VNRC Vermont Natural Resources Council
9 Bailey Avenue
Montpelier, Vermont 05602

March 28, 2017

Laura Lapierre
Wetlands Program Manager
Vermont Wetlands Program
Watershed Management Division
One National Life Drive, Main 2
Montpelier, VT 05620 - 3522

Re: LaPlatte River Marsh Wetlands Class I Designation Petition

Dear Laura:

Pursuant to Section 7.1 of the Vermont Wetland Rules (VWR), the Vermont Natural Resources Council (VNRC) files the attached petition to reclassify the LaPlatte River Marsh Wetlands from a Class II Wetland to a Class I Wetland. Below are the responses to the information required for filing a Petition to reclassify a Wetland to Class I set forth in VWR § 7.2.

VWR § 7.2 (a) – Nature and Purpose of the Petition

The Petition requests that the Secretary of the Agency of Natural Resources (ANR) designate a portion of the LaPlatte River Marsh Wetlands Complex, as depicted on the attached LaPlatte Marsh Reclassification Map prepared by Arrowwood Environmental, a Class I Wetland.

VWR § 7.2 (b) – Summary of Circumstances Prompting Petition and Action Sought

VNRC is Vermont's oldest and largest environmental advocacy organization. VNRC's mission is to protect and enhance Vermont's natural environments, vibrant communities, productive working landscapes, rural character and unique sense of place, and prepare the state for future challenges and opportunities. VNRC accomplishes its mission through research, education, collaboration and advocacy.

As part of fulfilling our mission, VNRC has historically been involved in efforts to ensure that Vermont's most special and unique natural areas are recognized by the public and receive the highest level of protection under the law. One such effort VNRC has engaged in has been to pursue Class I designations for Vermont's highest quality wetlands.

For example, VNRC petitioned to reclassify the Northshore Wetland in Burlington, Vermont as Class I. The petition was granted by ANR. VNRC also petitioned to reclassify the Lake Bomoseen Wetland as Class I. Consistent with VNRC's past efforts and its mission, VNRC is petitioning the ANR to recognize the unique and special characteristics of the LaPlatte River Marsh Wetlands by designating it as a Class I Wetland.

VWR § 7.2 (c) – Describe the Location of the Subject Wetland or Buffer Zone
Attached is USGS topographic map that depicts the proposed delineation for Class I Wetland designation and the associated 100 foot buffer, which was prepared by Arrowwood Environmental.

VWR § 7.2 (d) – Compliance with State and Federal Statutes and Rules

VWR § 2.7 (C) provides that a Class I Wetland is a wetland that the:

Secretary determines, based on an evaluation of the extent to which the wetland serves the functions and values set forth at 10 V.S.A. § 905b(18)(A) and in Section 5 of these is exceptional or irreplaceable in its contribution to Vermont's natural heritage, and therefore merits the highest level of protection. See 10 V.S.A. § 902(6).

Attached is a detailed analysis prepared by Arrowwood Environmental that provides the technical support for concluding that the portion of the LaPlatte River Marsh Wetlands Complex depicted on the LaPlatte Marsh Reclassification Map is exceptional or irreplaceable in its contribution to Vermont's natural heritage. The analysis sets forth the basis for determining that the LaPlatte River Marsh Wetlands Complex is exceptional or irreplaceable in its contribution to Vermont's natural heritage for the following functions and values:

5.1 - Water Storage for Flood Water and StormRunoff
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
5.10 - Erosion Control through Binding and Stabilizing the Soil

VWR § 7.2 (e) – Supporting Documents

In addition to the attached functions and values analysis, VNRC provides the following documents in support of the Petition: *LaPlatte River Wetland Complex, Wildlife Functions, Prepared by John A. Austin, Vermont Fish and Wildlife Department (January 24, 2017)*; *Natural Communities of the LaPlatte River Marsh Area, Prepared by Eric Sorenson, Charlie Holm and Avery Shawler, for The Nature Conservancy and the Vermont Department of Fish and Wildlife (January 2016).*

VWR § 7.2 (f) – Names and Addresses of Property Owners Within or Adjacent to the Wetland and Buffer Zone

Attached is a list of the required property owners.

VWR § 7.2 (g) and (h) – Signature of Petitioner, Name and Contact Information of Petitioner

Jon Groveman, VNRC Policy and Water Program Director has signed the Petition on behalf of VNRC. You may contact Mr. Groveman at 802-249-7736 or jgroveman@vnrc.org with questions about the Petition.

VWR § 7.2 (i) – Provide All Determinations or Decisions Pertaining to the Wetland in Question

VNRC is not aware of any such decisions.

As we discussed, VNRC will provide actual notice to adjoining landowners in the manner determined by ANR after ANR determines that the Petition is complete. Thank you for your consideration. Please contact me with any questions.

Jon Groveman, Esq.
VNRC Policy and Water Program Director

Vermont Wetlands Program Determination and Class I Rulemaking Petition Database Form

Under Sections 7 and 8
of the Vermont Wetland Rules

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
WETLANDS PROGRAM

Petition Submittal Instructions

- If submitting via US post, include a check in the correct fee amount made payable to the "**State of Vermont**," and a CD for petitions that contain large files (1 MB or greater).

Mail to:
Vermont Wetlands Program
Watershed Management Division
One National Life Drive, Main 2
Montpelier, VT 05620-3522

- Petitions can also be submitted via email to the following address: ANR.WSMDWetlands@vermont.gov
  - If submitting via email, please mail a check in the correct fee amount, made payable to the "**State of Vermont**," and a copy of the Vermont Wetlands Program Petition Database Form (this page) to the address provided above.
  - ***It is not necessary to mail in a copy of the complete petition if submitting via email***

Petitioner Name: Vermont Natural Resources Council	**Petition Preparer Name:** Jon Groveman
Town Where Wetland is Located: Shelburne	**County:** Chittenden
Span#: NA	**Vermont Wetlands Project (VWP)# if Known:**
Wetland Location Description: *911 street address or direction from nearest intersection*	Harbor Road north to Lake Champlain
Brief Petition Summary:	Reclassification of LaPlatte River Marsh Wetlands to Class 1
Petition Type: ☒Class I Wetland Rulemaking Petition ☐Wetland Determination to Class II ☐Wetland Determination to Class III	
Existing Land Use Type(s): *(Check all that apply)* ☐Residential (single family) ☐Residential (subdivision) ☒Undeveloped ☒Agriculture ☐Transportation ☒Forestry ☒Parks/Rec/Trail ☐Institutional ☐Industrial/Commercial	
Proposed Land Use Type(s): *(Check all that apply)* ☐Residential (single family) ☐Residential (subdivision) ☐Undeveloped ☐Agriculture ☐Transportation ☐Forestry ☐Parks/Rec/Trail ☐Institutional ☐Industrial/Commercial	
Wetland Delineation Date(s): Formal wetland delineations were not conducted. Field assessments were conducted by Arrowwood Env	

Fees

Make Checks Payable to: State of Vermont	Administrative Fee:	$240.00

Vermont Wetlands Program Determination and Class I Rulemaking Petition Database Form

Under Sections 7 and 8
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  - ***It is not necessary to mail in a copy of the complete petition if submitting via email***

Petitioner Name: Vermont Natural Resources Council	**Petition Preparer Name:** Dori Barton/Michael Lew-Smith
Town Where Wetland is Located: Shelburne	**County:** Chittenden
Span#: NA	**Vermont Wetlands Project (VWP)# if Known:**
Wetland Location Description: *911 street address or direction from nearest intersection* Harbor Road north to Lake Champlain	
Brief Petition Summary: Reclassification of LaPlatte River Marsh Wetlands to Class 1	
Petition Type: ■Class I Wetland Rulemaking Petition ☐Wetland Determination to Class II ☐Wetland Determination to Class III	
Existing Land Use Type(s): *(Check all that apply)* ☐Residential (single family) ☐Residential (subdivision) ■Undeveloped ■Agriculture ☐Transportation ■Forestry ■Parks/Rec/Trail ☐Institutional ☐Industrial/Commercial	
Proposed Land Use Type(s): *(Check all that apply)* ☐Residential (single family) ☐Residential (subdivision) ☐Undeveloped ☐Agriculture ☐Transportation ☐Forestry ☐Parks/Rec/Trail ☐Institutional ☐Industrial/Commercial	
Wetland Delineation Date(s): Formal wetland delineations were not conducted. Field assessments were conducted by Arrowwood Env	

Fees

Make Checks Payable to: State of Vermont	Administrative Fee:	$240.00

Vermont Wetlands Program
Determination and Class I Rulemaking Petition

Under Sections 7 and 8
of the Vermont Wetland Rules

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
WETLANDS PROGRAM

Petitioner Information: *If the Petitioner is someone other than the landowner, the landowner information must be included below*			
Petitioner Name: Vermont Natural Resources Council (VNRC), C/O Jon Groveman			
Address: 9 Bailey Avenue	City/Town: Montpelier	State Vt	Zip: 05602
Phone Number: 802-223-2328	Email Address: jgroveman@vnrc.org		

Petitioner Certification:
By signing this petition, you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.

Petitioner Signature: Jon Groveman Digitally signed by Jon Groveman DN: cn=Jon Groveman, o=VNRC, ou=VNRC, email=jgroveman@vnrc.org, c=US Date: 2017.03.28 13:45:07 -04'00' Date: 3/28/17

Petition Preparer Information: *Consultant, engineer, or other representative that is responsible for filling out the petition, if other than the Petitioner or landowner.*			
Petition Preparer Name: Dori Barton/Michael Lew-Smith, Arrowwood Environmental, LLC			
Address: 950 Bert White Road	City/Town Huntington	State: VT	Zip: 05462
Phone Number: 802-434-7276	Email Address: dori@arrowwoodvt.com/michael@arrowwoodvt.c		

Petition Preparer Certification:
By signing this petition, you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.

Petition Preparer Signature: Dori Barton Digitally signed by Dori Barton Date: 2017.03.28 14:10:26 -04'00' Date: 3/28/17

Handwritten signatures are also accepted.

1. Location of wetland:
Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing features.

The wetland complex is located along the shores of the LaPlatte River north of Harbor Road and extends to its confluence with Lake Champlain.

2. Current Wetland Classification:

2.1. The wetland is a Class II wetland because:

The wetland is mapped on the VSWI

2.2. Section 4.6 Presumption
If the wetland meets the Section 4.6 Presumption, it does so primarily because:

a. Wetland is of the same type and threshold size as those mapped on VSWI maps; or greater than 0.5 acres.

b. The wetland contains woody vegetation and is adjacent to a stream, river, or open body of water.

g. The wetland contains a species that appears in the NNHP database as rare, threatened, endangered, or uncommon; or is a natural community type that is rare or uncommon.

3. Description of the Wetland:
Answer the following questions regarding the entire wetland area proposed for a determination or Class I designation.

3.1. Size of Complex in Acres:
The size of the complex can be obtained from the Wetland Inventory Map for mapped wetlands, or best estimation based on review of aerial photography or site visit.

~276 acres

3.2. Vegetation Cover Types Present:
List all wetland types in the wetland or wetland complex and their percent cover and the dominant species.
***For example:** 50 acres of softwood forested swamp dominated by hemlock; or 30% scrub swamp button bush, 70% emergent wetland dominated by reed-canary grass, sensitive fern, and jewelweed*

Wet Clayplain Forest; Silver Maple-Sensitive Fern Riverine Floodplain Forest; Lakeside Floodplain Forest; Cattail Marsh; Rivershore

3.3. Landscape Position:
Where is the wetland located on the landscape? Describe all.
***For example:** Bottom of a basin, edge of a stream, shore of a lake, etc.*

The wetland is located along the lower reaches of the LaPlatte River to its confluence with Lake Champlain.

3.4. Hydrology:
Describe the main source of water for the wetland. List any river, stream, lakes, or ponds.

The main source of water for the wetland is the LaPlatte River and McCabe's Brook. During periods of high water, the wetland also may be flooded by Lake Champlain.

3.4.1. Direction of Flow:
***For example:** Stream flows from north to south through the wetland, or the wetland drains generally to the southwest.*

The LaPlatte River flows from southeast to north through the eastern portion of the wetland complex; McCabe's Brook flows from southwest to the north through the western portion of the wetland complex.

3.4.2. Influence of Hydrology on the Wetland:
***For example:** The river provides floodwater to the wetland in the spring.*

The rivers provides floodwater to the wetland in the spring; Lake Champlain provides floodwater to the wetlands when Lake levels are high.

3.4.3. Relation of Entire Wetland to the Project Area:
The distance between the project area and any nearby surface waters

The wetland extends to the south and west of Harbor Road through agricultural lands and commercial development.

3.4.4. Wetland Hydroperiod:
Discuss the frequency and duration of flooding, ponding, and/or soil saturation

The hydroperiod within the wetland complex varies depending on the landscape position. Some areas are permanently flooded or saturated, other areas are seasonally flooded or saturated. See wetland data forms for more detail.

3.5. Surrounding Landuse of the Entire Wetland:
***For example:** Rural residential and forested; Agricultural and undeveloped*

The area of the wetland complex that is under petition is primarily surrounded by agricultural and forest lands, with a small amount of rural residential development.

3.6. Relation of the Wetland to Other Nearby Wetlands:
Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question.

The overall wetland complex is comprised of 14 different natural community types, encompassing an area of ~276 acres. The combination of floodplain forests, shrub swamps, and emergent marshes contribute to the overall function of the complex.

3.7. Cumulative Impacts to the Wetland:
Identify any cumulative ongoing impacts that may influence the wetland.
Examples include but are not limited to: *Wetland encroachments, land use management in or surrounding the wetland, or development that influences hydrology or water quality. List any past Vermont Wetland Permits or CUD's related to this property.*

The LaPlatte River is approximately 20 miles long with its headwaters in the town forest in Hinesburg. The river travels from its headwaters in conserved forest west meandering through farmland for nearly its entire course. It also passes through the more developed areas of Hinesburg Village and Shelburne Village. The LaPlatte River is listed as a bacteria- impaired water The

4. Buffer Zone:
Describe the proposed buffer zone of the wetland (default 100-foot buffer for Class I, but other may be proposed)

4.1. Buffer Size proposed:
The purpose of a buffer zone is to protect those functions that make a wetland significant. Here state the proposed size and justification. The default buffer size for a Class II is 50 feet, and 100 feet for Class I. N/A for Class III petitions.

The default 100 foot buffer is the minimum width buffer needed to protect the functions and values for which the wetland complex is exceptional.

4.1.1 Buffer Land Use:
For example: *Mowed shoulder, 50% forested, old field, paved road, and residential lawns, etc. Describe any previous and ongoing disturbance in the buffer zone.*

5% residential; 15% agriculture; 80% forested

4.1.2 Buffer Vegetation:
List the vegetation cover type and dominant plant species.

The forested buffer consists of the following natural communities: Temperate Calcareous Cliff; Limestone Bluff Cedar Pine Forest; White Pine Forest; Hemlock Forest; Mesic Clayplain Forest; Sand Over Clay Forest. The open land within the buffer zone consists primarily of hay fields and pasture.

4.1.3 Buffer Soils:
Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description.

Enosburg and Whately; Adams and Windsor loamy sands; Covington silty clay

5. Wetland Function and Value Summary (as defined in the Vermont Wetland Rules Section 5):
Check which functions are present in the wetland

☒ Flood/Storm Storage	☒ RTE Species
☒ Surface & Groundwater Protection	☒ Education & Research
☒ Fish Habitat	☒ Recreation/Economic
☒ Wildlife Habitat	☒ Open Space/Aesthetics
☒ Exemplary Natural Community	☒ Erosion Control

Functions and Values: *For each function and value evaluate the **wetland** and check all that apply. Use Wetland Inventory Maps when necessary.*

6. Water Storage for Flood Water and Storm Runoff

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

☐ Constricted outlet or no outlet and an unconstructed inlet.

☒ Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.

Water Storage for Flood Water and Storm Runoff Continued…

- ▣ If a stream is present, its course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- ▣ Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- ☐ Hydrologic or hydraulic study indicates wetland attenuates flooding

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

Water Storage for Flood Water and Storm Runoff Continued…

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

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

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

- ▣ History of downstream flood damage to public or private property.
- ☐ Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by loss or reduction of the water storage function.
  - ☐ Developed public or private property
  - ☐ Stream banks susceptible to scouring and erosion
  - ☐ Important habitat for aquatic life
- ▣ The wetland is large in size and naturally vegetated.
- ▣ 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.
  - ▣ Developed public or private property.
  - ☐ Stream banks susceptible to scouring and erosion.
  - ☐ Important habitat for aquatic life.
- ▣ The wetland is large in size and naturally vegetated
- ▣ Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
  - ▣ A large amount of impervious surface in urbanized areas.
  - ☐ Relatively impervious soils.
  - ☐ Steep slopes in the adjacent areas.

6.1 Remarks on Water Storage function:
Add any additional remarks about the function here.

See attached Exceptional Functions and Values Narrative

7. Surface and Ground Water Protection:

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

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

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

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

- ☐ Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
- ☐ Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- ☐ Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- ☐ Current use in the wetland results in disturbance that compromises this function.

Surface and Groundwater Protection Continued…

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

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

☐ The wetland provides flows to Class A surface water. (Check ANR Atlas)

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

☒ The wetland is large in size and naturally vegetated.

7.1. Remarks on Water Protection Function:

See attached Exceptional Functions and Values Narrative

8. Fish Habitat:

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

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

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

☒ Documented or professionally judged spawning habitat for northern pike.

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

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

8.1. Remarks on Fish Habitat Function:

See attached Exceptional Functions and Values Narrative

9. Wildlife Habitat

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

- ■ Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
- ■ Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
- ■ Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
- ■ Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging, roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
- ■ Supports winter habitat for white-tailed deer. Good habitats for this species include softwood swamps. Evidence of use includes browsing, bark stripping, worn trails, or pellet piles.
- ■ Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
- ■ Has the habitat to support muskrat, otter, or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers, and streams.
- □ Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
- ■ Provides the following habitats that support the reproduction of uncommon Vermont amphibian species including:
  - ■ Wood frog, Jefferson salamander, blue-spotted salamander, or spotted salamander. Breeding habitat for these species includes vernal pools and small ponds.
  - ■ Northern dusky salamander and the spring salamander. Habitat for these species includes headwater seeps, springs, and streams.
  - ■ The four-toed salamander, Fowler's toad, western or boreal chorus frog, or other amphibians, found in Vermont of similar significance.
- ■ Supports or has the habitat to support 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 include large marsh systems with open water components.
- ■ Supports or has the habitat to support populations of uncommon Vermont reptile species including: wood turtle, northern map turtle, eastern musk turtle, spotted turtle, spiny softshell turtle, eastern ribbonsnake, northern watersnake, and others found in Vermont of similar significance.
- □ Supports or has the habitat to support significant populations of Vermont reptile species, including smooth greensnake, DeKay's brownsnake, or other more common wetland-associated species.
- ■ Meets four or more of the following conditions indicative of wildlife habitat diversity:

Wildlife Habitat Continued…

- ■ 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.
- ■ The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp.
- ■ Located adjacent to a lake, pond, river or stream.
- ■ Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land.
- ☐ Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water.
- ☐ One of the following:
  - ☐ Hydrologically connected to other wetlands of different dominant classes or open water within 1 mile.
  - ☐ Hydrologically connected to other wetlands of same dominant class within 1/2 mile.
  - ☐ Within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected.

- ☐ Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation.
- ■ Contains evidence that it is used by wetland dependent wildlife species

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

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

- ☐ The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
- ☐ The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- ☐ The current use in the wetland results in frequent cutting, mowing or other disturbance.
- ☐ The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

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

- ■ The wetland 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 as a locally important wildlife habitat by an ANR Wildlife Biologist.

9.1. Remarks on Wildlife Habitat Function:

See attached Wildlife Functions narrative by Mr. John Austin, Vermont Fish and Wildlife Department, and Exceptional Functions and Values Narrative

10. Exemplary Wetland Natural Community

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

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

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

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

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

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

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

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

▣ A wetland mosaic containing examples of several to many wetland community types; or

▣ A large wetland complex containing examples of several wetland community types.

List species or communities of concern:

The State of Vermont has identified six State Significant Natural Communities:
Buttonbush Swamp, Deep Bulrush Marsh, Lakeside Floodplain Forest, Silver Maple-Sensitive Fern Riverine Floodplain Forest, Sugar Maple-Ostrich Fern Riverine Floodplain Forest, River Mud Shore

10.1. Remarks on Exemplary Natural Communities:

See attached Exceptional Functions and Values Narrative

11. 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;

Rare, Threatened, and Endangered Species Continued…

- ☒ 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:

See attached Exceptional Functions and Values Narrative

11.1. Remarks on RTE habitat:

See attached Exceptional Functions and Values Narrative

12. Education and Research in Natural Sciences:

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

- ☒ Owned by or leased to a public entity dedicated to education or research.

- ☒ History of use for education or research.

- ☒ Has one or more characteristics making it valuable for education or research.

12.1. Remarks on Education and Research in Natural Sciences:

See attached Exceptional Functions and Values Narrative

13. Recreational Value and Economic Benefits:

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

- ☒ Used for, or contributes to, recreational activities.

- ☐ Provides economic benefits.

- ☒ Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.

- ☐ Used for harvesting of wild foods.

13.1 Remarks on Recreational Value and Economic Benefits:

See attached Exceptional Functions and Values Narrative

14. Open Space and Aesthetics:

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

▣ Can be readily observed by the public; and

▣ Possesses special or unique aesthetic qualities; or

▣ Has prominence as a distinct feature in the surrounding landscape;

☐ Has been identified as important open space in a municipal, regional or state plan.

14.1 Remarks on Open Space and Aesthetics:

See attached Exceptional Functions and Values Narrative for discussion of significance, but not a demonstration of exceptional significance.

15. Erosion Control Through Binding and Stabilizing

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

▣ Erosive forces such as wave or current energy are present and any of the following are present as well:

▣ Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.

▣ Good interspersion of persistent emergent vegetation and water along course of water flow.

☐ Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

Erosion Control Through Binding and Stabilization Continued...

What type of erosive forces are present?

▣ Lake fetch and waves

▣ High current velocities:

☐ Water level influenced by upstream impoundment

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at 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.

15.1. Remarks on Erosion Control Function:

See attached Exceptional Functions and Values Narrative

16. Exemplary and/or Irreplaceable Qualities (Vermont Wetland Rules Section 5):
Check which wetland functions and values you consider as exemplary or irreplaceable

■ Flood/Storm Storage	■ RTE Species
■ Surface & Groundwater Protection	■ Education & Research
■ Fish Habitat	■ Recreation/Economic
■ Wildlife Habitat	☐ Open Space/Aesthetics
■ Exemplary Natural Community	■ Erosion Control

17. Class I Criteria:
These are criteria which support whether a wetland is exceptional or irreplaceable. Wetlands which fit one or more of these criteria typically rate high in one or more function or value.

17.1. Representative Example:
If applicable, describe how this wetland is a representative example of a wetland type or types. Cite literature here.

Not applicable

17.2 Rare Community Type:
If applicable, describe how this wetland is a rare wetland community type. Cite literature here.

Not applicable

17.3 Community Assemblage/Wetland Complex:
If applicable, describe the diversity of wetland types, plant, animal species, soils and topography etc.

See attached Narrative Responses to Questions 17 and 18

17.4 Landscape Association:
If applicable, describe how the wetland's function and value is specific to its landscape position and the critical nature of its location.

See attached Narrative Responses to Questions 17 and 18

18. Class I Sub Criteria: *These are qualities that contribute to a wetland being exceptional or irreplaceable.*

18.1. Rare Threatened or Endangered Species:
Cite all element occurrences by number. (do not list names for protection purposes)

See attached Narrative Responses to Questions 17 and 18

18.2. Undisturbed Condition:
If applicable, describe how the wetland is in a relatively undisturbed condition.

Not applicable

18.3 Intact Landscape:
If applicable, describe how the wetland is part of an intact and unfragmented landscape.

Not applicable

18.4 Connectivity:
If applicable, describe how the wetland serves as an important wildlife or waterfowl corridor, connecting natural areas or serving in migration.

See attached narrative by Mr. John Austin, Vermont Fish and Wildlife Department

19. Additional Narrative: *Please provide any additional narrative to support the petition.*

20. Supporting Materials:
*****ADDITIONAL MATERIAL REQUIRED TO CALL PETITION COMPLETE***

20.1. **Location Map:
Provide a location map that is 8 ½" x 11" and separate from any site plans. The Vermont Natural Resources Atlas is appropriate using USGS topography map base layer, roads, and VSWI wetlands at a minimum.

Date	Title
2/16/17	LaPlatte River Wetland Complex: Reclassification

20.2. **Proposed Mapping:
List as specified below. Plans must be legible and include wetland delineation or aerial interpretation and buffer zones. It is helpful to provide one map with topography and one with aerial photography as a base.

Title	Author	Date	Last Revision Date
LaPlatte River Wetland Reclassification	Arrowwood Environmental	2/28/17	NA

20.3. U.S. Army Corps of Engineer Wetland Delineation Forms:
List Attachment Name, dates data was collected, cover types sampled and number of paired plots included. Required for Determinations.

Attachment #/Title	(Range of) Collection Date(s)	Vegetation Cover Types	# of Paired Plots
Delineation Forms	10/3/16	Cattail Marsh, Deep Bulrush Marsh, Lakeside FF, Riverine FF, Wet Clayplain Forest	5 wetland plots
Delineation Forms	10/3/16	Sand-Over-Clay Forest, Mesic Clayplain forest	2 upland plots

20.4. Other Supporting Documents:
For Class I – include a signatory page which includes signatures, printed name, and mailing address of each individual (and email address if possible). ***Examples include but are not limited to:*** *Photographs, newspaper articles, historic documents, scientific reports, GIS shapefiles, additional ACOE forms.*

Date	Last Revision	Author	Title
2016	2016	Sorenson et al.	Natural Communities of the LaPlatte River Marsh Natural Area
Jan 24, 2017	Jan 24, 2017	John Austin	LaPlatte River Wetland Complex Wildlife Functions
Feb 2, 2017	Feb 2, 2017	Arrowwood Environmental	Exceptional Functions and Values Narrative

21. Abutting Landowners

Please provide abutting landowner information so that all persons owning property within, or adjacent to, the affected wetland area of buffer zone can be notified during the public notice period.

21.1. Abutting Land Owner Information:

Please list as first names first followed by last name

1. Name: **Street/Road:** Attached **City/State/Zip:**	**16. Name:** **Street/Road:** **City/State/Zip**
2. Name: **Street/Road:** **City/State/Zip:**	**17. Name:** **Street/Road:** **City/State/Zip:**
3. Name: **Street/Road:** **City/State/Zip:**	**18. Name:** **Street/Road:** **City/State/Zip:**
4. Name: **Street/Road:** **City/State/Zip**	**19. Name:** **Street/Road:** **City/State/Zip:**
5. Name: **Street/Road:** **City/State/Zip**	**20. Name:** **Street/Road:** **City/State/Zip:**
6. Name: **Street/Road:** **City/State/Zip**	**21. Name:** **Street/Road:** **City/State/Zip:**
7. Name: **Street/Road:** **City/State/Zip**	**22. Name:** **Street/Road:** **City/State/Zip:**
8. Name: **Street/Road:** **City/State/Zip**	**23. Name:** **Street/Road:** **City/State/Zip:**
9. Name: **Street/Road:** **City/State/Zip**	**24. Name:** **Street/Road:** **City/State/Zip:**
10. Name: **Street/Road:** **City/State/Zip**	**25. Name:** **Street/Road:** **City/State/Zip:**
11. Name: **Street/Road:** **City/State/Zip**	**26. Name:** **Street/Road:** **City/State/Zip:**
12. Name: **Street/Road:** **City/State/Zip**	**27. Name:** **Street/Road:** **City/State/Zip:**
13. Name: **Street/Road:** **City/State/Zip**	**28. Name:** **Street/Road:** **City/State/Zip:**
14. Name: **Street/Road:** **City/State/Zip**	**29. Name:** **Street/Road:** **City/State/Zip:**
15. Name: **Street/Road:** **City/State/Zip**	**30. Name:** **Street/Road:** **City/State/Zip:**

LaPlatte River Marsh Wetlands
Class 1 Reclassification Petition
Narrative Response to Questions 17 and 18
February 23, 2017

17.1. Representative Example:
If applicable, describe how this wetland is a representative example of a wetland type or types. Cite literature here.

NA

17.2 Rare Community Type:
If applicable, describe how this wetland is a rare wetland community type. Cite literature here.

NA

17.3 Community Assemblage/Wetland Complex:
If applicable, describe the diversity of wetland types, plant, animal species, soils and topography etc.

A community assemblage or wetland complex consists of multiple different wetland types which are interrelated because of hydrology, geographic position and various wetland functions. Because they are interrelated, impacts in one part of the wetland may have ripple effects throughout the complex. The LaPlatte River Marsh wetland complex occupies the banks of the LaPlatte River and one of its tributaries, McCabe's Brook. It is these surface waters and associated flooding regimes which tie these wetlands together. The soils in the complex range from depositional sands along the active floodplain to deep organic soils in the marshes and backswamps. Various soils and landscape positions give rise to 14 different wetland natural community types comprising 267 acres. Community types include Alder Swamp, Buttonbush Swamp, Cattail Marsh, Deep Broadleaf Marsh, River Mud Shore, Sedge Meadow, Seep, Shallow Emergent Marsh, Vernal Pool, Wet Sand-Over-Clay Forest, 2 types of Clayplain Forest and 3 types of Floodplain Forest. All three of the floodplain forest types, the Lakeside, the Silver Maple-Sensitive Fern and the Sugar Maple-Ostrich Fern Floodplain Forests have been determined to be state significant examples of their type by the Natural Heritage Inventory (NHI). The River Mud Shore, Buttonbush Swamp, Deep Bulrush Marsh and Clayplain Forests are also considered state significant natural communities by NHI. This diversity of natural communities provides habitat for a wide array of fish and wildlife species. The Nature Conservancy has documented that this wetland provides habitat for 20 species of mammals, 60 species of birds and 50 species of fish, reptiles and amphibians. (TNC. 2013)

The diversity of wetland types and wildlife habitats within this wetland complex is unique in the region, and a testament to the value of this complex to the state's natural heritage.

17.4 Landscape Association:
If applicable, describe how the wetland's function and value is specific to its landscape position and the critical nature of its location.

The LaPlatte River Marsh wetland complex is significant for all ten of the listed functions and values. Much of its significance relates to its landscape position along the banks of the LaPlatte River and McCabe's Brook. It serves the critical functions of flood-water storage, surface water protection, erosion control and fish habitat specifically because it is associated with these rivers. In addition, this wetland complex is located at the mouth of the LaPlatte River and includes wetlands at the confluence with Lake Champlain. This association augments the wetland values of aesthetics, education and research, and recreation. This critical position at the southern tip of Shelburne Bay makes the health and functioning of this wetland complex inextricably linked to that of Lake Champlain. This tie to the impaired waters and cultural resource of the Lake enhances the importance of this wetland complex and the attests to the need for its conservation.

18.1. Rare Threatened or Endangered Species:
Cite all element occurrences by number. (do not list names for protection purposes)

The diverse assemblage of wetlands within the LaPlatte River Marsh wetland complex provides habitat to 22 different rare, threatened or endangered plant and animal populations. This includes 13 plant species, 2 fish species, 4 freshwater mussel species, and one each of an insect, bird and amphibian species. Each of these occurrences and its ranking is shown in the table below.

Table 2. List of Rare, Threatened and Endangered Species Present in the LaPlatte River Marsh Wetland Complex

Scientific Name	Type	Common Name	Rank
Euphyes dion	Insect	Dion Skipper	S2
Sisyrinchium angustifolium	Plant	Narrow Blue-eyed-grass	S2S3
Carex lupuliformis	Plant	False Hop Sedge	S2
Percina copelandi	Fish	Channel Darter	S1
Hemidactylium scutatum	Amphibian	Four-toed Salamander	S2
Thalictrum venulosum	Plant	Border Meadow-rue	S2S3
Elymus villosus var. villosus	Plant	Hairy Wild-rye	S1
Noturus flavus	Fish	Stonecat	S1
Ichthyomyzon unicuspis	Fish	Silver Lamprey	S2?
Lycopus virginicus	Plant	Virginia Bugleweed	S2
Physostegia virginiana	Plant	Obedient Plant	S2
Nycticorax nycticorax	Bird	Black-crowned Night-heron	S1B
Phegopteris hexagonoptera	Plant	Broad Beech-fern	S2S3
Blephilia hirsuta var. hirsuta	Plant	Hairy Wood-mint	S2
Cardamine bulbosa	Plant	Spring Cress	S1
Amaranthus tuberculatus	Plant	Water Hemp	S2
Pyganodon grandis	Mussel	Giant Floater	S2S3
Peltandra virginica	Plant	Arrowleaf	S2S3
Stachys pilosa var. pilosa	Plant	Marsh Woundwort	S2?
Lampsilis ovata	Mussel	Pocketbook	S2
Potamilus alatus	Mussel	Pink Heelsplitter	S2
Leptodea fragilis	Mussel	Fragile papershell	S2

18.2. Undisturbed Condition:

If applicable, describe how the wetland is in a relatively undisturbed condition.

NA

18.3 Intact Landscape:

If applicable, describe how the wetland is part of an intact and unfragmented landscape.

NA

18.4 Connectivity:
If applicable, describe how the wetland serves as an important wildlife or waterfowl corridor, connecting natural areas or serving in migration.

Mr. John Austin from the Vermont Department of Fish and Wildlife has provided a discussion (see attachment) about the exceptional significance of the LaPlatte River Marsh wetlands as critical wildlife habitat for migrating waterfowl and both a wildlife and waterfowl connecting corridor.

LaPlatte River Marsh Wetlands

Class 1 Reclassification Petition

Exceptional Functions and Values Narrative

March 8, 2017

Section 6 Water Storage for Flood Water and Storm Runoff

The LaPlatte River Marsh wetland complex is approximately 267 acres in size and comprised of 14 different natural community wetland types encompassing floodplain forests, shrub swamps and marshes. The wetland complex has the 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. Surface waters are held and velocities decreased in the floodplain forests, shrub swamps and emergent marshes adjacent to the River.

A critical function of this wetland complex is to help store and depress runoff peaks of floodwater and prevent them from being carried out into Lake Champlain. The wetland complex also serves to store flood backwaters from Lake Champlain during major storm events (which are becoming more frequent) such as Tropical Storm Irene in 2011 when water levels observed at the Shelburne Bay access area were over 102'. The attached map shows the available storage volumes in the wetland complex at a series of Lake levels. (Medalie and Olson, 2013)

The wetland complex is immediately upstream of Lake Champlain and plays a critical role in ameliorating flood levels to lakeshore properties which have experienced historical flood damage.

The LaPlatte River Marsh wetland complex is exceptional and irreplaceable for the water storage of floodwater and storm runoff function.

Section 7 Surface and Ground Water Protection

The LaPlatte River watershed encompasses 53 square miles and is the largest watershed draining into Shelburne Bay. Shelburne Bay is the drinking water source for thousands of Chittenden County residents. The condition of the LaPlatte River and its tributaries greatly affects the water quality of Shelburne Bay.

The LaPlatte River is approximately 20 miles long, with its headwaters located in a town forest in Hinesburg. The river then travels west, meandering through farmland for nearly its entire course. It also passes through the more developed areas of Hinesburg Village and Shelburne Village. The towns of Shelburne, Charlotte, Hinesburg, and parts of Williston, St. George, and Richmond fall within the watershed of the LaPlatte.

The LaPlatte River is listed as a bacteria- impaired water from its confluence with Lake Champlain, continuing 10.5 miles upstream to Levensworth Road in Hinesburg. Much of the agricultural land

surrounding the impaired segment of the LaPlatte River was likely once natural wetlands. These wetlands would have helped to attenuate floods and filter excessive runoff. The conversion of these wetlands to agricultural land, often in the form of filling and berming, has restricted the rivers access to its natural floodplain. Areas adjacent to the river that once played an important role in filtering runoff, have been converted into areas that are often a source of polluted runoff. While historically the wetlands along the LaPlatte were much more abundant, the LaPlatte River Marsh wetlands occupying its lower reaches are still significant in size, diverse in natural community composition and contain a high amount of microtopography. All of these features work together to provide an obvious filter between surface/ground water and adjoining landuses that contain both point and nonpoint sources of pollution from the watershed.

This wetland complex plays a critical role in not only the protection and improvement of water quality in the LaPlatte River but also Shelburne Bay. The period of April through June 2011 saw the all-time high phosphorus loading to Lake Champlain (Medalie and Olson, 2013). Long term phosphorus concentrations continue to increase in Shelburne Bay. Without this significant wetland resource, we would expect to see local levels of phosphorus rise in Shelburne Bay, as well as an overall increase in phosphorus loading to the lake. Protection of this significant resource would be a clear effort by the State to reduce lake pollutants.

The LaPlatte River Marsh wetland complex is exceptional and irreplaceable for the surface and groundwater protection function.

Section 8 Fish Habitat

The LaPlatte River is a Class B waterbody with designated uses including swimming, fishing and boating. The river is a designated warm water fishery from its confluence with Patrick Brook in Hinesburg downstream to the Spear Street extension bridge in Charlotte, and a coldwater fishery in all other reaches. The following twenty-three species have been identified in the LaPlatte during recent fish survey work (Biodrawversity, 2016): Black crappie, common shiner, golden shiner, largemouth bass, small mouth bass, rosyface shiner, northern pike, pumpkinseed, rock bass, Eastern silvery minnow, yellow bullhead, brown bullhead, yellow perch, white perch, bluegill, mudminnow, brook silverside, bluntnose minnow, spotfin shiner, tench, carp, white sucker, and American eel.

The LaPlatte River Marsh wetlands provide the following features which contribute to fish habitat: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; and streambank stability. The combination of deep and shallow marshes, seasonally flooded shrub swamps and floodplain forests provide critical spawning, nursery, feeding and cover habitat for the rich variety of fish that inhabit the LaPlatte River as it flows through this wetland complex.

The LaPlatte River Marsh is exceptional and irreplaceable for the fish habitat function.

Section 9 Wildlife Habitat

Wetlands are significant for this function if they provide habitat to one or more of the different wildlife guilds, including waterfowl, songbirds, shorebirds, reptiles, amphibians, water-dependent mammals and large mammals. In addition, the physiognomic structure of a wetland can also be used as an indicator for the diversity of wildlife habitat present.

The LaPlatte River Marsh wetland complex provides breeding, nesting and feeding habitat to a wide variety of songbirds, shorebirds, waterfowl, and raptors. The Nature Conservancy (TNC) has documented a total of 204 bird species that can be found in this wetland complex and adjacent uplands (TNC, 2003). Waterfowl such as cormorants, grebes, mergansers and ducks have been documented here. The wood duck, Canada goose, mallard and common merganser all rely on these wetlands for nesting habitat. Shorebirds such as killdeer, yellowlegs, 3 species of plover and 8 species of sandpiper forage in the wetland and muddy shores of the river. Wetland dependent species such as American bittern, American woodcock, common snipe, black-crowned night heron and great blue heron inhabit the marshes and water lily wetlands. A wide variety of raptors use these wetlands for feeding and, in some cases, nesting. These include osprey, bald eagles, northern harrier, American kestrel, merlin, peregrine falcon and 6 different species of hawks. Overall, the diversity of habitat types and its association with Lake Champlain make this wetland system a vital component of avian habitat in the Champlain Valley.

Wetland-dependent mammals can also be found using these wetlands for foraging or lodging. This includes beaver, otter, muskrat and mink. Numerous beaver and muskrat lodges are evident along the River and in the marshes of the wetland, while tracks on the muddy shores provide evidence of mink and otter foraging. In addition, the adjacent upland is mapped as a deer wintering area.

The diversity of wetland types also provides habitat for a wide variety of reptiles and amphibians, which have been documented by the Vermont Herp Atlas (http://vtherpatlas.org/ accessed 12-2016). Resident frog species include northern leopard frog, spring peeper, bullfrog and green frog. In addition, the gray tree frog, wood frog and American toad have been documented using these wetlands for breeding. The spotted salamander, the eastern newt as well as the uncommon blue-spotted salamander and the rare four-toed salamander have also been documented in this wetland complex. Turtles such as the snapping turtle and the painted turtle are commonly seen basking or foraging in these wetlands. The wood turtle and map turtle, both uncommon species of Special Concern, have also been documented here. Documented snake species include the milksnake, the gartersnake and the ring-necked snake. Other reptile and amphibian species that may be present but have not yet been documented include Northern dusky salamander, Northern two-lined salamander, the rare mudpuppy, pickerel frog, the rare Eastern musk turtle, and the uncommon Northern watersnake (J. Andrews, personal communication, 12-8-2016).

Structurally, the wetland offers a wide variety of different wetland types which vary depending on hydrology and landscape position. These include open water, floating-leaved aquatic types, deep marshes, densely vegetated shallow marshes, shrub types, early successional forests and mature forests. The interspersion of these different vegetation classes as a mosaic on the landscape provides habitat for wide ranging species. The wetland's location adjacent to Lake Champlain also makes it valuable for many species that use the lake. Finally, more than 50% of the adjacent upland is undeveloped, providing

habitat at the wetland-upland interface for species such as deer, beaver, salamanders, snakes, raptors and shorebirds.

Also provided in this application is a Wildlife Functions narrative written by Mr. John Austin from the Vermont Fish and Wildlife Department.

Given the critical habitat that the wetland complex offers to such a diversity of species, the LaPlatte River Marsh wetland is exceptional and irreplaceable for this function.

Section 10 Exemplary Wetland Natural Community

The natural communities of the LaPlatte River Marsh wetland complex were mapped and ranked by Sorenson et al. (2016). During that mapping, 14 different wetland natural communities were mapped, comprising 267 acres. A copy of this report and map are included with this application. These community types include Alder Swamp, Buttonbush Swamp, Cattail Marsh, Deep Broadleaf Marsh, River Mud Shore, Sedge Meadow, Seep, Shallow Emergent Marsh, Vernal Pool, Wet Sand-Over-Clay Forest and three types of Floodplain Forest. Summary of these types is shown in Table 1. The River Mud Shore, Buttonbush Swamp and Deep Bulrush Marsh are considered state significant natural communities by the Natural Heritage Inventory (NHI). The River Mud Shore is a sparsely vegetated, ephemeral community that occurs along the banks of the river during periods of low water. Plants (including some rare species) colonize these muddy shores, which also provide habitat for many shorebirds. Though the Deep Bulrush Marshes and Buttonbush Swamp are more common types, the size and condition of these wetlands in the LaPlatte River Marsh complex make them state significant. All three of the floodplain forest types, the Lakeside, the Silver Maple-Sensitive Fern and the Sugar Maple-Ostrich Fern Floodplain Forests have been determined to be state significant examples of their type. The Lakeside Floodplain Forest is "one of the most significant natural communities in the LaPlatte River Marsh" (Sorenson et al. 2016). Tall silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*) and swamp white oak (*Quercus bicolor*) dominate the canopy of this uncommon community. A single occurrence of the rare Sugar Maple-Ostrich Fern Floodplain Forest was also mapped. Though small, this site is relatively undisturbed, contains mature trees and is in excellent condition. The most common floodplain forest type in the LaPlatte River Marsh wetland is the Silver Maple-Sensitive Fern Forest, which stretches nearly the entire length of the complex along river banks and natural levees. Since most of the examples of this community have been converted to agriculture, large, intact examples such as this are rare.

Table 1. State Significant Natural Communities in the LaPlatte River Marsh Wetland Complex as mapped by NHI. (Sorenson et al. 2016)

Natural Community Type	Acres*	Current Condition	Landscape Context	Size Rank	Element Occurrence Rank
Buttonbush Swamp	5.0	A	AB	A	A
Deep Bulrush Marsh	28.0	B	B	B	B
Lakeside Floodplain Forest	23.8	AB	B	A	A
Mesic Clayplain Forest	35.3	C	C	C	C
Mesic Clayplain Forest	27.2	AB	C	C	B
River Mud Shore	1.7	A	B	A	A
Sand-Over-Clay Forest	95.2	B	BC	B	B
Sand-Over-Clay Forest	11.3	B	CD	C	C
Silver Maple-Sensitive Fern Riverine Floodplain Forest	62.3	B	BC	A	B
Sugar Maple-Ostrich Fern Riverine Floodplain Forest	2.1	A	B	C	B
Temperate Calcareous Cliff	1.1	A	BC	C	B
Transition Hardwoods Limestone Forest	29.2	B	C	A	B
Wet Clayplain Forest	12.6	BC	BC	C	C
Wet Sand Over Clay Forest	9.8	B	BC	C	B

** Acreages presented as mapped by NHI. Each of these communities is partially present within the mapped wetland and buffer boundaries associated with this petition.*

Taken together, the wetlands that make up the LaPlatte River Marsh wetland complex are significant, exceptional and irreplaceable for the exemplary natural community function.

Section 11 Rare, Threatened, and Endangered Species Habitat

The diverse assemblage of wetlands within the LaPlatte River Marsh wetland complex provides habitat to 22 different rare, threatened or endangered plant and animal populations. This includes 13 plant species, 2 fish species, 4 freshwater mussel species, and one each of an insect, bird and amphibian species. Each of these occurrences and its ranking is shown in the table below.

Table 2. List of Rare, Threatened and Endangered Species Present in the LaPlatte River Marsh Wetland Complex

Scientific Name	Type	Common Name	Rank
Euphyes dion	Insect	Dion Skipper	S2
Sisyrinchium angustifolium	Plant	Narrow Blue-eyed-grass	S2S3
Carex lupuliformis	Plant	False Hop Sedge	S2
Percina copelandi	Fish	Channel Darter	S1
Hemidactylium scutatum	Amphibian	Four-toed Salamander	S2
Thalictrum venulosum	Plant	Border Meadow-rue	S2S3
Elymus villosus var. villosus	Plant	Hairy Wild-rye	S1
Noturus flavus	Fish	Stonecat	S1
Ichthyomyzon unicuspis	Fish	Silver Lamprey	S2?
Lycopus virginicus	Plant	Virginia Bugleweed	S2
Physostegia virginiana	Plant	Obedient Plant	S2
Nycticorax nycticorax	Bird	Black-crowned Night-heron	S1B
Phegopteris hexagonoptera	Plant	Broad Beech-fern	S2S3
Blephilia hirsuta var. hirsuta	Plant	Hairy Wood-mint	S2
Cardamine bulbosa	Plant	Spring Cress	S1
Amaranthus tuberculatus	Plant	Water Hemp	S2
Pyganodon grandis	Mussel	Giant Floater	S2S3
Peltandra virginica	Plant	Arrowleaf	S2S3
Stachys pilosa var. pilosa	Plant	Marsh Woundwort	S2?
Lampsilis ovata	Mussel	Pocketbook	S2
Potamilus alatus	Mussel	Pink Heelsplitter	S2
Leptodea fragilis	Mussel	Fragile papershell	S2

The profusion of rare species within the LaPlatte River Marsh wetland complex makes this site irreplaceable and exemplary for this wetland function.

Section 12 Education and Research in Natural Sciences

The LaPlatte River Marsh wetlands have a long history of being used for education and research, which is not surprising given the unique assemblage of wetland community types and vast array of wildlife present. Undergraduate and graduate students from the University of Vermont have targeted the marsh for research projects over the years. Included in these are master's thesis (including Hub Vogelman's

1969 Master's research paper) as well as undergraduate assessments (including the 2007 UVM SCA Lands Program Assessment). The wetland provides a rich outdoor classroom within which to teach students about the significant functions and values of wetland ecosystems.

In addition to formal academic research, several non-profit organizations have used the wetland complex to educate local residents and Vermonters as whole about the significance of natural wetland ecosystems in protecting water quality and providing necessary wildlife habitat. The LaPlatte River Marsh Natural Area (established in 1977) is a 245-acre property owned by TNC, which is a non-profit organization dedicated to "secure clean water for both wildlife and people". TNC established the preserve to protect the diverse ecological communities and species found there. The preserve has a 2.5 mile interpretive trail along the LaPlatte, McCabe's Brook and marsh. The trail is primarily used for hiking, walking and birding and is accessible to the public from May to November.

The LaPlatte Watershed Partnership (LWP) is another non-profit organization whose mission is to learn and disseminate information about the LaPlatte River, its tributaries and the watershed as whole.

The LaPlatte River Marsh wetland complex is significant and exceptional for education and research in natural sciences.

Section 13 Recreational Value and Economic Benefit

A significant portion of the LaPlatte River Marsh wetlands are either owned by non-profit organizations or the town of Shelburne. TNC trails encompass approximately 2.5 miles through wetland and upland ecological communities. The town of Shelburne owns portions of the Marsh and its buffer on the east and west sides of Route 7. To the west of route 7, the town land contains a handicap-accessible recreational path which runs along the borders of the marsh. To the east of Route 7, the town owns and operates the 145 acre LaPlatte River Nature Park that contains an extensive recreational trail network. A series of dedicated trail networks are located throughout these parcels for recreationalists of all varieties, including walkers, hikers, bikers, and bird watchers.

The LaPlatte River, which winds through the wetland complex, provides water based recreational activities such as canoeing, kayaking, fishing and duck hunting. The Shelburne public dock provides paddling access via the public boat launch to Lake Champlain.

The LaPlatte River Marsh wetland complex is exceptional for the recreational value and economic benefits function.

Section 14 Open Space and Aesthetics

The LaPlatte River Marsh wetland complex is approximately 267 acres, comprised of 14 different natural community types including floodplain forests, shrub swamps, and emergent marshes. The unique assemblage of wetland types (interspersed with large areas of open water) are associated with both the LaPlatte River and its confluence with Lake Champlain and are readily observable by the public. In particular, the wetlands which provide a distinct contrast with the surrounding upland natural

communities can be viewed by boaters and by recreationalists using established trails on the surrounding public and private lands. The 2016 Shelburne Comprehensive Town Plan generally identifies the LaPlatte River wetland complex in the Conservation Area district. The Town established the LaPlatte River Conservation Corridor as it contains significant natural features and has been identified on the LaPlatte River Greenway Map.

The LaPlatte River Marsh wetland complex is significant for the function of open space and aesthetics.

Section 15 Erosion Control Through Binding and Stabilizing

The LaPlatte River Marsh wetlands are located along the lower LaPlatte River and comprise a significant portion its shoreline. The floodplain forests, shrub swamps and emergent marshes all provide dense vegetation that help to slow down high velocity surface waters and reduce erosion of the river banks.

Phase 2 Stream Geomorphic Assessments conducted by the Lewis Creek Association in 2011 show excessive erosion in upstream reaches of the LaPlatte River that has led to sediment and nutrient loading of the system and deposition in downstream reaches. Reduced upstream buffer widths reduce channel resistance and lead to excessive erosion. Little erosion was documented in the lower reaches, where large riparian buffers have stabilized the banks.

The stability of the lower reaches of the LaPlatte, where the river flows through the LaPlatte River Marsh wetland complex, is critical to the health of Shelburne Bay. The densely vegetated wetlands along the river are reducing the amount of sediment that could be potentially reaching the Lake and thereby, reducing potential phosphorus loading to the Lake.

The LaPlatte River Marsh wetland complex is exceptional and irreplaceable for preventing erosion through binding and stabilizing the soil.

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LaPlatte River Wetland Complex

Wildlife Functions

January 24, 2017

Prepared by John Austin, Vermont Fish & Wildlife Department

The LaPlatte River wetland complex extending from the falls where the river is crossed by Falls Road in the Town of Shelburne to where it has it's confluence with Lake Champlain is a rich mosaic of wetland conditions that support a diversity of wildlife. The habitat and natural community conditions of this area are described in a report prepared by Eric Sorenson, Charlie Hohn, and Avery Shawler (Natural Communities of the LaPlatte River Marsh Natural Area – January 2016). Headwaters of the LaPlatte River originate in the Town of Hinesburg and the riparian habitat along the entire length serves as an important corridor for wildlife through an otherwise highly fragmented part of the state. In fact, the connectivity function provided by the LaPlatte River throughout its course is one of the most significant functions it provides for wildlife and is what enables animals such as bobcat to access the wetland complex in the lower reaches of the river.

Landscape level wildlife functions – habitat connectivity

From a landscape perspective, the lower LaPlatte River wetland complex provides the only area of intact forest cover (in this case associated with a wetland system) between Shelburne Pond and Lake Champlain. Surrounded by commercial, residential, transportation development and agriculture, this area provides a critical network of upland and wetland habitat that supports both wetland-dependent and other wildlife. Bobcat (Lynx rufus) are a wide-ranging carnivore that typically avoid human disturbance. However, bobcat are known to routinely utilize the LaPlatte River wetland complex as refugia from surrounding development and as important feeding habitat providing ready access to an abundance of small prey species such as Eastern cottontail (Sylvilagus floridanus). Recent research conducted by the Vermont Fish and Wildlife Department and the University of Vermont confirms this understanding and found that bobcats use the LaPlatte River corridor up to Shelburne Falls and beyond as a means of accessing this important area of feeding habitat. It is unlikely that bobcat would occur in this area of Shelburne without the wetland/upland complex of the lower LaPlatte River. This highlights one of several important wildlife functions supported by the wetland complex that has landscape level implications. Other examples include use of the river and wetland system by river otter (Lontra Canadensis), mink (Mustela vison), and beaver (Castor Canadensis), all of which are species that move long distances to meet their life requisites and use the area proposed for reclassification as core habitat for feeding, refuge, movement, and reproduction. Other species that are less directly associated with wetland habitat, but are known to use the area include red fox (Vulpes Vulpes) and coyote (Canis latrans). Muskrat, although not considered wide-ranging, are most certainly wetland dependent and rely on the marsh habitats of this system for survival.

Wetland dependent wildlife

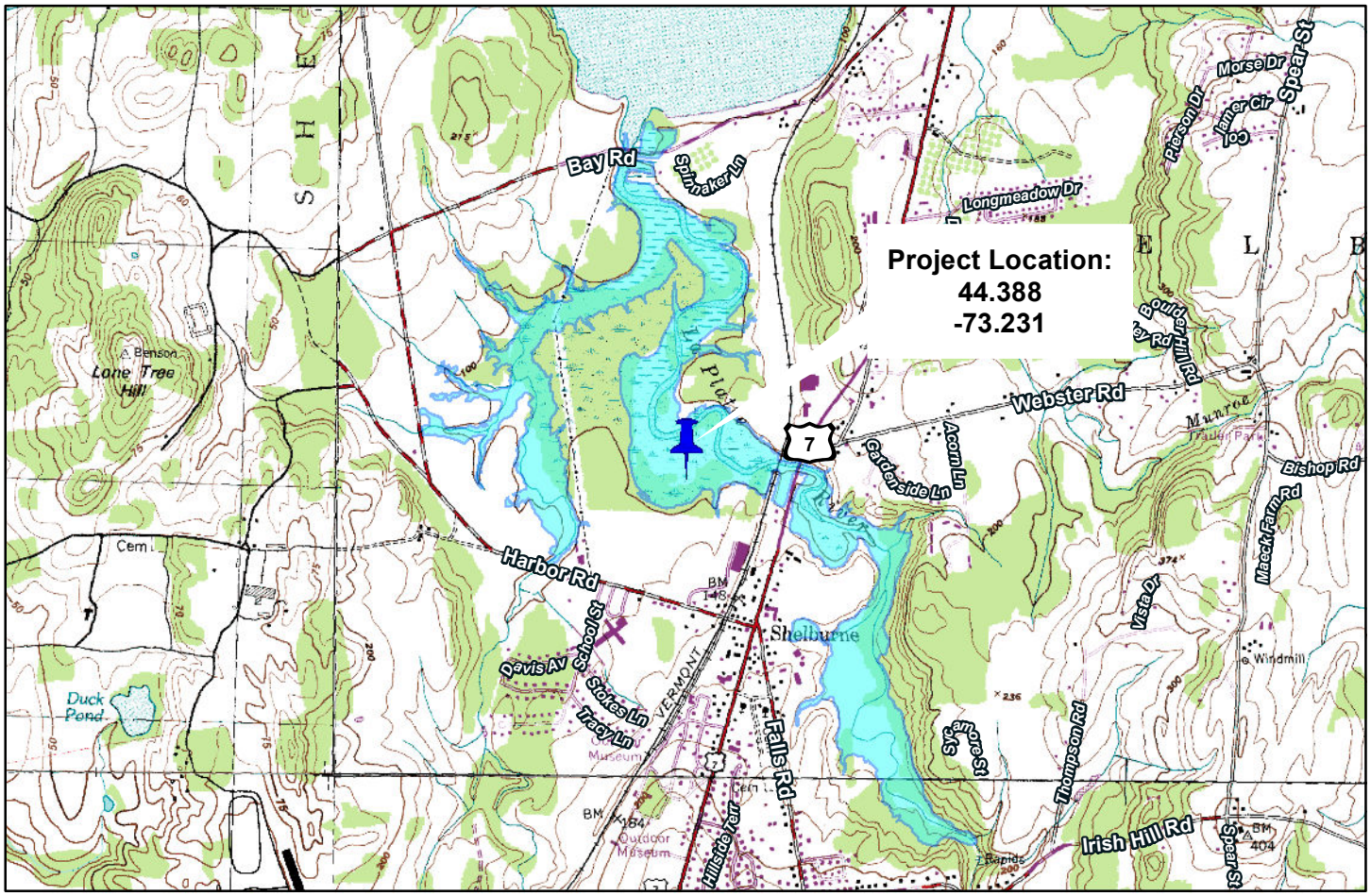
Similar to many of the Lake Champlain river delta wetland complexes, the lower LaPlatte River wetland complex is also a large, unique wetland system in terms of supporting wetland-dependent wildlife. More specific to the wetland complex itself, the area is critical habitat for a wide array of waterfowl, wading birds, shorebirds, raptors and songbirds that depend on large wetland systems for survival. The lower LaPlatte River wetland provides critical nesting and brood rearing habitat for wood ducks (Aix sponsa), mallard (Anas platyrhynchos), American black duck (Anas rubripes), common goldeneye (Bucephala clangula), hooded mergansers (Lophodytes cucullatus), Canada geese (Branta Canadensis), and possibly other species of waterfowl. During spring and fall migration periods, the wetland provides critical stopover resting and feeding habitat for a myriad of waterfowl that includes many other species not listed above who nest further north in boreal habitats. Wading birds including great blue herons (Ardea Herodias), green herons Butorides virescens), black-crowned night herons (Nycticorax nycticorax), snowy egrets (Egretta thula), cattle egrets (Bubulcus ibis), American bitterns (Botaurus lentiginosus), American coots (Fulica Americana), Virginia rail (Rallus limicola), and sora (Porzama Carolina) use the wetland complex for a variety of important functions including nesting, brood-rearing, and feeding. During periods of fall migration, in particular, and especially during years of low water levels, the wetland is used by a diversity of migrating shorebirds.

Raptors such as Eastern screech owl (Otus asio), barred owl (Strix varia), great-horned owl (Bubo virginianus), Northern saw-wet owl (Aegolius acadicus), sharp-shinned hawk (Accipiter striatus), coopers hawk (Accipiter cooperii), red-tailed hawk (Buteo jamaicensis), and broad-winged hawk (Buteo platypterus). Osprey (Pandion haliaetus) regularly use the lower wetland system and Lake Champlain shoreline to find food. Osprey nearby this wetland system and rely on the area to find food to feed their young. In recent years, numbers of bald eagles have increased in Vermont, and along Lake Champlain in particular, and as such, this is another species that may utilize this wetland system for feeding. Bald eagles are known to nest a few miles south of the LaPlatte River wetland, closer to the wetlands associated with lower Lewis Creek.

Wetland & upland habitat interactions and the need for wide buffers

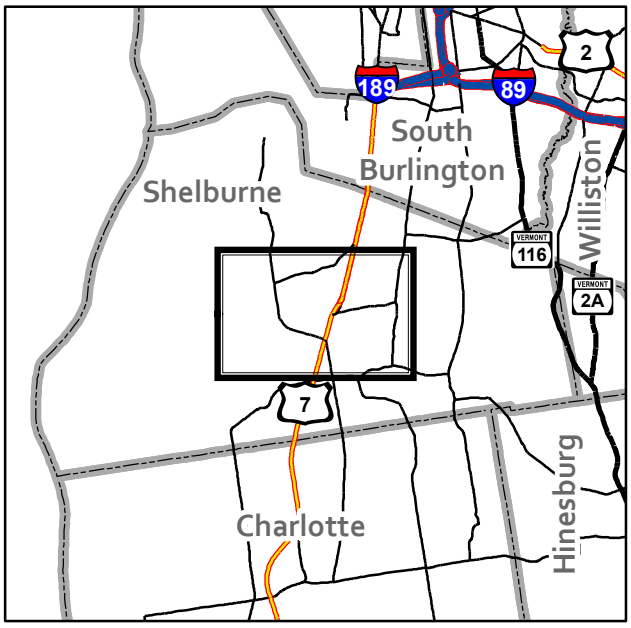
The assemblage of cattail marsh, deep rush marsh, button bush swamp and floodplain forests provides outstanding habitat for all the wetland dependent wildlife mentioned above. These habitat conditions occur on a relatively large scale in this wetland system and as such, are considered unique and irreplaceable within the Lake Champlain basin. In addition, the connection to associated upland habitats around the wetland also supports these same wildlife functions by providing a protective buffer from surrounding development and agriculture, as well as other necessary habitat conditions such as cover and denning habitat for wide-ranging bobcat, and critical winter habitat for white-tailed deer (*Odicoileus virginianus)* (softwood cover within and around the wetland is mapped as deer winter habitat). Maintaining the interconnectedness of the wetlands to the remaining upland habitat is essential for supporting the wildlife functions. Relatedly, the proposed 100 foot buffer for the reclassification of the wetland is an absolute minimum distance to ensure the integrity of these sensitive wetland functions that transcend the boundary of the wetland itself. In fact, the Vermont Fish and Wildlife Department typically considers a 300 foot buffer as necessary to protect sensitive wildlife functions in a wetland system like the LaPlatte. It will be imperative that remaining forest habitat surrounding the wetland

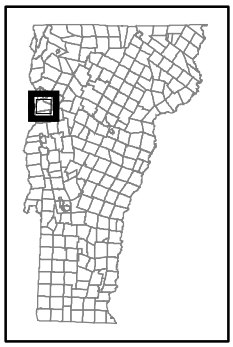
remain intact, particularly the area depicted on attachment 1 to this document which extends well beyond the 100 foot buffer zone.



Approx. Wetland Extent

Feet
0 500 1,000 2,000 3,000 4,000
1 inch = 2,500 feet





Notes: The site location depicted here is approximate and provided for planning and discussion purposes only. This is NOT a survey. Other data from VCGI. Background is USGS 1:24k.

LaPlatte River Wetland Complex: Reclassification

Shelburne, Vt.

Thursday, February 16, 2017
File: LaplatteReclass_SiteLocation
Prepared By: Aaron Worthley, Arrowwood Environmental
NAD 83 Vt. State Plane

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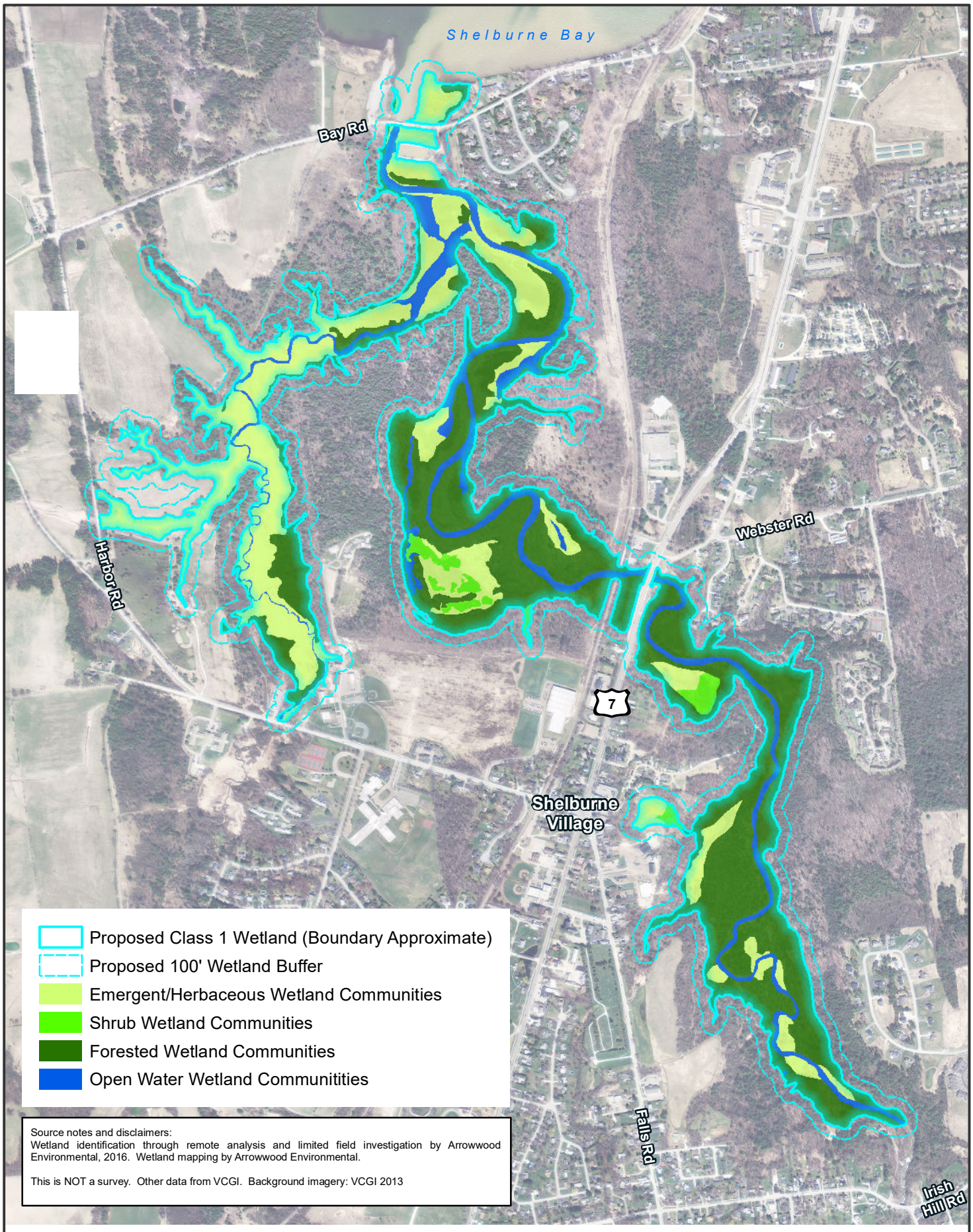

Source notes and disclaimers:
Wetland identification through remote analysis and limited field investigation by Arrowwood Environmental, 2016. Wetland mapping by Arrowwood Environmental.

This is NOT a survey. Other data from VCGI. Background imagery: VCGI 2013

LaPlatte River Wetland Complex: Reclassification Petition

Tuesday, February 28, 2017 | 1 in = 1,200 ft | Feet 0 300 600 1,200

File: LaplatteReclass_PetitionMap | *Prepared By: A Worthley* | *NAD 83, Vt State Plane*

N W E S

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Natural Communities of the LaPlatte River Marsh Natural Area

Shelburne, Vermont

Eric Sorenson, Charlie Hohn, and Avery Shawler

for

The Nature Conservancy

Montpelier, Vermont

and

Vermont Fish and Wildlife Department

Montpelier, Vermont

January 2016

Contents

Background

The LaPlatte River Marsh has long been recognized as a natural treasure. The natural area is diverse and includes much more than an outstanding marsh complex; it also includes floodplain forests, buttonbush swamps, rare forest types, rare species of plants and animals, and excellent wildlife habitat. Standing on the levee shoreline of the LaPlatte River under an arching canopy of silver maple it is easy to imagine being in a remote and wild location, even though a highly developed portion of Chittenden County surrounds the natural area.

The LaPlatte River emerges from Lake Iroquois and flows northwest 16 miles to Lake Champlain. The LaPlatte River Marsh is located in a low-lying area where the LaPlatte River flows into the lake. Annual spring river and lake flooding of the marsh allows only water tolerant species such as black willow, green ash and silver maple to thrive (LaPlatte Trail Guide).

The LaPlatte River Marsh complex stretches from Shelburne Bay south and east along the LaPlatte River to Shelburne Falls (See Figure 1). Much of the lower reaches of the LaPlatte River and McCabes Brook and the surrounding marshes, floodplain and upland forests are included in the LaPlatte River Marsh Natural Area, owned and managed by The Nature Conservancy. The Town of Shelburne and Audubon Vermont also own conservation holdings in the area.

The LaPlatte River Marsh was possibly first recognized for its natural values in the classic and influential publication “Vermont Natural Areas” (Vogelmann, 1969). Many ecologists, biologists, botanists, and naturalists have studied the marsh over the years. The Natural History of the LaPlatte River Marsh, Shelburne, Vermont (Fastie, 1985) provides an excellent and detailed description of this natural area.

Project Purpose

The purpose of this project is to map, describe, and determine significance ranks for the natural communities of the LaPlatte River Marsh. Mapping was conducted using standard Natural Heritage Inventory/NatureServe methodology. Natural communities that meet the criteria for state significance will be tracked in the Vermont Fish and Wildlife Department’s Natural Heritage Inventory database. This data is used for conservation planning by VT Fish and Wildlife Department and The Nature Conservancy. An additional purpose was simply to add to the already abundant information on the ecological significance of the LaPlatte River Marshes.

Physical Setting

Location

The LaPlatte River Marsh is located at the mouth of the LaPlatte River, which drains into Shelburne Bay in Shelburne (Figure 1).

Figure 1: Location map of the LaPlatte River Marsh Natural Area in Shelburne, VT.

The natural community mapping area includes the wetland complex and adjacent upland forests from Bay Street at the mouth of the LaPlatte River upstream to Falls Road in Shelburne Falls. Site work was focused on lands owned by The Nature Conservancy and the Town of Shelburne.

Bedrock Geology

Only four types of bedrock are mapped in the LaPlatte River Marsh study area (Figure 2) based on the Bedrock Geologic Map of Vermont (Ratcliffe et al., 2011). The entire LaPlatte River Marsh Natural Area west of Route 7 has Monkton Quartzite as the dominant bedrock. Bedrock geology strongly influences the distribution of plant species and natural communities, especially in the case of calcium-rich bedrock such as is found in the LaPlatte River Marsh vicinity. However, in most of the study area west of Route 7 there are deep deposits of glacial-lacustrine and alluvial silt, sand, and clay that cover the underlying bedrock and mask its influence on surface vegetation. Bedrock outcrops, cliffs, and shallow till soils are dominant on the east side of the LaPlatte River south of Route 7 and in these areas the calcium-rich Winooski Dolostone and Danby Formation rock have a strong influence on vegetation and natural communities.

Table 1: The four bedrock types found in the LaPlatte River Marsh vicinity.

Code on Map	Bedrock Formation Name	Acres on Map	Bedrock Description
Cm	Monkton Quartzite	331	Reddish-brown, pebbly, thin- to thick-bedded sandstone, orangey-gray- and buff-weathering well-bedded dolostone, and reddish-brown-weathering dolomitic quartzite
Cd	Danby Formation	46	Thin, light-gray beds of vitreous quartzite and crossbedded sandy dolostone. Unit discontinuous in southern Vermont
Cw	Winooski Dolostone	110	Well-bedded dolostone weathering beige, cream, and buff, with green, red, or gray phyllite, siliceous partings, and thin beds of blue-quartz-pebble conglomerate and quartzite
Csp	Clarendon Springs Formation	1	Steel-gray-weathering, light-gray, massive calcitic dolostone grading upward into darker, more fissile calcitic dolostone containing white quartz knots near top

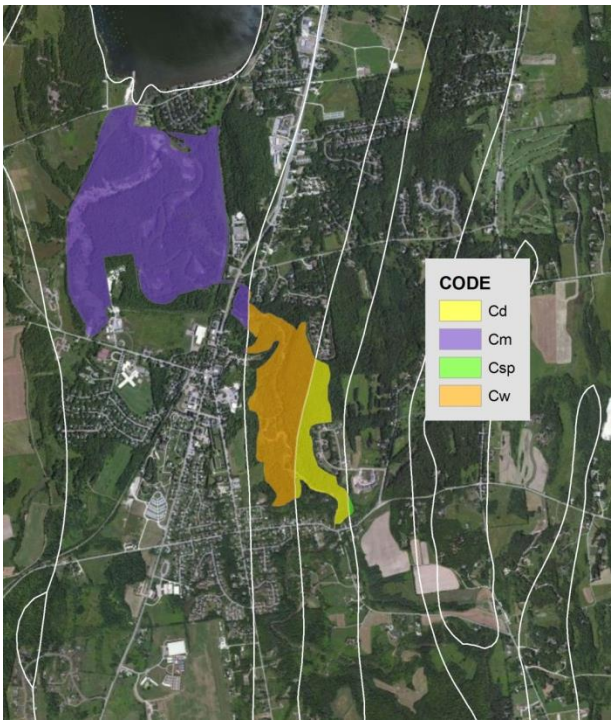

Figure 2: Map of bedrock types in the LaPlatte River Marsh study area. The white lines show the full extent of the bedrock types with colored areas indicating extent of the type in the study area.

Surficial Geology and Soils

Like geology, soils have significant effects on the distribution of plants and natural communities. The most abundant soil type in the mapping area is Covington Silty Clay, which covers 21.6% of the LaPlatte River Marsh study area. This clay is found in the northwestern portion of the study area and supports mostly Mesic Clayplain Forests. Almost as abundant are Enosburg and Whately soils, which cover 19.9% of the study area, including the peninsula between McCabes Brook and the LaPlatte River. This area mainly supports the rare Sand-Over-Clay Forest natural community. Adams and Windsor loamy sands comprise 13.7% of the study area, including most of the northeastern portion of the mapping area. These soils are closely associated with the rare Pine-Oak-Heath Sandplain Forest, but only a very early successional example of this rare natural community was observed, probably due to past agricultural use and the early successional state of this area forests. The Farmington extremely rocky loam is found in the southern portion of the study area, and includes natural community types associated with bedrock exposure and shallow glacial till. Winooski, Hinesburg, and Duane soils are all closely associated with floodplain forests, though portions of the Winooski soils were also cleared for agricultural use in the southern portion of the study area.

Table 2: The major soil types in the LaPlatte River Marsh vicinity*. Information on soils from the Natural Resources Conservation Service.

Soil Type	Acreage	Percent Cover of LaPlatte
Covington silty clay	105	21.6%
Enosburg and Whately soils	97	19.9%
Adams and Windsor loamy sands	67	13.7%
Water	50	10.3%
Farmington extremely rocky loam	33	6.8%
Winooski very fine sandy loam	26	5.3%
Farmington extremely rocky loam	25	5.1%

*The other soils types present each made up less than 5% of the LaPlatte River vicinity.

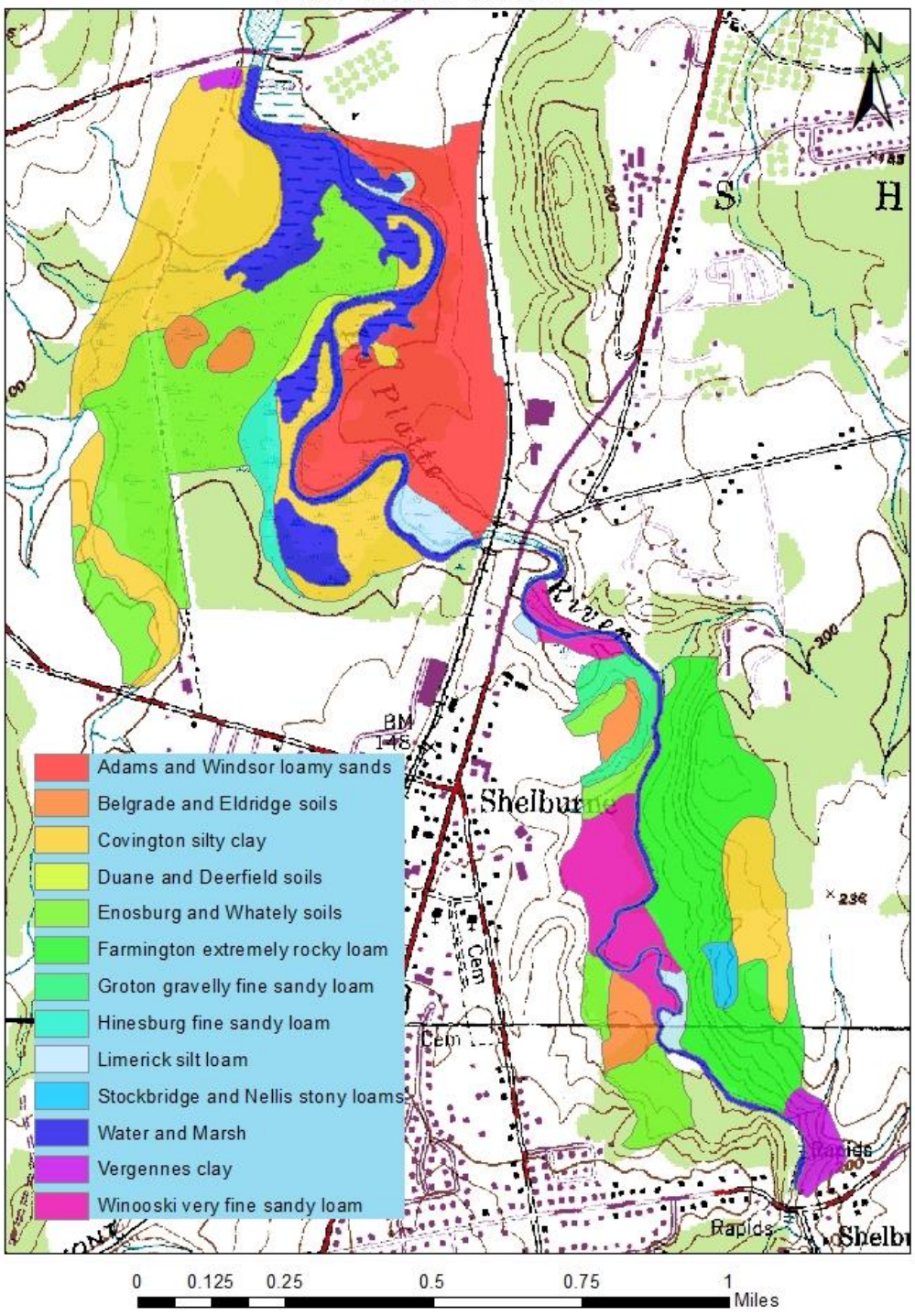

Figure 3: The major soil types of the LaPlatte River Marsh study area (from Natural Resources Conservation Service data).

Surface Waters

The LaPlatte River watershed occupies 53 square miles and includes drainage from Lake Iroquois in St. George through Patrick Brook, the LaPlatte River headwaters in eastern Hinesburg, and Mud Hollow Brook in Charlotte. McCabes Brook is also within the watershed, drains areas west of Route 7, and flows into the LaPlatte River only 500 feet upstream of Shelburne Bay. Most of the wetland natural communities are affected by the fluctuating water levels of the LaPlatte River, which results in spring and fall flooding, deposition of soils in the floodplain, and also erosion of the river shoreline. In addition, high water levels in Lake Champlain affect most of the wetland natural communities at least as far upstream as the Route 7 bridge. The effect from Lake Champlain is typically much longer duration flooding in the spring than would occur as a result of flooding from the LaPlatte River alone.

Land Use History

During the 19th century the LaPlatte River delta area was primarily used as a pasture (LaPlatte River Marsh Natural Area Trail Guide). The majority of the forest had regenerated by the 1930s and these forests were logged several times. Most of the floodplain forests were still used as pasture as late as 1942 (Fastie, 1985). Throughout most of Vermont, floodplain forests were converted for agricultural use, since their moist, fertile soils without large rocks made farming easy and productive (Johnson 1980). Although the forests have grown back in the LaPlatte Marsh and in some other floodplain areas, floodplain forests in particular still face new threats in the form of invasive species shrub species, especially Common Buckthorn (*Rhamnus cathartica*) and Morrow's Honeysuckle (*Lonicera morrowii*).

Natural Community Inventory

Methods

Site visits to the natural communities of the LaPlatte River Marsh were conducted by Eric Sorenson in 2006 and 2011. Additional site visits were conducted by Avery Shawler and Bill Hegman in 2012. Information collected include GPS points, species lists and relative abundance of species, soil profile description, hydrology, and natural community condition. Initial natural community mapping was conducted by Eric Sorenson, with revisions and refinements by Charlie Hohn based on field notes, GPS data, Bing Bird's Eye imagery, and high resolution aerial photography.

Standard Natural Heritage methods were used to:

- Group nearby natural community polygons of the same type into Element Occurrences based on separation distances and barriers.
- Rank each natural community occurrence based on the size of the element occurrence, its current condition, and the landscape context.
- All state-significant natural community occurrences were entered into the Natural Heritage Inventory database.

Summary of Natural Community Mapping Results

The mapping area included approximately 525 acres of wetland and upland habitat in or adjacent to the LaPlatte River Marsh. Twenty one natural community types were observed and mapped and are listed in Table 3. Of these, 14 natural community element occurrences of 12 natural community types were identified that meet the Vermont Natural Heritage Inventory criteria for state-significant natural communities (Table 4). Six land cover types were also identified and are included on the map for areas that are not recognized natural community types, because they are open water or because they are early successional areas and natural community types are not yet apparent. Table 4 summarizes the 13 natural community element occurrences identified and mapped.

Table 3: Natural community types mapped in LaPlatte River Marsh study area.

Natural Community Type	State Significant?	Total Acres
Wetland		
Alder Swamp	No	1
Black Ash Seepage Swamp	No	<1
Buttonbush Swamp	Yes	5
Cattail Marsh	No	10
Deep Bulrush Marsh	Yes	28
Lakeside Floodplain Forest	Yes	24
River Mud Shore	Yes	2
Sedge Meadow	No	21
Seep	No	0.5
Shallow Emergent Marsh	No	3
Silver Maple-Sensitive Fern Riverine Floodplain Forest	Yes	62
Sugar Maple-Ostrich Fern Riverine Floodplain Forest	Yes	2
Vernal Pool	Unknown	<1
Wet Clayplain Forest	Yes	13
Wet Sand Over Clay Forest	Yes	10
Upland		
Hemlock Forest	No	<1
Limestone Bluff Cedar-Pine Forest	No	2
Mesic Clayplain Forest	Yes	62
Pine-Oak-Heath Sandplain Forest	No	46
Sand-Over-Clay Forest	Yes	95
Temperate Calcareous Cliff	Yes	1
Transition Hardwoods Limestone Forest	Yes	29

Table 4: Summary of state-significant natural community element occurrences mapped at LaPlatte River Marsh.

Natural Community Type	Acres	Current Condition	Landscape Context	Size Rank	Element Occurrence Rank
Buttonbush Swamp	5.0	A	AB	A	A
Deep Bulrush Marsh	28.0	B	B	B	B
Lakeside Floodplain Forest	23.8	AB	B	A	A
Mesic Clayplain Forest	35.3	C	C	C	C
Mesic Clayplain Forest	27.2	AB	C	C	B
River Mud Shore	1.7	A	B	A	A
Sand-Over-Clay Forest	95.2	B	BC	B	B
Sand-Over-Clay Forest	11.3	B	CD	C	C
Silver Maple-Sensitive Fern Riverine Floodplain Forest	62.3	B	BC	A	B
Sugar Maple-Ostrich Fern Riverine Floodplain Forest	2.1	A	B	C	B
Temperate Calcareous Cliff	1.1*	A	BC	C	B
Transition Hardwoods Limestone Forest	29.2	B	C	A	B
Wet Clayplain Forest	12.6	BC	BC	C	C
Wet Sand Over Clay Forest	9.8	B	BC	C	B

* Temperate Calcareous Cliff comprises around 54,000 vertical square feet.

The map below shows the distribution of natural communities mapped at the LaPlatte River Marsh study area.

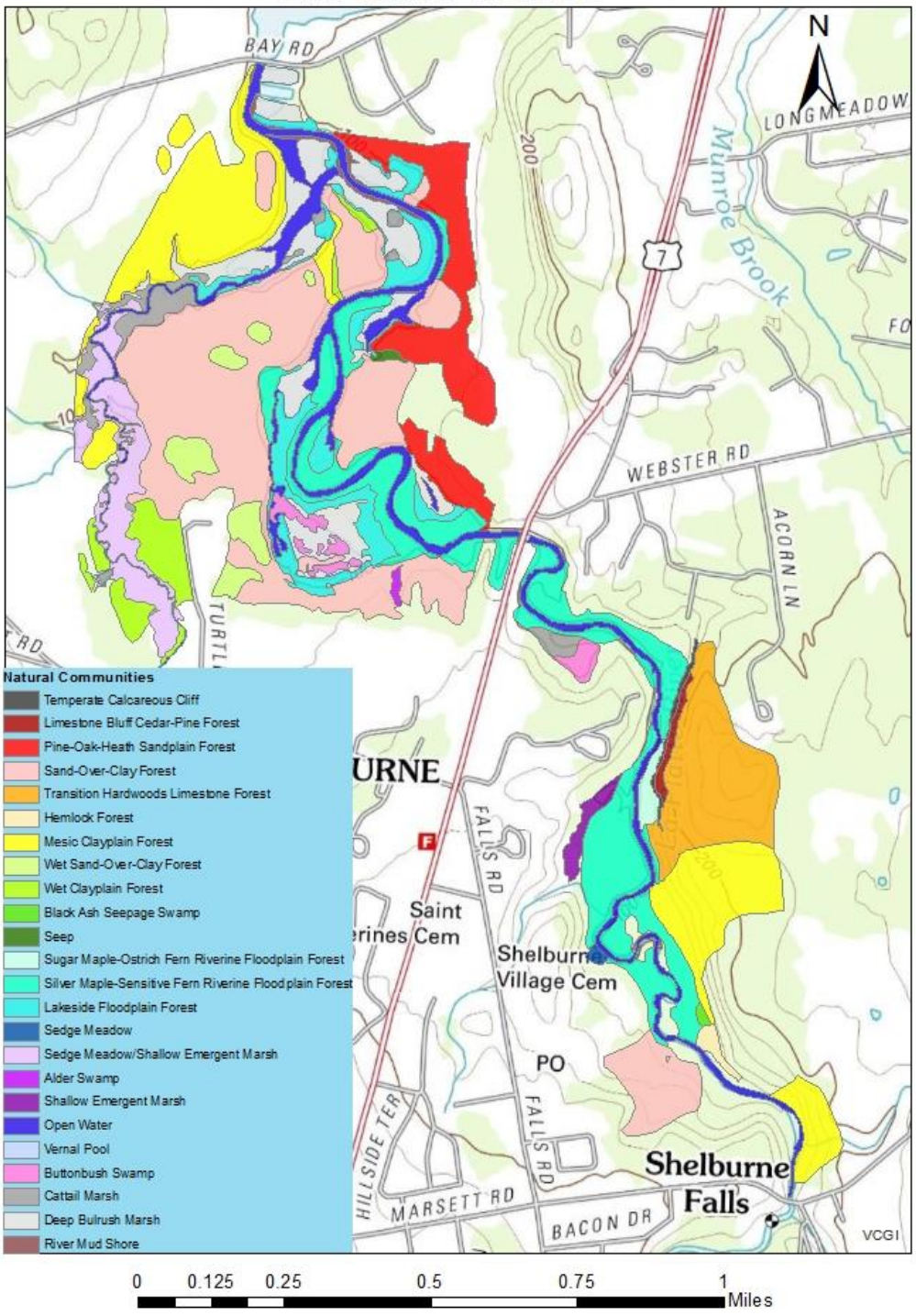

Figure 4: Natural communities map of LaPlatte Marsh area.

Natural Community Descriptions

Wetland Natural Communities

Alder Swamp

***Significance**: One small locally significant example of this widespread (S4) natural community.*

A small (0.5 acre) example of Alder Swamp is located in a valley between clayplain terraces south of the river and west of the Route 7 bridge. This small example of a common (S4) natural community is not considered state significant, though it does add to landscape-level diversity of the wetland complex.

The Alder Swamp is dominated by Speckled Alder (*Alnus incana*). A few shrubby Green Ash (*Fraxinus pennsylvanica*) are present. The herb layer is dense (90% cover) and includes Slender Mannagrass (*Glyceria melicaria*), Clearweed (*Pilea pumila*), Spinulose Wood Fern (*Dryopteris carthusiana*), Spotted Touch-Me-Not (*Impatiens capensis*), Sensitive Fern (*Onoclea sensibilis*), and Cinnamon Fern (*Osmundastrum cinnamomeum*). The soils consist of up to 30 cm of organic matter over saturated sand. Abundant seeps feed this wetland, indicating a layer of clay under the sand that obstructs downward water movement in the soil.

Buttonbush Swamp

***Significance**: A-ranked example of this rare (S2) natural community type.*

Several patches of Buttonbush Swamp, making up one element occurrence, are located in the mapping area. These are primarily at the southern end of the main wetland complex west of Route 7, with a patch east of Route 7 also present. This fairly large (5 acre) example of a rare (S2) natural community is considered state significant.

As is often the case with this natural community, Common Buttonbush (*Cephalanthus occidentalis*) is very strongly dominant, with 90% cover. Other species present in low abundance include Spotted Water-hemlock (*Cicuta maculata*), Bulblet Water-hemlock (*Cicuta bulbifera*), the uncommon Yellow Water-crowfoot (*Ranunculus flabellaris*), Water Smartweed (*Polygonum amphibium*), and Climbing Nightshade (*Solanum dulcamara*).

Buttonbush Swamp provides excellent waterfowl habitat.

Figure 5: Buttonbush Swamp south of the LaPlatte River and west of route 7. (Obs. Pt. 012, 9/8/2006)

Cattail Marsh

***Significance**: Small, locally significant examples of a widespread (S4) natural community type.*

Two areas of Cattail Marsh, totaling about 10 acres, occur in the mapping area. The main patch occurs along McCabe Brook. The smaller patch occurs just east of Route 7. These examples are relatively small for the Champlain Valley and are considered locally significant but not state significant.

The Cattail Marsh is strongly dominated by cattails (*Typha* spp.) including Broad-Leaved Cat-Tail (*Typha latifolia*), and intergrades with Deep Bulrush Marsh in its wettest sections and Sedge Meadow as it stretches upstream along McCabes Brook and becomes relatively drier.

Historic air photos from the 1960s indicate that some of the western portion of this marsh was once forested wetland – perhaps a swamp supporting silver maple and green ash – so it is possible this natural community may transition eventually back to a forested swamp if not prevented from doing so by high lake levels.

Figure 6: Cattail Marsh (9/28/2011)

Deep Bulrush Marsh

***Significance**: B-ranked example of a widespread (S4) natural community type.*

Deep Bulrush Marsh occupies 28 acres in the deeper water stretches along the lower section of the LaPlatte River and McCabes Brook. This sizable example of a relatively common (S4) natural community is considered to be state significant.

Deep Bulrush Marsh occurs in deep water, and is dominated by River Bulrush (*Bolboschoenus fluviatilis*). Cattails (*Typha* spp.) are also present with duckweed (*Lemna* sp.) forming a floating mat on the water surface. In the mapping area, Deep Bulrush Marsh intergrades with Deep Broadleaf Marsh and Cattail Marsh, and some of the area delineated as being part of the Deep Bulrush Marsh may be more similar to Deep Broadleaf Marsh and support significant amounts of Giant Bur-reed (*Sparganium eurycarpum*) and Water Smartweed (*Polygonum amphibium*). The 1984 Zika survey found areas of Giant Bur-Reed as well as Canada Reed Grass (*Calamagrostis canadensis*) and on the wetland margins the invasive Flowering-Rush (*Butomus umbellatus*).

Figure 7: Deep Bulrush Marsh and mixed marsh along McCabes Brook, with a patch of Cattail Marsh behind the scattered silver maples (Obs. Pt. 018., 9/8/2006).

Figure 8: Deep Bulrush Marsh dominated by river bulrush, surrounded by floodplain forest on the eastern side of the LaPlatte River (Obs. Pt. 055, 10/13/2006).

Lakeside Floodplain Forest

***Significance**: B-ranked example of an uncommon (S3) natural community type.*

The moderate sized (24 acre) undisturbed Lakeside Floodplain Forest is one of its most significant natural communities in the LaPlatte Marsh. This uncommon (S3) natural community has been largely fragmented along much of its original range by lakeside development, but the example in the LaPlatte River Marsh still experiences a natural flood regime and occurs surrounded by other natural communities in a relatively natural setting.

This Lakeside Floodplain Forest supports a canopy dominated by Silver Maple (Acer saccharinum), Green Ash (Fraxinus pennsylvanica), and Swamp White Oak (Quercus bicolor). The 1983 Zika study also noted canopy American Elm (Ulmus americana) – these canopy trees presumably have since succumbed to Dutch Elm Disease. Silver maples up to 80 feet tall and 30 inch diameter at breast height (dbh) were observed in 2013, with even larger 100 foot tall silver maples noted in the 1998 Sorenson report. Winterberry (Ilex verticillata) is sometimes present in the shrub layer. The herb layer is mostly bare, but in some areas Sensitive Fern (Onoclea sensibilis), Creeping Yellow-Loosestrife (Lysimachia nummularia), Royal Fern (Osmunda regalis),

and Marsh Fern (Thelypteris palustris) are abundant. There are also carpets of silver maple seedlings in some areas that appear not to survive more than a year or two. The sparse groundcover is the result of longer duration flooding in the Lakeside Floodplain Forest which is a foot or two lower in elevation than the riverine floodplain forest that occurs on the levees adjacent to the LaPlatte River.

Figure 9: A narrow band of Lakeside Floodplain Forest (middle ground, bare of herbs) with Silver Maple-Sensitive Fern Riverine Floodplain Forest on the narrow natural levee adjacent to the LaPlatte River.

Figure 10: Lakeside Floodplain Forest with swamp white oak (foreground) and silver maple (background) and a wetter depression with Deep Bulrush Marsh. (Near Obs. Pt. 055, 10/13/2006)

Red Maple-Black Ash Seepage Swamp

***Significance**: a locally significant example of a widespread (S4) natural community type.*

A very small (less than 0.5 acre) patch of Red Maple-Black Ash Seepage Swamp occurs to the east of the river downstream (north) of Shelburne Falls.

This small swamp supports an overstory dominated by Black Ash (*Fraxinus nigra*), with Basswood (*Tilia americana*), Yellow Birch (*Betula alleghaniensis*), and American Hornbeam (*Carpinus caroliniana*) also present. Hemlock (*Tsuga canadensis*) occurs on hummocks. Speckled Alder (*Alnus incana*) dominates the shrub layer, with the invasive species European Buckthorn (*Rhamnus cathartica*) and Morrow's Honeysuckle (*Lonicera morrowii*) also present. The herb layer includes Lakeside Sedge (*Carex lacustris*), Large-leaved Aster (*Eurybia macrophylla*), Wood Horsetail (*Equisetum sylvaticum*), and Crested Wood Fern (*Dryopteris cristata*). Soils are peat overlaying clay.

River Mud Shore

***Significance**: An A-ranked example of an uncommon (S3) natural community type.*

An area of River Mud Shore stretches intermittently along approximately 0.65 miles of shore along the LaPlatte River. This natural community consists of mud shores along the river that are only exposed during times of low water, when they are colonized by annual herbaceous plants. This is considered a state significant example of this uncommon natural community.

This natural community consisted mostly of exposed, unvegetated mud at the time it was observed. Scattered plants include Rice Cut Grass (*Leersia oryzoides*), Cardinal Flower (*Lobelia cardinalis*), Giant Bur-reed (*Sparganium eurycarpum*), and Nodding Beggar-Ticks (*Bidens cernua*).

River Mud Shore offers feeding habitat for Great Blue Heron and many other shorebirds.

Figure 11: A narrow band of River Mud Shore on the bank opposite the photo location. During times of lower water a wider area of mud would be exposed. (09/02/2006)

Sedge Meadow

***Significance**: Locally significant examples of a widespread (S4) natural community type. Excellent waterfowl and marsh bird habitat.*

Sedge Meadow makes up 21 acres of wetland in the study area, including a small 1 acre patch upstream from the Route 7 bridge along the LaPlatte River and a much larger 20 acre patch along McCabes Brook. The McCabes Brook wetland is intermediate between Sedge Meadow and Shallow Emergent Marsh. Neither of these natural communities are considered state significant, as they are somewhat disturbed examples of a widespread (S4) natural community type.

The large western occurrence is dominated by Lakeside Sedge (*Carex lacustris*), with scattered Broad-Leaved Cattail (*Typha latifolia*), goldenrod (*Solidago* sp.), Reed Canary Grass (*Phalaris arundinacea*), nettle (*Urtica* sp.), Spotted Touch-Me-Not (*Impatiens capensis*), and Giant Bur-reed (*Sparganium eurycarpum*) also present. A few seedlings of Green Ash (*Fraxinus pennsylvanica*) were also observed. Historic air photos from the 1960s indicate that some of the northern portion of this meadow was once forested wetland, and the 1985 Fastie report mention a "Flooded Silver Maple Forest" here, so it is possible this natural community may eventually transition back to a forested swamp or floodplain forest if not prevented from doing so by higher lake levels than those present historically.

Shallow Emergent Marsh

***Significance**: Locally significant examples of a widespread (S4) natural community type.*

A relatively small (3 acre) area of disturbed shallow emergent marsh is present east of Route 7 and west of the LaPlatte River. Limited information about this natural community is available, but because of its small size and disturbed condition it is not a state significant natural community.

Additional patches of Shallow Emergent Marsh are present within the large area along McCabe Brook that is mapped as Sedge Meadow.

Silver Maple-Sensitive Fern Riverine Floodplain Forest

***Significance**: An A-ranked example of an uncommon (S3) natural community type.*

An large (62 acre) and high quality example of Silver Maple-Sensitive Fern Riverine Floodplain Forest stretches along the LaPlatte River from near Shelburne Falls to just upstream from the confluence of McCabes Brook. This uncommon (S3) natural community is found primarily on natural levees adjacent to the river. As with other floodplain forests, most examples of this natural community in Vermont have been converted to agricultural land, and this excellent example of intact floodplain forest is one of the most significant natural communities of the LaPlatte River Marsh study area.

This natural community is generally dominated by Silver Maple (*Acer saccharinum*), with Green Ash (*Fraxinus pennsylvanica*) also present to locally dominant (Marshall and Matti, 1990).

Younger portions of the floodplain forest, especially upstream from Route 7, also contain significant amounts of Box Elder (*Acer negundo*). Cottonwood (*Populus deltoides*), Swamp White Oak (*Quercus bicolor*), and Basswood (*Tilia americana*) are scattered through the natural community, with American Elm (*Ulmus americana*) present, mainly in the understory. The shrub layer contains patchy Morrow's Honeysuckle (*Lonicera morrowii*) and European Buckthorn (*Rhamnus cathartica*), both invasive species, with the latter mostly on higher ground of natural levees. Common Winterberry (*Ilex verticillata*) is also sometimes present. Vines are abundant and include Virginia Virgin's-Bower (*Clematis virginiana*), Wild Cucumber (*Echinocystis lobata*), Common Ground-Nut (*Apios americana*), American Hog-Peanut (*Amphicarpaea bracteata*), and River Grape (*Vitis riparia*). The herb layer is diverse and includes Sensitive Fern (*Onoclea sensibilis*), Tall Meadow-Rue (*Thalictrum pubescens*), Jack-In-The-Pulpit (*Arisaema triphyllum*), Creeping Yellow-Loosestrife (*Lysimachia nummularia*), White Cut Grass (*Leersia virginica*), Eastern Riverbank Wild-Rye (*Elymus riparius*), and Tussock Sedge (*Carex stricta*), with Small-Spiked False Nettle (*Boehmeria cylindrica*) on natural levees, and some invasive Garlic Mustard (*Alliaria petiolata*) especially upstream from Route 7.

Figure 12: A Silver Maple-Sensitive Fern Riverine Floodplain Forest with Winterberry visible in foreground. (9/28/2011)

Sugar Maple-Ostrich Fern Riverine Floodplain Forest

***Significance**: A B-ranked example of a rare (S2) natural community.*

A small (2 acre) example of Sugar Maple-Ostrich Fern Riverine Floodplain Forest is present upstream from Route 7 in an area of floodplain protected from heavy flood scouring by a small rise and enriched by the calcareous cliff towering above. While small, this is an excellent, state significant example of this rare (S2) natural community, with some very large trees.

The Sugar Maple-Ostrich Fern Riverine Floodplain Forest supports a canopy dominated by Sugar Maple (*Acer saccharum*) and Basswood (*Tilia americana*), with Common Hackberry (*Celtis occidentalis*) also present, including an immense (possibly state champion) hackberry with a DBH of 59 cm! Herbs include Ostrich Fern (*Matteuccia struthiopteris*) and Wild Leek (*Allium tricoccum*). This is a discrete and unique area of floodplain protected from heavy flood scouring by a small rise and enriched by the calcareous cliff towering above. While small, this is an excellent example of this rare natural community, with some very large trees.

Vernal Pool

***Significance**: This example of an uncommon (S3) natural community may be state significant, depending on the level of amphibian breeding behavior.*

A small vernal pool is present on a small bench southwest of the LaPlatte River near the southern end of the mapping area. This vernal pool measures approximately 50 by 40 feet, and was observed to have 6 to 8 inches of standing water in November 2006. It is uncertain if this pool is state significant, because amphibian breeding status, which is used for ranking vernal pools, was not discernible at the time of survey. Speckled Alder (*Alnus incana*) is present in the area, and the vernal pool shares some characteristics with Alder Swamp. The surrounding forest is a Sand-Over-Clay Forest supporting hemlock and hardwoods.

Wet Clayplain Forest

***Significance**: A C ranked example of a rare (S2) natural community.*

Several patches of Wet Clayplain Forest, making up one occurrence, are present along McCabe Brook and between McCabe Brook and the LaPlatte River. These patches together make up around 12.5 acres. The northeastern, smaller patches are in excellent condition, and the larger southwestern patches are young, disturbed forest. This is a state significant occurrence of this rare (S2) natural community.

The northeastern portion of this occurrence occurs in a narrow depression between two areas of Sand-Over-Clay forest. The wet clayplain supports a fairly dense (60% cover) canopy of Red Maple (*Acer rubrum*), Green Ash (*Fraxinus pennsylvanica*), Eastern Hemlock (*Tsuga canadensis*), and Swamp White Oak (*Quercus bicolor*). Many trees are of 30-40 cm dbh and a hemlock was found to be 146 years old. The understory supports trees and saplings of hemlock, red maple, and green ash, along with American Hornbeam (*Carpinus caroliniana*). Shrubs include Common Winterberry (*Ilex verticillata*) and Common Blackberry (*Rubus allegheniensis*), and shrub cover

makes up a total of 20% cover in two layers. Virginia-Creeper (*Parthenocissus quinquefolia*) is present as a vine. Herb cover is well-developed (30% cover) and very diverse (25 species observed in the plot). Some of the more common species include White Cut Grass (*Leersia virginica*), Small-Spiked False Nettle (*Boehmeria cylindrica*), Mad Dog Skullcap (*Scutellaria lateriflora*), Devil's Beggar-Ticks (*Bidens frondosa*), Sensitive Fern (*Onoclea sensibilis*), and Marsh Fern (*Thelypteris palustris*). Areas of bare understory offered evidence of the presence of standing water at some times of year. Several wind-tipped green ash trees were observed. A small wet patch with Sphagnum moss was present.

The younger southern area of Wet Clayplain Forest supports a young but diverse forest of Swamp White Oak (*Quercus bicolor*), Red Maple, Sugar Maple (*Acer saccharum*), Green Ash, American Elm, Shagbark Hickory (*Carya ovata*), and Paper Birch (*Betula papyrifera*). Invasive Morrow's Honeysuckle and European Buckthorn) are abundant in the shrub layer, along with willows (*Salix* sp.), Highbush-Cranberry (*Viburnum opulus*), Poison-Ivy (*Toxicodendron radicans*), and introduced apple trees (*Malus* sp.) which indicate the area was previously a field or apple orchard. Virginia-Creeper (*Parthenocissus quinquefolia*) occurs as a vine. The herb layer supports a sedge *Carex* cf. *gracilescens*, aster (*Aster* sp.) and Common Wrinkle-Leaved Goldenrod (*Solidago rugosa*).

Figure 13: Tip-up in the shallow soil of Wet Clayplain Forest.

Wet Sand Over Clay Forest

***Significance**: C-ranked example of a rare (S2) natural community*

Many pockets of Wet Sand-Over-Clay Forest occur in depressions and low-lying areas around 1 to 2 feet below the main ground level within the larger Sand Over Clay Forest west of the LaPlatte River. Tree species here include Eastern Hemlock (*Tsuga canadensis*), Red Maple (*Acer rubrum*), Yellow Birch (*Betula alleghaniensis*), Eastern White Oak (*Quercus alba*), Swamp White Oak (*Quercus bicolor*), Green Ash (*Fraxinus pennsylvanica*), and Black Cherry (*Prunus serotina*). American Hornbeam (*Carpinus caroliniana*) and Common Winterberry (*Ilex verticillata*) are present in the understory, with Three-Leaved Goldthread (*Coptis trifolia*), Cinnamon Fern (*Osmundastrum cinnamomeum*), and Sensitive Fern (*Onoclea sensibilis*) in the herb layer. Collectively, these patches comprise a state significant occurrence of this rare (S2) natural community.

Upland Natural Communities

Hemlock Forest

***Significance**: A locally significant example of a widespread (S4) natural community type*

A small (1.5 acre) area of Hemlock Forest occurs on a terrace northeast of the LaPlatte River, just downstream from Shelburne Falls. This area was not surveyed in detail, but was observed to be dominated by Eastern Hemlock (*Tsuga canadensis*) with Eastern White Pine (*Pinus strobus*) and scattered hardwoods also present. Along with the forest of dense white pine to its northeast, this Hemlock Forest may provide wintering habitat for white-tailed deer.

Limestone Bluff Cedar-Pine Forest

***Significance**: A locally significant example of a rare (S2) natural community.*

A narrow band of Limestone Bluff Cedar-Pine Forest extends along the rim of a cliff stretching along the east side of the LaPlatte River floodplain, southeast of the Route 7 bridge. This natural community is estimated to cover approximately two acres. This natural community was not surveyed in enough detail to determine if it meets the criteria for state significance. Northern White-Cedar (*Thuja occidentalis*) and Eastern White Pine (*Pinus strobus*) occur in this natural community, and Eastern Hemlock (*Tsuga canadensis*) and Red Pine (*Pinus resinosa*) may also be present.

Mesic Clayplain Forest

***Significance**: a C-ranked example of a rare (S2) natural community.*

Mesic Clayplain Forest occurs in two occurrences in the mapping area, totaling over 60 acres and occurring both in the northwestern and southeastern portions of the mapping area. This natural community, which occurs in areas of clay soil, was once very common in the Champlain Valley but has largely been cleared for agriculture. This natural community is considered to be area (S2 ranked) in Vermont, and both examples in the mapping area are considered to be state significant.

The best example of Mesic Clayplain Forest in the mapping area is found on the western portion of the southeastern occurrence. This forest supports large examples of Eastern Hemlock (*Tsuga canadensis*), Northern Red Oak (*Quercus rubra*), Basswood (*Tilia americana*), Shagbark Hickory (*Carya ovata*), and Sugar Maple (*Acer saccharum*) , with one hemlock measured as having a 46 cm DBH and an age of approximately 280 years. Scattered Green Ash (*Fraxinus pennsylvanica*) and Eastern White Oak (*Quercus alba*) are also present. American Beech (*Fagus grandifolia*) and Hop-Hornbeam (*Ostrya virginiana*) are abundant in the understory. Shrubs include American Witch-Hazel (*Hamamelis virginiana*), and herbs include Christmas Fern (*Polystichum acrostichoides*), Tall Scouring-Rush (*Equisetum hyemale*), Zig-Zag Goldenrod (*Solidago flexicaulis*), Broad-Leaved Sedge (*Carex platyphylla*), Southern Long-Awned Wood Grass (*Brachyelytrum erectum*), and Northern Maidenhair Fern (*Adiantum pedatum*). The eastern portion of this occurrence consists of similar but younger forest.

The northwestern occurrence of Mesic Clayplain Forest is significantly younger and more disturbed than the southeastern occurrence. In the western portion of this forest, open grown Eastern White Pine (*Pinus strobus*), Red Maple (*Acer rubrum*), Green Ash (*Fraxinus pennsylvanica*), and Swamp White Oak (*Quercus bicolor*) dominate the overstory, with a significant shrub layer dominated by invasive Morrow's Honeysuckle (*Lonicera morrowii*). Herbs include Partridge-Berry (*Mitchella repens*) and White Cut Grass (*Leersia virginica*). In the center of the occurrence, there is much less honeysuckle, and Eastern Hemlock (*Tsuga canadensis*) is also present in the overstory. American Hornbeam (*Carpinus caroliniana*) and American Elm (*Ulmus americana*) are present in the understory here, with Prickly Ash (*Zanthoxylum americanum*) present in the shrub layer as well as a few invasive honeysuckle (*Lonicera* cf. *morrowii*) and Buckthorn (*Rhamnus* sp.). Canada Wood-Nettle (*Laportea canadensis*) and Jack-In-The-Pulpit (*Arisaema triphyllum*) are present in the herb layer.

Figure 14: Mesic Clayplain Forest. Notice the shallow roots on ash tree in foreground.

Pine-Oak Heath Sandplain Forest

***Significance**: A locally significant example of a very rare (S1) natural community.*

A large (46 acre) area north and east of the main marsh complex has been mapped as Pine-Oak Heath Sandplain Forest. The area is currently occupied by a disturbed and mostly young forest, and was mapped as this type because it contains Adams-Windsor Soils that are strongly associated with Pine-Oak-Heath Sandplain Forest. At the current time it supports young Eastern Hemlock (*Tsuga canadensis*), American Beech (*Fagus grandifolia*), Eastern White Pine (*Pinus strobus*), Red Maple (*Acer rubrum*), and Yellow Birch (*Betula alleghaniensis*). A few large mature beech trees are also present. Two invasive shrubs - honeysuckle (*Lonicera sp.*) and buckthorn (*Rhamnus* sp.) - are present in the area. Over time this natural community may develop back into Pine-Oak-Heath Sandplain Forest similar to one that probably initially occupied the site, but this may not be possible without a natural fire regime.

Sand-Over-Clay Forest

***Significance**: B-ranked example of a rare (S2) natural community.*

Two areas of Sand-Over-Clay Forest were documented in the mapping area. This unique natural community occurs when a layer of sand overlies a layer of clay, here on Enosburg and Whately soils. The sand is well-drained and usually low in nutrients, but the clay below blocks drainage and leads to both more water and more nutrient availability than other forests growing on sand. The larger of the two Sand-Over-Clay Forests covers much of the area between the LaPlatte River and McCabes Brook, with a few patches of older forest east of the river as well; and the smaller of the two is in the far southern portion of the mapping area. Both examples of this rare (S2) natural community are considered state significant.

The large northern area of Sand-Over-Clay Forest includes a large area of good-condition forest west of the LaPlatte River and a smaller area of good- to excellent-condition forest east of the river. The forest occurs on a very deep (over 100 cm) sand deposit, with clay below this depth. Much of the forest is on a flat surficial glacial terrace, but small variations in topography create a mosaic, with areas lying 1 to 2 feet lower than the adjacent forest supporting patches of Wet Sand-Over-Clay Forest, especially in the large patch west of the river. The overstory is also correspondingly variable. Eastern Hemlock (*Tsuga canadensis*) and Red Maple (*Acer rubrum*) are each locally dominant. In addition to red maple and hemlock, American Beech (*Fagus grandifolia*), Yellow Birch (*Betula alleghaniensis*), Eastern White Pine (*Pinus strobus*) , Black Cherry (*Prunus serotina*), scattered large White Oak (*Quercus alba*) and Swamp White Oak (*Quercus bicolor*), Paper Birch (*Betula papyrifera*), Black Birch (*Betula lenta*), American Elm (*Ulmus americana*), and Sugar Maple (*Acer saccharum*) are present. The canopy cover tends to be quite high, and was noted at 80% in one hemlock-dominated area. The understory tree layer includes hemlock, Shagbark Hickory (*Carya ovata*), American Hornbeam (*Carpinus caroliniana*), American beech, and Green Ash (*Fraxinus pennsylvanica*). Shrubs include American Witch-Hazel (*Hamamelis virginiana*), Maple-Leaved Viburnum (*Viburnum acerifolium*), and a few scattered invasive European Buckthorn (*Rhamnus cathartica*). The shrub layer is relatively sparse, especially east of the river. The herb layer is diverse and includes New York Fern (*Thelypteris noveboracensis*), Three-Leaved Goldthread (*Coptis trifolia*), Cinnamon Fern (*Osmundastrum cinnamomeum*), Northern Lady Fern (*Athyrium filix-femina*), Red Baneberry (*Actaea rubra*), Wild Sarsaparilla (*Aralia nudicaulis*), Interrupted Fern (*Osmunda claytoniana*), Evergreen Wood Fern (*Dryopteris intermedia*), Sensitive Fern (*Onoclea sensibilis*), Eastern Hay-Scented Fern (*Dennstaedtia punctilobula*), Round-Leaved Violet (Viola rotundifolia), Canada-Mayflower (*Maianthemum canadense*), American Lop-Seed (*Phryma leptostachya*), Common Speedwell (*Veronica officinalis*), and Indian Cucumber Root (*Medeola virginiana*). Diversity is highest in areas of groundwater seepage which provides water and nutrients and allows for the presence of calciphile shrubs. Herb cover and diversity is very low under hemlock canopies. The bryophyte layer is negligible.

Most areas west of the river support good-condition forest – a hemlock of 54 cm DBH was observed to be 94 years old. Some evidence of past logging was observed, but no exotics were observed in the central area. Much of this forest east of the river is in excellent condition. A 52 cm dbh hemlock here was found to be 172 years old with moderate growth increasing to fast growth later in the life of the tree. Other large trees include an 84 cm dbh red maple and a

massive lone Basswood (*Tilia americana*) tree of 110 cm dbh offering evidence of localized soil enrichment. No cut stumps were observed in this area, and the only human disturbance visible consists of a very old woods road and a few scattered buckthorn shrubs. The soil here consists of deep fine sand with a gray Ae horizon, perhaps a testament to long-standing hemlock canopy on the site.

A very small area of the northern occurrence supports an unusual example of a Dry Oak Forest within a wetland complex. This natural community occurs on a natural sand berm “island” and thus is well drained and much drier than its surroundings. The dominant species in this small patch of forest is Northern Red Oak (Quercus rubra), with white oak and red maple also present. Shrubs include American Witch-Hazel and Velvet-Leaved Blueberry (Vaccinium myrtilloides), and herbs include Eastern Spicy-Wintergreen (*Gaultheria procumbens*), Bracken Fern (*Pteridium aquilinum*), Poverty Oatgrass (*Danthonia spicata*), and Ribbed Sedge (*Carex virescens*). Because of its small size and sandy soils it was mapped as part of the Sand-Over-Clay Forest.

The smaller southern Sand-Over-Clay Forest supports a diverse canopy of American Beech (*Fagus grandifolia*), Black Birch (*Betula lenta*), Red Maple (*Acer rubrum*), Eastern Hemlock (*Tsuga canadensis*), Big-Toothed Aspen (*Populus grandidentata*), Eastern White Pine (*Pinus strobus*), Yellow Birch (*Betula alleghaniensis*), and Northern Red Oak (*Quercus rubra*). The understory includes saplings of American beech, White Ash (*Fraxinus americana*), and Sugar Maple (*Acer saccharum*) as well as invasive Morrow's Honeysuckle (*Lonicera morrowii*). Herbs include Evergreen Wood Fern (*Dryopteris intermedia*), Marginal Wood Fern (*Dryopteris marginalis*), and White Wood Aster (*Aster divaricatus*). The soil consists of fine sand to at least 60 cm of depth.

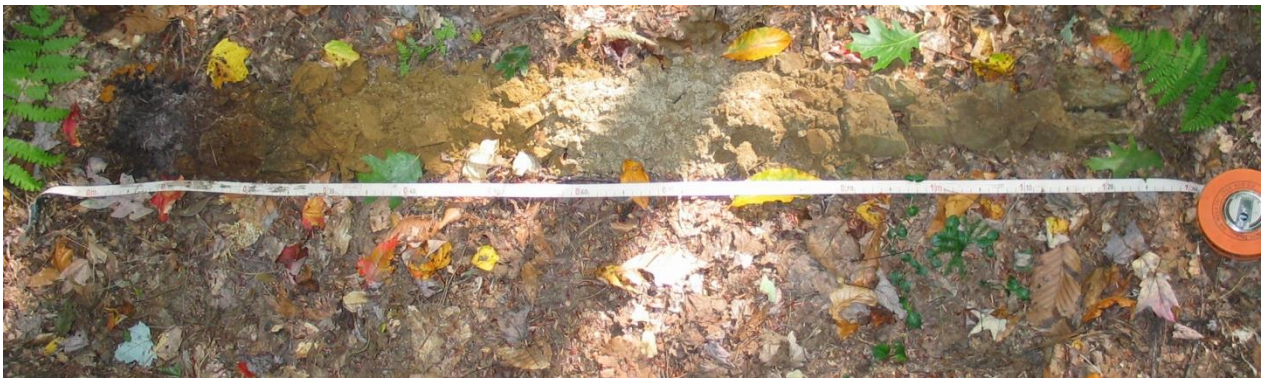

Figure 15: Soil profile in Sand-Over-Clay Forest.

Figure 16: Sand-Over-Clay Forest

Temperate Calcareous Cliff

***Significance**: B-ranked example of this uncommon (S3) natural community.*

An impressive Temperate Calcareous Cliff extends from north to south along the eastern edge of the Lamoille River Floodplain southeast of Route 7. This cliff extends for more than 1800 feet, averages around 30 feet tall, and is composed of dolostone and phyllite. These rocks contain high amounts of calcium and confer enrichment and reduced acidity both to the cliff face and the natural community below it. This sizable example of a rare (S3) natural community is considered state significant.

Not surprisingly, there is limited vegetation on the sheer cliff face, However it does support Goldie's Wood Fern (*Dryopteris goldiana*), Wall-Rue Spleenwort (*Asplenium ruta-muraria*), American Yew (*Taxus canadensis*), and Mountain Crane's-Bill (*Geranium robertianum*).

Figure 17: The Temperate Calcareous Cliff rises abruptly from the LaPlatte River floodplain forests.

Transition Hardwood Limestone Forest

***Significance**: B-ranked example of this uncommon (S3) natural community.*

A sizable (29 acre) area of Transition Hardwood Limestone Forest is present in the southeastern portion of the mapping area. This is considered a state significant example of this rare (S3) natural community.

This Transition Hardwoods Limestone Forest supports an overstory dominated by Sugar Maple (*Acer saccharum*), with Green Ash (*Fraxinus pennsylvanica*), Basswood (*Tilia americana*), Northern Red Oak (*Quercus rubra*), and Bitternut Hickory (*Carya cordiformis*) also present. Areas with exposed rock ledges also support Eastern Hemlock (*Tsuga canadensis*). The invasive shrub Morrow's Honeysuckle (*Lonicera morrowii*) is present in the shrub layer in some areas, along with currant (*Ribes* sp.). The herb layer is diverse and includes Marginal Wood Fern (*Dryopteris marginalis*), Sharp-lobed Hepatica (*Hepatica acutiloba*), Broad-leaved Ricegrass (*Oryzopsis racemosa*), Blue-Stem Goldenrod (*Solidago caesia*), and Forest Licorice Bedstraw (*Galium circaezans*).

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: CM

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.399206 Long: -73.233548 Datum: WGS84

Soil Map Unit Name: Not mapped (mapped as "Fresh Water Marsh") NWI classification: PEM1E

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes x	No ____	**within a Wetland?**	**Yes** x **No** ____
Wetland Hydrology Present?	Yes x	No ____	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
Cattail Marsh at mouth of LaPlatte River on shores of Lake Champlain. Very low water level at the time of sampling.

HYDROLOGY

Wetland Hydrology Indicators:

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

- x Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- x Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- x 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)
- x Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches):	____
Water Table Present?	Yes x	No ____	Depth (inches):	15
Saturation Present? (includes capillary fringe)	Yes x	No ____	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
Cattail marsh. Geomorphic position of a flood-prone area. Evidence of flooding as listed in hydrology indicators section. Standing water is common in this community, but much of area is stranded at time of sampling due to low water levels.

VEGETATION – Use scientific names of plants. Sampling Point: CM

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Typha latifolia*	70	Yes	OBL
2. *Sagittaria latifolia*	5	No	OBL
3. *Myosotis scorpioides*	3	No	OBL
4. *Bidens cernua*	3	No	OBL
5. *Lythrum salicaria*	10	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	91 =Total Cover		
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	91	x 1 =	91
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	91 (A)		91 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Nice lakeside cattail marsh on shores of Lake Champlain.

SOIL

Sampling Point: CM

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/1	95	10YR 6/6	5	C	M	Mucky Loam/Clay	High organic content

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Mucky soils

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: DBM

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.396179 Long: -73.232686 Datum: WGS84

Soil Map Unit Name: Not mapped (mapped as "Water") NWI classification: PSS1E

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes x	No ____	**within a Wetland?**	**Yes** x **No** ____
Wetland Hydrology Present?	Yes x	No ____	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
Deep Bulrush Marsh along the shores of the LaPlatte river. Near the mouth of the river south of the marina. Very low water level at the time of sampling.

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches):	____
Water Table Present?	Yes x	No ____	Depth (inches):	17
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches):	3

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
Site along banks of LaPlatte River and periodically floods. No surface water at time of sampling, but near record low water. Evidence that surface water is common.

VEGETATION – Use scientific names of plants. Sampling Point: DBM

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Sparganium eurycarpum*	15	No	OBL
2. *Phalaris arundinacea*	35	Yes	FACW
3. *Mentha arvensis*	3	No	FACW
4. *Schoenoplectus fluviatilis*	30	Yes	OBL
5. *Persicaria maculosa*	5	No	FAC
6. *Typha latifolia*	10	No	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	98	=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	38	x 2 =	76
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	98 (A)		146 (B)

Prevalence Index = B/A = 1.49

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Nice deep bulrush marsh. Dominated by river bulrush and sparganium.

SOIL

Sampling Point: DBM

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/1	85	10YR 5/6	15	C	M	Loamy/Clayey	
10-17	N 4/	85	10YR 5/6	15	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Undecomposed plant material common in top layers of soil.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: FF

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.390492 Long: -73.232102 Datum: WGS84

Soil Map Unit Name: Covington Silty Clay NWI classification: PFO1E

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes x	No ____	**within a Wetland?**	**Yes** x **No** ____
Wetland Hydrology Present?	Yes x	No ____	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
Riverine floodplain forest along the banks of the LaPlatte River. Approximately 0.5 miles from mouth of river. Very low water level at the time of sampling.

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____ No x	Depth (inches): ____	
Water Table Present?	Yes ____ No x	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____ No x	Depth (inches): ____	**Wetland Hydrology Present?** **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
No surface water present, very low water levels. Evidence of flooding, surface water likely present during high water events.

VEGETATION – Use scientific names of plants. Sampling Point: FF

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	70	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	95	Yes	FACW
2. *Pilea pumila*	5	No	FACW
3. *Lythrum salicaria*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	105	=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	170	x 2 =	340
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		345 (B)

Prevalence Index = B/A = 1.97

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Silver Maple-Ostrich Fern Floodplain Forest. Site is overtaken with reed canary grass, which forms near complete coer in the herbaceous layer. Nice silver maple trees 12-22" DBH.

SOIL

Sampling Point: FF

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	80	10YR 4/6	20	C	M	Loamy/Clayey	Oxidized rhizospheres
6-12	2.5Y 4/1	80	10YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Silt loam soils. Clearly floods during high water events. No restrictive layer.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: LkFF

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.392182 Long: -73.231020 Datum: WGS84

Soil Map Unit Name: Covington Silty Clay NWI classification: PFO1E

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area**	
Hydric Soil Present?	Yes x	No ___	**within a Wetland?**	**Yes** x **No** ___
Wetland Hydrology Present?	Yes x	No ___	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
Lakeside Floodplain forest along the banks of the LaPlatte River. Approximately 0.5 miles from the river mouth. Very low water level at the time of sampling (near record low).

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
Lakeside Floodplain Forest. Geomorphic position of a flood-prone area. Evidence of flooding as listed in hydrology indicators section.

VEGETATION – Use scientific names of plants. Sampling Point: LkFF

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	75	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer saccharinum*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Carex gynandra*	30	Yes	OBL
2. *Thelypteris palustris*	30	Yes	FACW
3. *Decodon verticillatus*	5	No	OBL
4. *Penthorum sedoides*	5	No	OBL
5. *Dulichium arundinaceum*	10	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	115	x 2 =	230
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	165 (A)		280 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Nice lakeside floodplain forest. Relatively undisturbed. No invasive species apparent. Fairly open, very little shrub layer.

SOIL

Sampling Point: LkFF

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/1	95	7.5YR 4/6	5	C	M	Loamy/Clayey	
10-22	2.5Y 4/1	80	7.5YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Very low water level. Soils not saturated at time of sampling.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: Wclay

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.394726 Long: -73.230974 Datum: WGS84

Soil Map Unit Name: Enosburg and Whatley NWI classification: PFO4/1A

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes x	No ____	**within a Wetland?**	**Yes** x **No** ____
Wetland Hydrology Present?	Yes x	No ____	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)
Wet Clayplain forest along LaPlatte River. Approximately 1000 feet from mouth of river. Site is located at base of slope in between upland and floodplain forest. Very low water level at the time of sampling.

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 Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- x Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____
Water Table Present?	Yes ____	No x	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
No standing water at time of sampling, but very low water levels. Low, wet hollows look like they pond water after high water events. Narrow band of vegetation.

VEGETATION – Use scientific names of plants. Sampling Point: Wclay

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tilia americana*	40	Yes	FACU
2. *Fraxinus pennsylvanica*	30	Yes	FACW
3. *Acer rubrum*	10	No	FAC
4. *Tsuga canadensis*	10	No	FACU
5.			
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Tsuga canadensis*	5	Yes	FACU
2. *Acer rubrum*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Pilea pumila*	20	Yes	FACW
2. *Scutellaria lateriflora*	10	No	OBL
3. *Amphicarpaea bracteata*	20	Yes	FAC
4. *Boehmeria cylindrica*	5	No	OBL
5. *Leersia virginica*	3	No	FACW
6. *Lycopus uniflorus*	3	No	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	61	=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	18	x 1 =	18
FACW species	53	x 2 =	106
FAC species	35	x 3 =	105
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	161 (A)		449 (B)

Prevalence Index = B/A = 2.79

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Narrow band of wet clayplain forest in between floodplain forest, marsh and upland. Site sits at base of slope. Nice looking, undisturbed forest, but fairly small.

SOIL

Sampling Point: Wclay

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	90	10YR 5/6	10	C	M	Loamy/Clayey	oxidized rhizospheres
6-18	10YR 5/1	95	10YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- X 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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Sample not taken in low hollow where standing water may be present after high water events.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: UpClay

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.395608 Long: -73.235197 Datum: WGS84

Soil Map Unit Name: Covington Silty Clay NWI classification: NA

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No x	**within a Wetland?**	**Yes** ____	**No** x
Wetland Hydrology Present?	Yes ____	No x	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Mesic Clayplain Forest in wetland buffer. Very low water level at the time of sampling.

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 Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____	
Water Table Present?	Yes ____	No x	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____	**Wetland Hydrology Present?** **Yes** ____ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
No wetland hydrology.

VEGETATION – Use scientific names of plants. Sampling Point: UpClay

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2. *Tsuga canadensis*	20	Yes	FACU
3. *Pinus strobus*	20	Yes	FACU
4. *Quercus rubra*	10	No	FACU
5. *Fraxinus americana*	5	No	FACU
6.			
7.			
	105	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Tsuga canadensis*	20	Yes	FACU
2. *Acer rubrum*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	25	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *None present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	130 (A)		465 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Mesic Clayplain Forest mapped by Natural Heritage Inventory. Some areas with more white pines (some young) and less hemlock. Some wetland inclusions. No herb layer - late in season and may be fairly sparse even in growing season.

SOIL

Sampling Point: UpClay

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/3	100					Loamy/Clayey	No mottles
6-18	10YR 6/2	98	2.5Y 5/6	2	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ? Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Soils very dry. Currently undergoing a dry spell. Lake levels at near record low.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Laplatte River Wetland Complex City/County: Shelburne, Chittenden County Sampling Date: 10/3/16

Applicant/Owner: Various State: VT Sampling Point: UpSand

Investigator(s): Michael Lew-Smith and Dori Barton Section, Township, Range:

Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR or MLRA): LRR R Lat: 44.394452 Long: -73.231136 Datum: WGS84

Soil Map Unit Name: Enosburg and Whately NWI classification: PFO4/1A

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

Are Vegetation N , Soil N , or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No x	**within a Wetland?**	**Yes** ____	**No** x
Wetland Hydrology Present?	Yes ____	No x	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)
Sand-Over-Clay Forest. Very little rain recently. Near record low water level in lake at the time of sampling.

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 Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____
Water Table Present?	Yes ____	No x	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
None available.

Remarks:
No wetland hydrology.

VEGETATION – Use scientific names of plants. Sampling Point: UpSand

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	35	Yes	FACU
2. *Acer rubrum*	25	Yes	FAC
3. *Pinus strobus*	35	Yes	FACU
4. *Quercus rubra*	10	No	FACU
5.			
6.			
7.			
	105	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Tsuga canadensis*	20	Yes	FACU
2. *Fagus grandifolia*	25	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *None present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30x30)			
1. *None present*			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	150 (A)		575 (B)

Prevalence Index = B/A = 3.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 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 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Sand-Over-Clay Forest as mapped by the Natural Heritage Inventory. Very clearly upland vegetation.

SOIL

Sampling Point: UpSand

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2						Sandy	
3-5.5	10YR 7/1						Sandy	
5.5-11	7.5YR 4/6						Sandy	
11-15	10YR 6/4						Sandy	

[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)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ 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)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Spodosol

VNRC VERMONT NATURAL RESOURCES COUNCIL

May 18, 2017

Laura Woods
Vermont Wetlands Program
One National Life Drive, Main 2
Montpelier, VT 05620-3522

Sent Via E-Mail

Re: Class I Wetland Designation for LaPlatte River Marsh Wetlands – Request for Additional Information

Dear Ms. Woods:

I am writing to provide the information that the Vermont Wetlands Program (VWP) requested in order to determine that the Petition to Reclassify the LaPlatte River Marsh Wetlands filed by the Vermont Natural Resources Council (VNRC) is complete. Specifically, the VWP requested that VNRC provide the following:

* *A written draft of the proposed rule. You only need to include the added language which should follow the format of the language for all other Class I additions. For example: Dorset Marsh, Dorset, (43.23793, -73.09057), Established April 22, 1992, Wetland file 1990-03. The wetland buffer extends 100 feet from the delineated wetland boundary.*

* *A list of the categories of people, enterprises, and governmental entities potentially affected by the proposed rule and an estimate for each, of the costs and benefits anticipated.*

* *A statement of how the proposed rule would be consistent with applicable state and federal laws.*

The information is provided below.

A Draft of the Proposed Rule

The draft of the proposed rule per the VWP's instructions is as follows:

LaPlatte River Marsh Wetlands, Shelburne, (44.396131, -73.232501), Wetland

File 2016-699. The wetland buffer is proposed to extend 100 feet from the delineated wetland boundary.

Categories of those Affected, Costs and Benefits

The following are categories of entities affected by the Petition and the costs and benefits associated with the Petition:

Recreation

A major category of entities affected by the Petition are people who use and enjoy the wetland. As noted in the Petition, a significant portion of the LaPlatte River Marsh Wetlands are either owned by non-profit organizations or the town of Shelburne. The Nature Conservancy (TNC) trails encompass approximately 2.5 miles through wetland and upland ecological communities. The town of Shelburne owns portions of the marsh and its buffer on the east and west sides of Route 7. To the west of route 7, the town land contains a handicap-accessible recreational path which runs along the borders of the marsh. To the east of Route 7, the town owns and operates the 145 acre LaPlatte River Nature Park that contains an extensive recreational trail network. A series of dedicated trail networks are located throughout these parcels for recreationalists of all varieties, including walkers, hikers, bikers, and bird watchers. The LaPlatte River, which winds through the wetland complex, provides water based recreational activities such as canoeing, kayaking, fishing and duck hunting. The Shelburne public dock provides paddling access via the public boat launch to Lake Champlain. Recreational users of the LaPlatte River Marsh Wetlands will benefit from the Class I designation, which will provide additional protections for the resource.

Education

Another category of entities affected by the Petition are schools and other educational institutions that use the LaPlatte River Marsh Wetlands. There is a long history of using the wetland for education and research. For example, as noted in the Petition, the unique assemblage of wetland community types and vast array of wildlife present in the wetland makes it ripe for research and teaching students about the function and values of wetlands. Undergraduate and graduate students from the University of Vermont have targeted the marsh for research projects over the years. In addition to formal academic research, several non-profit organizations have used the wetland complex to educate local residents and Vermonters as whole about the significance of natural wetland ecosystems in protecting water quality and providing necessary wildlife habitat. Entities that utilize the LaPlatte River Marsh Wetlands for education and research will benefit from the Class I designation, which will protect the wetlands important functions and values.

Property Owners

As noted in the Petition, there are approximately 145 properties adjacent to the proposed Class I Wetland and the 100 foot buffer around the wetland that VNRC has identified. Of these properties, the only built feature that we have identified as being in the wetland is a bridge. We have also identified a number of trails and approximately 17 structures (including buildings, roads, parking lots, boat launch, marina etc.) in the wetland buffer. Under the Vermont Wetland Rules (VWR) maintenance and reconstruction of existing structures (including roads, trails and docks) is allowed in the wetland and wetland buffer. See VWR § 6.12.

The Class I designation does capture additional portions of property in the wider buffer 100 foot buffer for the Class I wetland. The existing Class 2 wetland for the LaPlatte River Marsh Wetlands is 50 feet. Accordingly, property that is within the wider 100 foot buffer will need to obtain a wetland permit if VNRC's Petition is granted. In addition, the standard for obtaining a permit to engage in activities within a Class I wetland is higher than the standard for obtaining a permit for activities within a Class II wetland.

It is difficult to place an exact cost on the increased regulation of activities associated with the proposed Class I designation for the LaPlatte River Marsh Wetlands. VNRC submits that the increased costs to property owners will not be significant for several reasons. First, as noted above, existing structures may be maintained under the VWRs, ensuring that these features may continue to exist. Second, while the expanded buffer will capture additional activities, a property owner may apply for a permit to conduct activities within the buffer, and the standard to obtain a permit for work within a buffer is the same for a Class I and Class II wetland. Third, a significant portion of the LaPlatte River Marsh wetlands are either owned by non-profit organizations or the town of Shelburne. Accordingly, there should be only limited areas where private property owners would have the opportunity to propose development in the wetland.

Public Benefit

For all the reasons set forth in the Petition, there will be a significant benefit to the public in increasing protections for the LaPlatte River Marsh Wetlands. The LaPlatte River Marsh Wetlands is a special natural resource that should be protected to ensure that the important functions and values the wetland provides are not diminished. The costs associated with the additional regulatory restrictions provided by the Class I designation and outweighed by the benefit to the public for protecting this unique natural area.

Consistent with Applicable Laws

As set forth in the Petition, the LaPlatte River Marsh Wetlands meets the standards in the VWRs for designating a wetland as Class I. Accordingly, the

Petition is consistent with state law. VNRC is not aware of any federal law that is applicable to Class I designation process under the VWRs.

Please let me know of the VWP requires any additional information. VNRC will provide notice of the Petition to adjoining landowners after the VWP indicates that the Petition is complete, and the VWP is moving forward with its review of the Petition.

Sincerely,

Jon Groveman
VNRC Policy and Water Program Director

cc: Dori Barton (via e-mail)

582-183-12457	75 HARBOR RD	RYAN TALBOTT FARM ENT INC	1022 FALLS RD	SHELBURNE	VT	05482
582-183-12614	154 TURTLE LN	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-11819	NATURE CONSERVANCY	NATURE CONSERVANCY	27 STATE ST	MONTPELIER	VT	05602
582-183-12603	175 LAPLATTE CIR	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-12596	128 FALLS RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-11857	2087 SHELBURNE RD	VERMONT RAILWAY INC	1 RAILWAY LN	BURLINGTON	VT	05401
582-183-12603	175 LAPLATTE CIR	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-12549	82 SHELBURNEWOOD DR	PHELPS DONALD	104 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-13188	82 SHELBURNEWOOD DR	SHELBURNEWOOD MH CO-OP INC	219 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10688	408 SHELBURNEWOOD DR	SHIP SEVIN LLC	1700 WILLISTON RD STE 2	SO BURLINGTON	VT	05403
582-183-12549	82 SHELBURNEWOOD DR	PHELPS DONALD	104 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10421	155 CHESAPEAKE DR	CARROLL JAMES	155 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-12846	140 CHESAPEAKE DR	SANDAGE LARRY	140 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-11453	2098 SHELBURNE RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-10499	242 WEBSTER RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-13175	0 CHESAPEAKE DR	COWLES CORNELIUS & EUGENIA	PO BOX 1383	BURLINGTON	VT	05402
582-183-10415	4772 SHELBURNE RD	CARON GARY	4772 SHELBURNE RD	SHELBURNE	VT	05482
582-183-12594	2089 SHELBURNE RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-12594	2089 SHELBURNE RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-11819	NATURE CONSERVANCY	NATURE CONSERVANCY	27 STATE ST	MONTPELIER	VT	05602
582-183-11819	NATURE CONSERVANCY	NATURE CONSERVANCY	27 STATE ST	MONTPELIER	VT	05602
582-183-11819	NATURE CONSERVANCY	NATURE CONSERVANCY	27 STATE ST	MONTPELIER	VT	05602
582-183-10177	987 BAY RD	BURNHAM CHARLES	987 BAY RD	SHELBURNE	VT	05482
582-183-12307	1019 BAY RD	SHELBURNE BAY BOAT CLUB INC	PO BOX 4144	SO BURLINGTON	VT	05406
582-183-11410	886 BAY RD	KOPER MICHAEL & LOUISE	886 BAY RD	SHELBURNE	VT	05482
582-183-12606	1136 BAY RD	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-12570	1469 BAY RD	OLSON MICHAEL & STEPHANIE	1469 BAY RD	SHELBURNE	VT	05482
582-183-12455	0 BAY RD	STERN ABBI & SARENA	415 9TH ST APT 53	BROOKLYN	NY	11215
582-183-13157		SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-13179	600 HARBOR RD	RYAN TALBOTT FARM ENT INC	1022 FALLS RD	SHELBURNE	VT	05482
582-183-10197	236 WEBSTER RD	BILLADO DAVID & JANI	236 WEBSTER RD	SHELBURNE	VT	05482
582-183-11148	1141 FALLS RD	LOUCKS TIMOTHY TRUST	4040 GREENBUSH RD	CHARLOTTE	VT	05445
582-183-11348	1101 FALLS RD	KENT CHRISTOPHER	1101 FALLS RD	SHELBURNE	VT	05482
582-183-11635	1007 FALLS RD	LAWSON LAUREN TRUST	1007 FALLS RD	SHELBURNE	VT	05482
582-183-10417	1023 FALLS RD	WEBB LILA	1023 FALLS RD	SHELBURNE	VT	05482
582-183-11643	261 FALLS RD	MARCOTTE DIANE	PO BOX 372	SHELBURNE	VT	05482
582-183-12517	233 FALLS RD	WIND RIDGE PROP LLC	PO BOX 64	SHELBURNE	VT	05482
582-183-11105	209 FALLS RD	C P SHELBURNE PROP LLC	71 SO UNION ST	BURLINGTON	VT	05401
582-183-12601	56 SCHOOL ST	SHELBURNE TOWN OF	PO BOX 88	SHELBURNE	VT	05482
582-183-11036	578 HARBOR RD	VERMONT TRANSCO LLC	366 PINNACLE RIDGE RD	RUTLAND	VT	05701
582-183-11036	578 HARBOR RD	VERMONT TRANSCO LLC	366 PINNACLE RIDGE RD	RUTLAND	VT	05701
582-183-12215	4966 SHELBURNE RD	RUSSELL GORDON & JODY	4966 SHELBURNE RD	SHELBURNE	VT	05482
582-183-11698	142 CHESAPEAKE DR	MCMAHON DOLORES	142 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-10908	87 HARVEST LN	HEALEY DEBORAH REV TRUST	87 HARVEST LN	SHELBURNE	VT	05482
582-183-12758	153 CHESAPEAKE DR	PICKARD SPENCER & ELIZA	153 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-11461	359 TURTLE LN	LAKE CHAMPLAIN WALDORF ED ASSOC	359 TURTLE LN	SHELBURNE	VT	05482

582-183-12468	124 SPINNAKER LN	HOLOCH PETER & ADELE	124 SPINNAKER LN	SHELBURNE	VT	05482
582-183-12787	94 SPINNAKER LN	ANDERSON TIMOTHY	94 SPINNAKER LN	SHELBURNE	VT	05482
582-183-11607	16 SPINNAKER LN	MERRILL DOUGLAS & LISA	16 SPINNAKER LN	SHELBURNE	VT	05482
582-183-12311	1611 HARBOR RD	SHELBURNE FARMS INC	1611 HARBOR RD	SHELBURNE	VT	05482
582-183-13159	0 HENRY ST	HOUSING VERMONT	123 ST PAUL ST	BURLINGTON	VT	05401
582-183-13160	75 HARRINGTON AVE	SHELBURNE HSING LTD PTNRSHP	412 FARELL ST STE 100	SO BURLINGTON	VT	05403
582-183-13161	110 HARRINGTON AVE	HARRINGTON VILLAGE LTD PRTNSHIP	123 ST PAUL ST	BURLINGTON	VT	05401
582-183-10511	50 SHELBURNE SHOPPING PARK	PRECOURT INV CO LLC	215 MAPLE LEAF LN	SHELBURNE	VT	05482
582-183-12549	82 SHELBURNEWOOD DR	PHELPS DONALD	104 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-13174	236 WEBSTER RD	LAFLECHE BRIAN	240 WEBSTER RD	SHELBURNE	VT	05482
582-183-10383	195 FALLS RD	GRANGIEN PATRICK & CHRISTINE	225 WEED RD	HINESBURG	VT	05461
582-183-11479	181 FALLS RD	LAPLATTE PARTNERSHIP	PO BOX 583	SHELBURNE	VT	05482
582-183-10523	20 SHELBURNE SHOPPING PARK	RUFIT LLC	4414 SPEAR ST	SHELBURNE	VT	05482
582-183-10520	80 SHELBURNE SHOPPING PARK	PRECOURT INV CO LLC	215 MAPLE LEAF LN	SHELBURNE	VT	05482
582-183-12626	65 FALLS RD	SCOUT INV LLC	65 FALLS RD	SHELBURNE	VT	05482
582-183-12851	53 FALLS RD	PILL MAHARAM ARCHITECTS INC	1611 ROSCOE RD	CHARLOTTE	VT	05445
582-183-12555	41 FALLS RD	41 FALLS RD LLC	PO BOX 471	SHELBURNE	VT	05482
582-183-12370	29 FALLS RD	BINNACLE GROUP LLC	4800 BASIN HARBOR CLUB RD	VERGENNES	VT	05491
582-183-12739	15 FALLS RD	WEBSTER DAVID & GWEN	PO BOX 177	SHELBURNE	VT	05482
582-183-11638	5068 SHELBURNE RD	CRE JV MIXED 15 NE BRANCH HLDG LLC	PO BOX 460049	HOUSTON	TX	77056
582-183-10933	4980 SHELBURNE RD	FYLES MARK	8 CLYDE ALLEN DR	ST ALBANS	VT	05478
582-183-11123	234 GARDENSIDE LN	HARRIS REES & DEIRDRE	234 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-12130	152 GARDENSIDE LN	SKROCKI SAUL & KATHRYN	152 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-10767	154 GARDENSIDE LN	PEABODY JUDITH REV TRUST	154 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-10650	232 GARDENSIDE LN	BOKAN DANIEL	232 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-12408	156 GARDENSIDE LN	SOKOL DAVID	156 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-12673	111 CHESAPEAKE DR	VANDAL JOCELYN	111 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-11170	95 CHESAPEAKE DR	BELLEZZA ROBERT & KATHLEEN	95 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-11247	58 CHESAPEAKE DR	STRAWBRIDGE GEOFFREY & JILL	58 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-10827	67 CHESAPEAKE DR	FAR VINCENT & PATSY	67 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-12387	286 WEBSTER RD	SMARDON RICHARD & HADDOCK DOROTHY	286 WEBSTER RD	SHELBURNE	VT	05482
582-183-10906	182 YACHT HAVEN DR	COMBRES SHANE & KATIE	182 YACHT HAVEN DR	SHELBURNE	VT	05482
582-183-11005	160 YACHT HAVEN DR	GOOD STEPHEN & GLORIA LIV TRUST	160 YACHT HAVEN DR	SHELBURNE	VT	05482
582-183-10398	140 SPINNAKER LN	CAMPAGNA KIM & MAURICE	140 SPINNAKER LN	SHELBURNE	VT	05482
582-183-10331	68 SPINNAKER LN	SIMENON PIERRE & ADELINE TRUST	68 SPINNAKER LN	SHELBURNE	VT	05482
582-183-11352	38 SPINNAKER LN	KERR JOHN & NANCY	38 SPINNAKER LN	SHELBURNE	VT	05482
582-183-11408	13 SPINNAKER LN	KOHLER REV TRUST	13 SPINNAKER LN	SHELBURNE	VT	05482
582-183-10481		CHITWOOD ROBERT	103 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10448		CHAMBERLIN EDWARD & TINA	PO BOX 852	SHELBURNE	VT	05482
582-183-12142		COMMONS AT SHELBURNEWOOD LLC	412 FARRELL ST STE 100	SO BURLINGTON	VT	05403
582-183-12164		ROBERTS JOHN	898 OSGOOD HILL RD	WESTFORD	VT	05494
582-183-10248		BOISVINE WILLIAM	PO BOX 5	SHELBURNE	VT	05482
582-183-10916		TABAILLOUX KATHERINE	PO BOX 5321	BURLINGTON	VT	05402
582-183-11588		SORDIFF TINA & BOBBY JOE	214 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12990	299 SYCAMORE ST	FINA BRIAN	299 SYCAMORE ST	SHELBURNE	VT	05482
582-183-10794	1037 FALLS RD	ELKINS RUSSELL	PO BOX 356	SHELBURNE	VT	05482

582-183-11178	1063 FALLS RD	HILDEBRAND JEFFERSON & WENDY JO	1063 FALLS RD	SHELBURNE	VT	05482
582-183-11764	1077 FALLS RD	MONELL WILLIAM & TRACY	PO BOX 187	SHELBURNE	VT	05482
582-183-11882	985 FALLS RD	COMEAU ANDREW & BARBARA	985 FALLS RD	SHELBURNE	VT	05482
582-183-11312	165 FALLS RD	KAELIN JR JOSEPH TRUST	PO BOX 322	SHELBURNE	VT	05482
582-183-10518	30 SHELBURNE SHOPPING PARK	PRECOURT INV CO LLC	215 MAPLE LEAF LN	SHELBURNE	VT	05482
582-183-10505	40 SHELBURNE SHOPPING PARK	PRECOURT INV CO LLC	215 MAPLE LEAF LN	SHELBURNE	VT	05482
582-183-11129	77 FALLS RD	FALLS ROAD REALTY LLC	311 DOLLIVER DR	CHARLOTTE	VT	05445
582-183-12320	11 FALLS RD	CATAMOUNT HSI SHELBURNE LLC	210 COLLEGE ST STE 201	BURLINGTON	VT	05401
582-183-12319	5247 SHELBURNE RD	CATAMOUNT HSI SHELBURNE LLC	210 COLLEGE ST STE 201	BURLINGTON	VT	05401
582-183-10165	5203 SHELBURNE RD	OFFICE LLC	1154 ROSCOE RD	CHARLOTTE	VT	05445
582-183-12740	5187 SHELBURNE RD	WEBSTER GWEN	PO BOX 386	SHELBURNE	VT	05482
582-183-10160	687 HARBOR RD	687 HARBOR RD SHELBURNE LLC	% ECOVA INC-MS 4604; PO BOX 2440	SPOKANE	WA	99210
582-183-10339	236 GARDENSIDE LN	BULA OREST & ANNE	236 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-12302	150 GARDENSIDE LN	SHEAHAN CHRISTOPHER & MARY ANN	150 GARDENSIDE LN	SHELBURNE	VT	05482
582-183-11774	85 HARVEST LN	COHEN BRUCE	85 HARVEST LN	SHELBURNE	VT	05482
582-183-12001	12 CHESAPEAKE DR	PICHE LOUISE	PO BOX 835	SHELBURNE	VT	05482
582-183-12784	194 WEBSTER RD	WILLIAMS BERTA TRUST	PO BOX 457	SHELBURNE	VT	05482
582-183-12334	4740 SHELBURNE RD	CATAMOUNT HARBOUR LLC	210 COLLEGE ST	BURLINGTON	VT	05401
582-183-11796	168 SPINNAKER LN	LISHNAK TIMOTHY & ERICA	168 SPINNAKER LN	SHELBURNE	VT	05482
582-183-12119	20 YACHT HAVEN DR	NELSON CARL & ROXANNE	20 YACHT HAVEN DR	SHELBURNE	VT	05482
582-183-13001	341 SYCAMORE ST	KEEN JENNIFER	341 SYCAMORE ST	SHELBURNE	VT	05482
582-183-13011	329 SYCAMORE ST	STROH ANDREW & JUDITH	329 SYCAMORE ST	SHELBURNE	VT	05482
582-183-10774	5059 SHELBURNE RD	LOLITA HLDGS LLC	372 MONARCH RD	SHELBURNE	VT	05482
582-183-12585	5115 SHELBURNE RD	WHITSTABLE PROP LLC	4278 HARBOR RD	SHELBURNE	VT	05482
582-183-11991		LEWIS JEROME	PO BOX 572	SHELBURNE	VT	05482
582-183-10532		LONGE TOBY	131 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10802		EMKIC SEAD	139 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12347		LAFOUNTAIN TAUSHA	144 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12522		GIROUX JENNIFER	162 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12697		CASTLE ON THE WATER LLC	PO BOX 494	SHELBURNE	VT	05482
582-183-12499		CARLETON JR N PHILLIPS & VICTORIA	183 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10095		RICH NARISSA	205 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12513		DAIGLE PETER	207 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-11694		LACLAIR MORGAN	191 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-12550		BEAUDIN TRACEY	219 SHELBURNEWOOD DR	SHELBURNE	VT	05482
582-183-10581		GRIFFIS FRANCES ET AL	370 ACORN LN	SHELBURNE	VT	05482
582-183-10984		GIOMBETTI & KAREN MIKKELSEN ANN	376 ACORN LN	SHELBURNE	VT	05482
582-183-11985		LIV TRUST DAVIS JR ROWLAND & DIANNE	250 E PEARSON ST 1407	CHICAGO	IL	60611
582-183-11156		HEFFERNAN PATRICIA TRUST	374 ACORN LN	SHELBURNE	VT	05482
582-183-11696		DOLL PEYRON JEANNE	366 ACORN LN	SHELBURNE	VT	05482
582-183-11969		MALANEY JENNIFER	360 ACORN LN	SHELBURNE	VT	05482
582-183-10708		SENIOR GILLIAN	364 ACORN LN	SHELBURNE	VT	05482
582-183-10192		SENIOR PETA GILLIAN	364 ACORN LN	SHELBURNE	VT	05482
582-183-10128		GLEZEN SHARON	386 ACORN LN	SHELBURNE	VT	05482
582-183-12838		MORAIS CATHERINE	384 ACORN LN	SHELBURNE	VT	05482
582-183-10516	15 SHELBURNE SHOPPING PARK		15 SHELBURNE SHOPPING PARK	SHELBURNE	VT	05482

582-183-10517	11 SHELBURNE SHOPPING PARK	11 SHELBURNE SHOPPING PARK	SHELBURNE	VT	05482
	25 IRISH HILL RD	25 IRISH HILL RD	SHELBURNE	VT	05482
	50 SHELBURNE SHOPPING PARK	50 SHELBURNE SHOPPING PARK	SHELBURNE	VT	05482
	5059 SHELBURNE RD	5059 SHELBURNE RD	SHELBURNE	VT	05482
582-183-11174	13 CHESAPEAKE DR	13 CHESAPEAKE DR	SHELBURNE	VT	05482
582-183-12332	2093 SHELBURNE RD	2093 SHELBURNE RD	SHELBURNE	VT	05482