

# **LAPLATTE HEADWATERS TOWN FOREST MANAGEMENT PLAN**

**HINESBURG, VERMONT**

**DECEMBER 2009**

## **LaPlatte Headwaters Town Forest Management Planning Committee**

Kristen Sharpless, Chair

Lenore Budd

Timothy Clancy

Lisa Godfrey

Jean Isham

Andrea Morgante

Stewart Pierson

With special assistance from Michael Snyder, Chittenden County Forester



**LAPLATTE HEADWATERS TOWN FOREST  
MANAGEMENT PLAN**

**HINESBURG, VERMONT**

**DECEMBER 2009**

**Town of Hinesburg**

---

John Trefry, Chair, Hinesburg Select Board

Date



# TABLE OF CONTENTS

---

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>NOTE FROM THE LAPLATTE HEADWATERS TOWN FOREST MANAGEMENT PLANNING COMMITTEE.....</b>	<b>4</b>
<b>INTRODUCTION.....</b>	<b>5</b>
PLANNING FOR THE LAPLATTE HEADWATERS TOWN FOREST .....	5
<i>Why Plan?</i> .....	5
<i>What is a management plan?</i> .....	6
<i>How is this plan designed to be used?</i> .....	7
ACQUISITION OF THE LAPLATTE HEADWATERS TOWN FOREST.....	8
PLANNING PROCESS.....	8
<i>Conservation Easement</i> .....	8
<i>Clean and Clear Funding for Wetland Restoration</i> .....	9
<i>LaPlatte Headwaters Town Forest Management Planning Committee</i> .....	9
<b>SECTION I: VISION, GOALS, AND BACKGROUND .....</b>	<b>13</b>
A VISION FOR THE FUTURE .....	13
<i>Vision Statement</i> .....	13
<i>Goals</i> .....	13
PERMITTED AND RESTRICTED USES .....	14
<i>Permitted Uses</i> .....	14
<i>Restricted Uses</i> .....	15
<i>Woodland Special Treatment Areas (STAs)</i> .....	16
<i>Riparian Corridor Special Area (STA)</i> .....	17
LIABILITY .....	18
DESCRIPTION AND BACKGROUND .....	19
<i>Landscape Context</i> .....	19
<i>Access</i> .....	20
<i>Land Use History</i> .....	20
<i>Physical Site</i> .....	22
<i>Forests</i> .....	27
<i>Wildlife and Habitat</i> .....	33
<i>Current Uses</i> .....	39
<b>SECTION II: MANAGEMENT OBJECTIVES, GUIDELINES, AND ACTIONS .....</b>	<b>41</b>
PERMANENT MANAGEMENT COMMITTEE .....	41
LANDSCAPE CONNECTIONS .....	42
EDUCATION AND COMMUNITY USES.....	47
FORESTS AND WILDLIFE.....	51
WATER AND WETLANDS .....	59
RECREATION .....	65
AGRICULTURE .....	71
<b>SECTION III: SUMMARY OF ACTIONS.....</b>	<b>73</b>
<b>REFERENCES AND RESOURCES.....</b>	<b>77</b>
<b>GLOSSARY OF TERMS .....</b>	<b>78</b>
<b>APPENDICES.....</b>	<b>81</b>
APPENDIX A: CONSERVATION PARTNERS.....	81
APPENDIX B: CONSERVATION EASEMENT .....	83
APPENDIX C: BASELINE DOCUMENTATION REPORT, VERMONT LAND TRUST.....	83

APPENDIX D: INDIANA BAT MANAGEMENT GUIDELINES ..... 83  
APPENDIX E: LAPLATTE RIVER CORRIDOR AND WETLAND MANAGEMENT PLAN ..... 83  
APPENDIX F: AUDUBON VERMONT HABITAT ASSESSMENT ..... 83

## EXECUTIVE SUMMARY

The LaPlatte Headwaters Town Forest (LHTF) is Hinesburg's second town forest. Like many town, or municipal, forests in Vermont, Hinesburg's first town forest was created in the mid-1900s from several hill farms in the Town's eastern foothills that were abandoned or taken by the Town for unpaid taxes. The new 301-acre LHTF in the western part of the Town was acquired through very different means in 2007. It was granted to the Town from the Vermont Land Trust and Vermont Housing and Conservation Board, which co-hold a conservation easement on the land as part of a larger project in cooperation with other local, state, and federal organizations and agencies to conserve the 627-acre Bissonette Farm.

The LHTF is particularly well-suited to being town-owned public land because it:

- Is representative of the western part of Hinesburg's rich and unique natural heritage in the Champlain Valley, which includes its geology, ecology, and cultural history;
- Contains a diverse mix of open and forested land that is home to a wide variety of plant communities and organisms - some of which are rare or endangered within Hinesburg, Vermont, and even North America;
- Includes the headwaters of the LaPlatte River;
- Has an established network of trails and history of use by the public for walking, snowshoeing, skiing, hunting, and education; and
- Is less than a half-mile from the Hinesburg Village and Community School at its northernmost boundary.

This management plan was developed by the Town of Hinesburg in order to guide the future use and management of the LHTF. In the spring of 2008, the Hinesburg Select Board appointed members from the Hinesburg Planning Commission, Conservation Commission, Trails Committee, and Land Trust to serve on a planning committee charged with the responsibility of creating a management plan that incorporates public input, including a public forum, and expert advice.

The following plan is the result of the LHTF Management Planning Committee's work. It introduces the LHTF, provides the over-arching philosophy and specific guidelines for its management including:

- Vision and goals
- Permitted and restricted uses
- Background and description
- Management objective, guidelines, and actions

This plan is intended to be implemented by a permanent Town Forest Management Committee in cooperation with Conservation Partners and other Town committees and to used as a reference by anyone interested in the LHTF or involved in its management.

This plan will be updated and submitted for approval by the Hinesburg Select Board every five years.

## **NOTE FROM THE LAPLATTE HEADWATERS TOWN FOREST MANAGEMENT PLANNING COMMITTEE**

This plan has been informed by extensive research and input from a wide range of experts (Appendix A) and sources, including the Hinesburg public. It is the result of a year and a half's worth of careful research, discussion, and consideration and represents our best effort toward outlining a philosophy and guidelines that we hope will go a long way toward implementing the purposes of the conservation easement.

There are a few places where this plan is inconsistent with other guiding documents, such as those in the appendices. Most likely, these inconsistencies are neither error nor oversight on our part; they represent places where this committee made different decisions that we felt were more in keeping with the conservation easement. Wherever these inconsistencies occur – unless they are with the conservation easement itself – this plan shall supersede any others.

This committee would like to thank everyone who advised, informed, and participated in the creation of this management plan. This was truly a group effort; we couldn't have done it alone. We would like to give a special thanks to Michael Snyder, the Chittenden County Forester, who not only advised us, but shared in our planning process, showed up to meetings, led walks, and inspired us with his love of the forest. Thanks, Mike.

Kristen Sharpless, Chair  
Lenore Budd  
Timothy Clancy  
Lisa Godfrey  
Jean Isham  
Andrea Morgante  
Stewart Pierson

## INTRODUCTION

### *PLANNING FOR THE LAPLATTE HEADWATERS TOWN FOREST*

#### **Why Plan?**

*The following section was adapted from the introduction to Warren, Vermont's Town Forest Plans.*

In any situation, good planning facilitates wise – rather than reckless – use. In the case of the LaPlatte Headwaters Town Forest (LHTF), without a good plan, ecological function and health could be compromised, conflicts between different uses and interests could go unaddressed, legal and financial issues could arise, and short-term gain could be chosen over long-term investment. Even with the best of intentions, it can be easy to make very bad mistakes in land management. The thought and effort that has been put into creating this management plan will go a long way toward promoting the wise use of the LHTF by documenting and communicating what is known about the property, the community's values and goals for its management, and the objectives, guidelines, and actions that should be taken to meet these goals.

#### ***One Forest. Many landowners, partners, and land managers***

The LHTF is collectively-owned by all of Hinesburg's residents – current and future. This is a lot of landowners for a 301-acre piece of land. As a result, identifying the vision, goals and objectives for the land is not as simple as it would be for private property owned by a single landowner. Everyone must be given the opportunity to express and discuss his/her ideas and opinions, which must be balanced against those of others and the needs and interests of the community as a whole. Planning provides constructive opportunities for these discussions to happen and documents the decisions that are made.

Although the LHTF is town-owned, in accordance with the conservation easement on the property, its management must be planned in consultation with and approved by the easement holders (see Appendix A for contact information):

- Vermont Land Trust
- Vermont Housing and Conservation Board

Its management must also be planned in consultation with and approved by three departments of the Vermont Agency of Natural Resources (see Appendix A for contact information):

- Vermont Fish and Wildlife Department
- Vermont Department of Forests, Parks, and Recreation
- Vermont Department of Environmental Conservation

The involvement of so many different partners who are working with the Town on the management of the LHTF makes it especially important to communicate and document exactly how the property will be used and managed. Management of the LHTF will present many opportunities for collaboration across disciplines and will require the Town to work closely with the Conservation Partners listed above, as well as other experts.

The natural features and communities at the LHTF are extraordinarily diverse; they include a wide-array of forest types, fields and meadows, streams, the LaPlatte River, and wetlands. Therefore, many different land managers, including foresters, wetland specialists, wildlife biologists, trail maintainers, and farmers, are likely to conduct and need to coordinate management activities at the LHTF. Since all of these features and communities are interconnected, wildlife habitat management, for example, cannot be conducted independently of forest or recreation management. This management plan provides important coordinated guidance for each of these land managers in their area of interest and expertise.

At any one moment in time, many people will be using the LHTF and will be involved its management. Over time, as there are changes in municipal staff, elected officials, agency personnel (such as County Foresters and state wildlife biologists) and in the citizenry of Hinesburg itself, this number will grow. As a result, many different people will look to this plan to provide direction for the use and management of the LHTF. The more people involved, the more important it is to create a clear and comprehensive plan.

### **What is a management plan?**

At a minimum, a management plan is a written, comprehensive document or series of documents that:

- Defines landowner(s)' management goals and objectives.
- Describes the land (including maps).
- Outlines and prioritizes specific management actions.
- Addresses how these actions will act to meet the management goals and objectives.

Management plans come in many different formats, depending on how they will be used and by whom. Plans that are created and used solely by professional foresters may be very brief with little background and a lot of technical information. However, plans intended to be interpreted and used by a diverse audience, such as this one, must include extensive background information and explanation.

The format of a plan also depends on the piece of land itself and its ownership. Historically, management on town forests in Vermont, such as the Hinesburg Town Forest, has focused on management for revenue from timber, as well as on recreation and wildlife habitat. However, in many ways, the LHTF defies the traditional model of a Vermont town forest since it was only recently acquired by the Town, is still mostly open land, and was conserved specifically because of some of its unique natural features, including habitat for the endangered Indiana Bat. Since forest management is only one of the diverse goals for the LHTF, this management plan also defies the traditional model of a forest management plan by incorporating many other goals and objectives, several of which take precedence over forest management.

Since forests are dynamic, changing systems and our knowledge about how they function is constantly evolving through scientific research, management plans are typically updated every 10-15 years. In accordance with the conservation easement (Appendix A), this plan must be updated every five years.

## **How is this plan designed to be used?**

Overseeing the management of the LHTF is ultimately the responsibility of the Hinesburg Select Board. This plan is an official document that has been approved by the Select Board, as well as required partners, and will direct the decisions that this governing body makes regarding the future of the LHTF. This plan recommends that a permanent LHTF Management Committee be appointed by the Select Board and be charged with implementing this plan and taking the leading role in on-going stewardship of the LHTF.

As a whole, this management plan is meant to be read and used by anyone who uses, manages, or is generally interested in the LHTF, including:

- Public officials and employees
- Land managers
- Teachers
- Students
- Private landowners
- Hikers, bikers, walkers, naturalists, hunters etc. – anyone who uses and visits the Forest

This plan could also serve as a useful model for other municipalities, as well as individual private landowners.

### ***Section I: Vision, Goals, and Background***

This section is meant to be used as a reference or resource by anyone interested in the LHTF or involved in its management, and includes:

- Vision and goals
- Permitted and restricted uses
- Background and description of the property

It is meant to guide future management decisions regarding the LHTF. It would be impossible to prescribe now how all the specific issues, conflicts, questions, and decisions that will arise over time should be dealt with. The information in this first section of the plan is designed to guide – not prescribe – any future decisions that need to be made. All choices should be evaluated relative to the purposes of the easement, permitted and restricted uses, vision and goals, and what is currently known about the Forest. This section is designed to be relatively timeless, although vision and goals for the LHTF may evolve over the years with changes in scientific understanding and management practices, as well as in the characteristics and values of Hinesburg's community.

### ***Section II: Objectives, Guidelines, and Actions***

Section II is more specific and technical, and provides objectives, management guidelines, and actions within each of the following areas:

- Landscape Connections
- Education and Community Uses
- Forests and Wildlife
- Water and Wetlands
- Recreation

- Agriculture

These sections provide more detailed guidance on how to reach the broad goals in the first section through specific management objectives, guidelines, and actions in each of these areas. These sections give the Town and professionals the specific information they need to coordinate and implement treatments or activities that work to meet the long-term goals and objectives outlined in the first section.

### ***Section III: Summary of Actions***

This section summarizes, prioritizes, and provides a potential schedule for the actions described in each of the areas in Section II.

### ***ACQUISITION OF THE LAPLATTE HEADWATERS TOWN FOREST***

The acquisition and conservation of the 301 acres of forestland, fields, wetlands, and riparian areas along the LaPlatte River that is now the LHTF was part of the LaPlatte Headwaters Initiative on the Bissonette Farm led by the Hinesburg Land Trust (HLT) and Trust for Public Land (TPL). Encompassing 627 acres south of Hinesburg Village, the LaPlatte Headwaters Initiative conserved a classic Vermont landscape of prime farmland, rolling wooded hills, open meadows, and rich wetlands. The size and diversity of the farm offered the opportunity to achieve multiple conservation and community goals.

The initiative commenced in 2004 when the HLT began discussions with Wayne and Barbara Bissonette about possibilities for conserving one of the largest undeveloped tracts remaining in Hinesburg. Over the following three years, the HLT developed partnerships with the Vermont Land Trust (VLT) and TPL in order to find funding to purchase the 627-acre farm. The acquisition of the LHTF (with an appraised value in 2007 of \$1,210,000) was funded with major grants from the Vermont Housing and Conservation Trust Fund, US Fish and Wildlife Service Recovery Land Acquisition Fund, Vermont Clean and Clear Action Plan, and Wayne and Barbara Bissonette. The Town of Hinesburg also contributed directly to the funding of the project with a \$100,000 appropriation voted at the 2007 town meeting, which helped leverage both public funding and additional private donations.

The LHTF was officially granted to the Town of Hinesburg from the VLT and Vermont Housing and Conservation Board in 2007. The VLT and the Vermont Housing and Conservation Board still hold a permanent conservation easement on the LHTF (Appendix A).

### ***PLANNING PROCESS***

#### **Conservation Easement**

VLT and VT Housing and Conservation Board hold a conservation easement on the LHTF (see Appendix B). This easement states that the Town of Hinesburg is responsible for the management of the Town Forest, which includes creating this management plan. The permitted and restricted uses outlined in the conservation easement are described within *Permitted and Restricted Uses* in Section I of this plan.

## **Clean and Clear Funding for Wetland Restoration**

The 301-acre LHTF includes approximately 120 acres of land identified as riparian wetlands and over one mile of the LaPlatte River and tributaries. State of Vermont Clean and Clear Action Plan funding was provided to:

- Conserve the headwaters of the LaPlatte River through protection of a river corridor that will allow restoration of the river's natural meander and fluvial morphology;
- Restore approximately 120 acres of riparian wetlands;
- And protect water quality and a drinking water source for Chittenden County through permanent protection of the river corridor and protection and restoration of wetlands.

A requirement of the Vermont Clean and Clear Action Plan funding for acquisition was to identify and secure funding to implement the restoration of the wetlands and river. This restoration planning and funding is being provided through an agreement with the US Natural Resources Conservation Service (NRCS). The Town of Hinesburg signed an agreement with NRCS in the summer of 2008 and work began during the summer of 2009.

## **LaPlatte Headwaters Town Forest Management Planning Committee**

The Town of Hinesburg was charged with creating this Management Plan that defines the philosophy for the ongoing management of the LHTF. This charge is part of the Town's conservation agreement with VLT, the Vermont Housing and Conservation Board, TPL, the Vermont Fish and Wildlife Department, the Vermont Department of Environmental Conservation, and the Vermont Department of Forest, Parks, and Recreation. In order to fulfill this obligation, the Select Board requested that the HLT assist in creating a committee to oversee the development of this management plan. The HLT created the committee, which began meeting in April 2008.

### ***Planning Committee Mission***

- Oversee the creation of a final management plan for the LHTF by December 2009.
- Seek input from Hinesburg residents through (1) a public process and (2) meeting with recreation user groups.
- Collaborate and communicate with experts.

### ***Representatives***

The HLT assembled a committee consisting of: Kristen Sharpless (Chair) and Matthew Probasco (Assistant Chair) of the Conservation Commission; Susan Mead (Secretary), Andrea Morgante and Paul Wiczoreck of the HLT; Jean Isham of the Planning Commission; Lenore Budd and Stewart Pierson of the Trails Committee. Matthew Probasco, Paul Wiczoreck, and Susan Mead stepped down half way through the process and were replaced with Timothy Clancy (Planning Commission) and Lisa Godfrey (LaPlatte Watershed Partnership).

### ***Public Walks on the LaPlatte Headwaters Town Forest***

The LHTF Management Planning Committee organized several public walks on the LHTF in order to provide opportunities for the public to explore the land, to learn about its unique

features and issues, and to express their questions and ideas to the Committee. The following walks were held on the LHTF during the spring, summer, and fall of 2008:

- *Family Woodland Walk* – Sunday, May 18. Led by Kristen Sharpless, Teacher/Naturalist.
- *Grassland Birds: Ecology and Land Management* – Thursday, June 12. Led by Mark LaBarr, Conservation Biologist, Audubon Vermont.
- *Bats: Ecology and Forest Habitat Management* – Thursday, August 21. Led by Scott Darling, Wildlife Biologist, Vermont Fish and Wildlife Department and Mike Snyder, Chittenden County Forester.
- *Rivers and Wetlands: Form, Function, and Restoration* – Saturday, September 21. April Moulart, Wetlands Restoration & Protection Specialist, Vermont Fish and Wildlife Department and Gretchen Alexander, River Specialist, Vermont Department of Environmental Conservation.
- *Recreation Issues* - Saturday, September 27. Led by Dan Kilborn, Vermont Land Trust Stewardship Forester and Mike Snyder, Chittenden County Forester
- *Stories from the Forest* – Saturday, October 18. Led by Mike Snyder, Chittenden County Forester.

These walks were advertised with fliers, on Front Porch Forums, on the Town website, through mailing lists, and with personal phone calls and letters. About 10-20 people attended each walk, including children.

### ***Public Input***

#### *Articles in the Hinesburg Record*

Beginning in the spring of 2008, members from the Committee submitted informational articles to the *Hinesburg Record* about the LHTF and the management planning process. Each article encouraged members of the public to get in touch with members of the Committee with questions or concerns.

#### *Naming the Town Forest*

*Hinesburg Record* articles also encouraged members of the public to brainstorm ideas for a name for the Town Forest and to share them with members of the Committee. At a June 3, 2008 celebration of the conservation of the entire Bissonette Farm, people attending were encouraged to write down suggestions for a name for the Town Forest. Many ideas, particularly from children, were received. The LHTF Management Planning Committee discussed possibilities for the name and provided multiple additional opportunities for Hinesburg residents to provide their input, including at the October 2008 public forum and at Town Meeting in 2009. In the spring of 2009, the Committee made a recommendation to the Select Board that the official name be the LaPlatte Headwaters Town Forest. This name reflects both the ecological and community values for which this property was conserved as public land. The name was accepted by the Select Board.

#### *Public Forums*

A forum to provide the public with general information about the LHTF and to receive input on the vision and goals was held at the Hinesburg Community School in October 2008. Another forum was held in October 2009 to share and receive feedback on Sections II and III of the plan.

*Discussion on Recreational Uses*

Representatives of different recreational user groups, including horseback riding, mountain biking (Fellowship of the Wheel), snowmobiling (VAST), and hunting, were invited to provide targeted feedback on the objectives, guidelines, and actions in Section II of the management plan related to recreation in writing or in person at a June 2009 meeting with the LHTF Management Planning Committee.



## SECTION I: VISION, GOALS, AND BACKGROUND

### *A VISION FOR THE FUTURE*

#### **Vision Statement**

The following statement is the vision of the residents of Hinesburg for the future of the LaPlatte Headwaters Town Forest (LHTF):

*The LHTF is a special place where we come to enjoy, learn from, and care for the land, its forests, streams, wetlands, and inhabitants. We will observe natural processes at work and model management activities to reflect these processes. We will monitor changes and adapt our future management in response to what we learn. All of us will have opportunities to explore the LHTF's unique and diverse natural systems and our place within them.*

#### **Goals**

The following are Hinesburg residents' goals for the management of the LHTF:

- Promote educational and community uses of the LHTF that are compatible with other management goals.
- Maintain and enhance ecological connections between the LHTF and the larger landscape.
- Allow natural processes to govern the LHTF's ecosystems and model any active management on these processes to the extent possible.
- Protect and enhance habitat for the endangered Indiana Bat and a diversity of other native species.
- Allow the LaPlatte River and its tributaries to create and adjust their natural channels and floodplains over time.
- Protect the water quality of the LaPlatte River and its tributaries.
- Restore and conserve wetlands.
- Promote and manage recreational uses that are compatible with other management goals for the LHTF.
- Demonstrate sustainable forestry practices that protect and enhance ecosystem function and health.
- Allow agricultural uses that are compatible with other management goals in designated areas of the LHTF.
- Monitor and respond to ecological changes.

## ***PERMITTED AND RESTRICTED USES***

Use and management of the LaPlatte Headwaters Town Forest must conform to the terms of a conservation easement granted by the Bissonettes to Vermont Land Trust (VLT) and the Vermont Housing and Conservation Board (VHCB) in October 2007. The Town of Hinesburg, as the new owner of the property, is bound by the terms of the conservation easement (or grant of development rights) because the easement runs with the land in perpetuity. The full text of the conservation easement is attached as Appendix B.

### **Permitted Uses**

Under the terms of the conservation easement the following uses are permitted to the extent they are consistent with the purposes of the easement:

1. **Recreation:** The Town has the right to use the property for all types of non-motorized, non-commercial recreation including bird-watching, cross-country skiing, fishing, hiking, hunting, snowshoeing, trapping, walking and wildlife observation. Snowmobiling, and non-motorized, mechanized recreation (such as mountain biking), and horseback riding may be permitted if such activities are regulated in the Management plan. Recreational uses may be more restricted within the Riparian Corridor Special Treatment Area, than on the rest of the property.
2. **Management plan Activities:** The Town may conduct activities that are reasonably necessary to carry out the purposes of the conservation easement and are permitted in this management plan. These activities may include management of vegetation and wildlife.
3. **Fields:** The Town has the right to use and maintain fields and pastures for agricultural and/or horticultural purposes, recreational, scenic or open space purposes and/or for the purpose of maintaining or enhancing wildlife habitat, unless such use conflicts with management for Indiana Bats.
4. **Forest Management:** The Town may harvest timber and conduct maple sugaring operations by tapping a minimal number of trees, but vegetation management to create a sugarbush is not permitted. The Town has the right to construct and maintain logging roads. All timber management must be in accordance with Forest and Wildlife Habitat Management Guidelines (Section II) and a project plan.
5. **Trails:** The Town may maintain trails for non-motorized, non-commercial recreational activities and may clear and construct new trails as described in this management plan.
6. **Public Events:** The Town may conduct periodic, temporary, non-commercial, community, and public gatherings and events on the unforested portion of the LHTF depicted as “Public Events Area” on the Bissonette Parcels 1 and 3 in the Baseline Documentation Report (Appendix C). Such Events Area must be provided for in this management plan.

7. **Parking Areas:** The Town may construct, maintain, and replace a permeable surfaced parking area, not to exceed 0.3 acres, at the location depicted as “Parking Area” on the Bissonette Parcels 1 and 3 in the Baseline Documentation Report (Appendix C). This parking area shall be used for such uses as are permitted in the easement. Prior written approval from VLT is required for the construction of the access drive and parking area.
8. **Septic Disposal System:** The easement allows for the construction, maintenance, repair, replacement, and use of a septic disposal system on the protected property for one single-family residence to be located on the most northerly portion of Parcel 3A as “Septic Easement to benefit Lot 3A,” on the survey entitled “Survey and Subdivision of Parcel 3 of the Lands of Wayne R. Bissonette Revocable Trust and Barbara B. Bissonette Revocable Trust, Gilman Road, Hinesburg, Vermont” by McCain Consulting, Inc., dated October 11, 2007, revised 10/18/07. The system will be constructed and maintained in the area of the protected property depicted as “Septic Easement to benefit Lot 3A” on the Survey, and as depicted on the Bissonette Parcels 1 and 3 in the Baseline Documentation Report (Appendix C). VLT must be notified and all requisite permits and approvals must be obtained prior to construction of the septic disposal system.

### **Restricted Uses**

Under the terms of the easement the following uses are restricted:

1. **General:** The LHTF shall be used for habitat conservation, wetland and river restoration, education, non-motorized and non-commercial recreation, natural area, open space, agricultural and forestry purposes only. Unless specified in the easement no residential, commercial, industrial or mining activities are permitted. No building or structures may be constructed, created, erected or moved onto the property, unless specifically permitted in both the easement and this management plan.
2. **Rights of Way and Easements:** Unless specifically permitted in the easement, or unless written approval for new easements is obtained from VLT, no rights-of-way, access easements, driveways, roads, or utility lines are permitted. Existing rights of way and easements are unaffected.
3. **Signs:** No signs, billboards, or outdoor advertising of any kind may be erected or displayed on the property. However, the landowner may erect and maintain reasonable signs indicating the name and ownership of the property, boundary markers, directional signs, memorial plaques, informational and interpretive signs, and signs limiting access or use. VLT and VHCB may erect and maintain signs designating the property as land under their protection, with the prior written permission of the Town.
4. **Trash:** The storage of trash, human waste, or unsightly material is prohibited unless VLT approves such storage in advance. No permission is required for the temporary storage of trash that is generated on the LHTF. The use of fertilizers and pesticides is allowed only with prior written approval of VLT and is to be regulated in this management plan.

5. **Excavation:** The easement prohibits filling, excavation, removal of topsoil, sand, gravel, rocks, or minerals or any change to topography unless the change is necessary to carry out the uses otherwise permitted by the easement and the uses required by the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E). Surface mining is expressly prohibited.
6. **Subdivision or Sale:** The Town may not give, grant, sell, convey, subdivide, convey in separate parcels, transfer, mortgage, pledge, lease, or otherwise encumber the property without the prior written approval of VLT and VHCB.
7. **Motor Vehicles:** Motor vehicles may not be operated on the property except for uses specifically permitted under the easement such as wildlife and habitat management, trail grooming, maintenance, handicap access, safety or emergency purposes, and such agricultural and forestry uses as may be compatible with the primary purposes of the easement.
8. **Water Resources:** The easement prohibits manipulation of natural water courses or other water bodies. No activities that would be detrimental to water purity, natural water level, or flow are permitted except as reasonably necessary to carry out the uses permitted in the easement and as may be more specifically permitted or limited under the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E).
9. **General Clause:** No use may be made of the LHTF that is inconsistent with the purposes of the easement. Proposed uses not addressed in the easement, or changes in existing uses, may be approved by VLT if they are consistent with the purposes of the easement.

### **Woodland Special Treatment Areas (STAs)**

These limitations are fully described in the Conservation Easement (Appendix B) and should be considered when any management is being planned in the Woodland STAs (Main Map).

1. **Management Goals:** Any activities planned and conducted in the Woodland STAs will focus on (1) conserving and improving maternal roosting habitat for the Indiana Bat and (2) protecting the integrity and natural species composition of the natural communities in the areas.
2. **Machinery:** No machinery will be operated within the Woodland STAs, with the exception of existing or subsequently approved roads and landings, where relocation is not feasible, or where negative impacts would be increased by relocating.
3. **Forest Management:** Forest management activities not required for improving maternal roosting habitat for the Indiana Bat or for control of exotic species are prohibited in the Woodland STAs.
4. **Agricultural Activity:** No agricultural activity shall be conducted within the Woodland STAs.

## Riparian Corridor Special Area (STA)

These limitations are fully described in the Conservation Easement (Appendix B) and should be considered when any activity is being planned in the Riparian Corridor STA (Main Map).

1. **Management Goals:** Any activities planned and conducted in the Riparian Corridor STA will focus on (1) restoring and preserving the natural values of the Riparian Corridor STA and (2) improving the natural functions of the STA.
2. **Consulting with Experts:** The Town must consult with the conservation partners (or their successors) when planning and implementing management activities in the Riparian Corridor STA.
3. ***LaPlatte River Corridor and Wetland Management Plan:*** This plan (Appendix E) addresses the planning, maintenance and cutting of vegetation, and other activities related to maintaining and improving ecological processes and must be a component of this management plan. It may be amended or altered in response to changes in conditions in the STA or the state of scientific knowledge.
4. **Agriculture:** No agricultural use (except what is provided for in the *LaPlatte River Corridor and Wetland Management Plan* – Appendix E) is permitted.
5. **Buildings and Structures:** No residential, commercial, industrial or mining activities are permitted. No buildings or structures may be installed, constructed, erected or moved into the STA.
6. **Recreational and Educational Use:** The Town has the right to use the STA for all types of non-motorized, dispersed recreational and educational purposes that are consistent with the purposes of the easement and this management plan's vision and goals. Non-commercial snowmobiling trails are permitted only as outlined in this management plan. Trails are permitted to be cleared for non-commercial horseback riding, skiing, walking, and snowmobiling as specified within this management plan or other project plans. Footpaths must appear natural and be a compact earthen surface only. Waterbars may be built as needed. Boardwalks and other trail-related structures are permitted only if details about their placement and design are approved through a project plan.

## ***LIABILITY***

Like any town owned land in Vermont, the LHTF is afforded some protection from liability under the doctrine of sovereign immunity, as well as case law. In addition, the Town has a \$2 million insurance policy for all public land and facilities. In general, the Town's insurance provider feels that a town forest creates only a low exposure to risk. Since the land is open to the public and recreational trail use is encouraged, there will be some expectation that the trails are maintained to a certain level, and this increases the liability exposure. To limit expectations, and thus liability exposure, signs at all entry points should say, "use at your own risk."

## ***DESCRIPTION AND BACKGROUND***

*The following text has been largely adapted from A Local Educator's Field Guide to Owl's Knoll that is based on a landscape inventory and assessment conducted by Field Naturalist student, Kristen Sharpless, during the summer of 2006. Owl's Knoll refers to the southern, forested part of the LaPlatte Headwaters Town Forest (LHTF).*

*A thorough inventory has not yet been done of the northern part of the LHTF (The River Parcel). Aside from a small, forested portion, most of The River Parcel is currently open, agricultural land that will be restored to wetlands as outlined in the LaPlatte River Corridor and Wetland Management Plan that was prepared by Arrowwood Environmental in June 2008 (Appendix E). Descriptive information on the LaPlatte River and the open land on The River Parcel is taken from this plan.*

*Descriptive information has also been taken from Vermont Land Trust and Nature Conservancy conservation biologist, Liz Thompson's, reports on the significant natural communities on the LHTF that were written in January 2007.*

### **Landscape Context**

The 301-acre LaPlatte Headwaters Town Forest (LHTF) is a rich and diverse area of forests, streams, wetlands, and agricultural fields, with trails and woods roads connecting to adjacent properties, lying west of Route 116 and Gilman Road and beginning one-half mile south of the village of Hinesburg. Orthophoto and topographic maps depicting the property are attached to this Management Plan.

When one looks at the Hinesburg landscape from a distance – say from a small aircraft flying the length of the Champlain Valley – one notices that the western part of the town is relatively low, and is really a part of the Champlain Valley, while the eastern part of town is hilly, belonging more to the foothills of the Green Mountains. Looking at the Champlain Valley, one is aware that much of that region is open, its fertile soils having been cleared and converted to agricultural use and kept that way until the present day.

One also notices that the LHTF, however, is unusual in the Champlain Valley as it is quite rugged in places and has large areas of forest, some of which has never (apparently) been cleared. The woods on the LHTF and the adjacent lands are vitally important as wildlife habitat and travel corridors, and they also harbor many interesting natural communities and species that are simply not found just a few miles to the east in the Green Mountains.

The LHTF also forms the headwaters of the LaPlatte River and includes some small tributaries and wetlands, as well as a longer stretch of the main body of the River where it flows through and along the northern part of the property.

## **Access**

Parking at the LHTF will be allowed at two places (Main Map). The first on the northern The River Parcel will be at a parking area on the west side of Gilman Road, approximately one-half mile south of its intersection with Route 116. This area, via a packed earth and culvert crossing of the LaPlatte River, serves as access for the Wilson property. Except for permitted management activities, vehicles must not cross over that culvert, and care must be taken not to block that access. Signs and a gate will be considered to help manage that access point.

A second parking area will be created within a six-acre parcel that is currently owned by the Hinesburg Land Trust who plans to donate the land to the Town. The future parking area is located just east of the Owl's Knoll boundary, on the west side of Gilman Road, approximately 1.3 miles south of its intersection with Route 116 (Main Map). This six-acre parcel may eventually be conserved and incorporated into the LHTF.

The LHTF is also accessible by trails on adjacent public and conserved properties that connect to those on the LHTF (Main Map).

## **Land Use History**

### ***Pre-European Settlement***

It is very likely that Native American groups, such as the Abenaki, used the land at the LHTF for hunting and possibly for other purposes, such as seasonal camps. Although no direct evidence of Abenaki presence has been found at the LHTF, it does not mean that it is not there. This is an area that warrants further exploration.

### ***Colonization and Early Agriculture (1762 - 1860)***

The land in Hinesburg was originally divided into 50- and 100-acre lots after Governor Wentworth of New Hampshire signed the charter for the Town in 1762. Settlers began purchasing these lots, moving to Hinesburg, and clearing the land for farming. Over the years, farms were bought and sold, rented, divided, and consolidated. Historical documents, such as diaries, deeds, agricultural censuses, photos and maps help us piece together the stories of previous inhabitants by providing information about who was living on the land and how they were managing it. This research can be easier to do for some pieces of land than others. Some farms stayed in the same family for generations with few changes in property boundaries. Others, such as the LHTF, have more complicated histories.

No one has yet traced the ownership of the land at the LHTF back to its original owners. However, because it is in the valley and not far from the village, it is likely that the land was settled and cleared early in the Town's history. Whereas a large portion of the LHTF is currently forested, for much of the past 200 years, it was probably open fields and pasture. It is likely that during the early and mid 1800s, its owners raised sheep for wool, which they processed at the carding mill and later sold to the woolen mill in Mechanicsville. After the region-wide decline in the woolen industry and closing of the woolen mill in Mechanicsville in the latter part of the nineteenth century, farmers in Hinesburg probably followed the regional trend of converting from raising sheep for wool to raising dairy cows.

### ***Growth and Emergence of Modern Vermont (1860 - 1930)***

The most detailed and accessible historical information for land ownership and use in Hinesburg exists for the period during the late 1800s. For this time period, it is relatively easy to reconstruct the stories of who was living on the land and what they were doing at the time by using a combination of historical records, such as deeds in the town hall and U.S. agricultural censuses, and maps, such as the 1869 *Atlas of Chittenden County*, by F.W. Beers (referred to as ‘the Beers *Atlas*’). Based on information from these sources, and remnants of old roads and stone walls found on the property, it is likely that the Owl’s Knoll falls in parts of the original Lots 16, 18, 115 and 117 as they are shown on the Beers *Atlas*.

According to the deed records at the Hinesburg Town Clerk’s Office, in the late 1800s and into the early 1900s, Michael and Margaret Gaffney farmed Lot 16. The deeds also show that during this time, the Gaffney farm was bordered by the Charles H. Weed farm to the south and west, the Noble. L. Partch farm to the west, and the O. Cogan farm to the north. The Gaffney farm probably included what is currently the hay field east of Owl’s Knoll, as well as part of Owl’s Knoll’s eastern forest. The Tenth U.S. Agricultural Census shows that, in 1879, the Gaffneys were only farming 36 acres of land. This was a relatively small farm, especially compared to their neighbors, the Weeds and the Nobles, who each owned more than 200 acres of land. The Census also shows that, in 1879, the Gaffneys, like many Vermont farmers at the time, kept dairy cows and made butter on their farm to sell in town or to ship to cities. They also grew corn, oats and potatoes for their own use, had a small orchard, and cut firewood for cooking and heating off of a woodlot on their land.

The western part of Owl’s Knoll, including the two rocky hills, could have been part of the Noble L. Partch Farm in the late 1800s. With a much larger farm than the Gaffneys, the Tenth U.S. Agricultural Census show that the Partches employed farm laborers and had enough dairy cows to sell milk to the creamery in town in addition to making butter on their own farm. The Partches also produced a small amount of maple sugar in 1879 (50 pounds), which would have been produced from a sugarbush somewhere on their property. It is possible that the sugarbush was located on the rich, steep slopes of the hills on the LHTF where there are currently many sugar maples.

We do not know what happened on the land at the LHTF in the early part of the twentieth century. One guess is that its owners continued to farm it and slowly abandoned pieces of it over time as farming generally declined throughout the state. As they were abandoned, fields and pastures would have slowly returned to forest and eventually been logged as they matured. A tree core taken from a white cedar growing on the top of one of the knolls estimated the tree to be about 90 years old. White cedars only establish in sunny, open sites. Therefore, it is possible that dairy cows were still grazing on even the steepest, rockiest part of the LHTF in the early 1900s. However, it is also possible that the hilly pasture at the LHTF was abandoned earlier and that the cedars established after a major disturbance, such as a fire, wind storm, or logging event, all of which could have created enough light on the site for the cedars to grow.

### ***The Modern Era (1930 – present)***

An aerial photo taken in 1942 shows that, by the mid-twentieth century, much of the LHTF had reverted to forest, except for the pastures and hayfields along the LaPlatte River in the

northern part of the property. The land on either side of the road that is currently the trail through Owl's Knoll was still open in 1942 as well, although the aerial photo contains a few dark patches of trees or shrubs which indicate that the land was probably abandoned shortly before that time. In the photo, there is also a building on the site, the remains of which are still visible today. This structure may have been a sugarhouse at one time as there is still a rusting evaporator pan on the site, but it also could have been used as a seasonal camp.

The 1942 aerial photo also indicates that Roy Hines had a farm on Gilman Road at this time. Although much of the Hines farm was in the fields on the east side of Gilman Road, his farm also included the eastern part of Owl's Knoll. Deeds show that Roy's neighbors Wayne and Barbara Bissonette bought the Hines farm in 2001, which included this part of Owl's Knoll.

Although we can see that Owl's Knoll had mostly returned to forest by the mid-1900s, humans have continued to play a role in its history. Based on the many stumps that are evident throughout the forest, it is apparent that all parts of the forest at Owl's Knoll have probably been logged at least once within the past century. This cutting has impacted the current forest composition and structure through the preferred removal of or management for certain species of trees.

## **Physical Site**

### ***Biophysical Region and Climate***

The LHTF lies on the eastern edge of the Champlain Valley. Therefore, the climate and weather it experiences can be very different on a seasonal and even daily basis from that in the higher foothills of the Green Mountains on the eastern side of town. On average, places such as the LHTF in the Champlain Valley experience warmer temperatures, more growing days and less precipitation than places in the higher elevations of the Green Mountains. As a result, there are several plant and animal species in Vermont that are restricted to the milder climate of the Champlain Valley. For example, bitternut hickory and white oak grow at the LHTF, but are uncommon in forests at higher elevations on the eastern side of Hinesburg.

### ***Topography***

Topographically, Hinesburg is divided almost evenly in half. The Champlain Valley makes up the western side of town and the foothills of the Green Mountains make up the eastern half. A major geologic feature, the Hinesburg thrust fault, runs in a north-south line through the middle of the town marking the boundary between the western valley and the eastern hills. This fault was formed about 350 million years ago during the closing of Iapetus Sea. The Iapetus Sea closed due to the convergence of tectonic plates. The movement of the plates created enough force to break the bedrock at the bottom of the sea and push it westwards, thrusting older rock up over younger rock. In Hinesburg, the bedrock on the eastern and western sides of the thrust fault is very different; the eastern valley, where Owl's Knoll is located, is generally underlain by softer sedimentary rocks, such as sandstones, dolostones and limestones, and the western hills are generally made of harder metamorphic rocks, such as schists and phyllites. The movement of tectonic plates created the tremendous force necessary to break, move, and, in some cases, metamorphose the bedrock.

Even though the LHTF is part of the Champlain Valley, it is not flat. The landforms on the property were formed by the same forces that created the Green Mountains and the Hinesburg thrust fault. The three main oblong, north-to-south-running hills, or knolls, at the LHTF are smaller scale versions of Mount Philo and Snake Mountain, which were formed as the bedrock in the region was thrust upward and westward.

In general, the landforms at the LHTF are defined by the underlying bedrock. There are three rocky knolls, or hills, where the bedrock is at or just below the surface on the western side of Owl's Knoll (Parcel 3) and another on the River Parcel. The topography, or shape of the land, on the eastern side of Owl's Knoll and the fields and meadows of The River Parcel is less hilly because most of the bedrock is buried deep under thick layers of mineral deposits, such as sand and clay. In this part of Owl's Knoll, the bedrock occasionally juts out as small knolls or outcrops. There are several impressive cliffs throughout the LHTF that are good places to get a closer look at the bedrock.

### ***Bedrock Geology***

The bedrock at Owl's Knoll is primarily Winooski dolostone, with some Monkton quartzite in the western part of Owl's Knoll (Parcel 3). Dolostones are relatively soft sedimentary rocks that form when shallow-sea marine creatures or bacteria deposit calcium carbonate, often in the form of shells or exoskeletons, on the seafloor as they die. The calcium carbonate layers build up over time and are eventually cemented into limestone or dolostone. Dolostone can also form from limestone as some of the calcium in the limestone is replaced by magnesium over time. The dolostone at Owl's Knoll was deposited about 540 million years ago off the shore of the ancient continent, Laurentia, in a tropical sea called the Iapetus. Monkton quartzite is a slightly older rock formation containing layers of different sedimentary rocks, including dolostone, sandstone and mudstones. If you look closely at the lighter bands of sandstone that are exposed at the south-facing cliff on the western knoll, you can see the individual grains of sand that make up the rock!

### ***Surficial Geology***

As described earlier, there are many places at the LHTF, where the bedrock is covered by layers of loose mineral deposits, or sediments. These sediment deposits, which were laid down by the forces of water, wind or glaciers, make up the surficial geology of the site. The low spots between the knolls in the western part of the property and the majority of the northern part of the property are covered by layers of fine clays and silts which are overlain in some spots by coarser sands.

Where did these sediment deposits at the LHTF come from? As in the rest of New England, glaciers have played an important and relatively recent role in defining the surficial geology at the LHTF. During the last ice age that lasted from about 2.5 million years ago to 14,000 years ago, at least a mile of ice covered the LHTF and all other places in Vermont. As the ice sheet moved south, it helped to grind down the mountains and carve out the valleys of Vermont and picked up huge amounts of different-sized sediments along the way. When the climate began to warm, the glaciers started to melt, leaving behind the sediment they had collected on the bare, rocky landscape. This mix of sediments, from boulders to clays, is called glacial till. Glacial till makes up the surficial geology of the Green Mountains

and is the source of stone that people used to build the miles of stone walls that still criss-cross the hills of Vermont today.

Glacial till was deposited in the valleys too, but it was quickly covered with other sediments. In addition to till, the glaciers released tremendous amounts of water as they melted. This water filled the valleys of Vermont creating large glacial lakes. 15,000-14,000 years ago, the Champlain Valley was flooded by Glacial Lake Vermont up to 600 feet in elevation. The highest point at the LHTF is only about 540 feet. Therefore, all of the land at the LHTF was submerged under the waters of Lake Vermont. As the glaciers continued to melt, sediments were carried into the lake by runoff and rivers. Heavier particles, such as sand, settled out close to shore and smaller, lighter particles, such as clay and silt stayed suspended in the water column until they reached calmer, deeper water, further from shore. The clay sediment layers at the LHTF indicate that the area was under relatively deep water at one time. The sandy layers over the clay were deposited in shallower water closer to shore, much like a beach (Figure 8). This pattern indicates that the water levels of Lake Vermont periodically dropped as different drainages opened up for the lake.

Perhaps you can imagine sitting on the recently-exposed rocky tops of the hills at the LHTF with the waters of Glacial Lake Vermont extending to the west. Once the lake waters receded, the clays, silts and sands that were deposited on these knolls when they were under water, probably quickly eroded off the hills' steep slopes, leaving behind larger pieces of till and exposing the bedrock. If you climb up any of the knolls on the property, you will probably find some loose pieces of rock that are not dolostone or quartzite. These pieces of stone are probably till that was eroded from another place and carried here by the glaciers.

### Soils

Because of the diverse topography and geology of the LHTF, there are also many different soils on the site (Soils Map). The following table summarizes the characteristics of the main soil types shown on the Soils Map of Owl's Knoll. For more information on each of these types, please refer to the Chittenden County Soil Survey.

**Table 1.** *The soil types at Owl's Knoll and their associated characteristics*

Soil Type	Textures/ Layers	Depth (inches)	Drainage	pH	Slope	Parent Material	Soil Survey name and code
Stony Loam	Extremely rocky mixed with loam	Shallow 17+	Excessively drained	5.5-8	Gently sloped to steep	Quartzite or Dolostone bedrock	Farmington Series (FaC and FaE)
Fine Sandy Loam	Thick layer of fine sand over silt/clay	Somewhat shallow <40 to silt/clay	Well drained	5.5	Flat to steep	Glacial Lake sediments	Hinesburg Series (HnB and HnD)
Silt Loam	Fine silty or sandy loam over clay layer	Somewhat shallow <40	Poorly drained	5.5	Flat		Munson Series (MyB) and Scantic Series (ScB)
Silt or sandy loam over clay	Silty layer over clay layer	Somewhat deep 40+	Poorly drained	4-4.5	Steep (25-60%)		Terrace Escarpment, silty and clayey (TeE)

Gravelly fine sandy loam	Loam over sand with gravel mixed throughout	Deep 72+	Excessively drained	4-4.5	Moderately sloped (12-20%)	Unsorted sediments from glacial runoff	Stetson Series (StC)
--------------------------	---	----------	---------------------	-------	----------------------------	--	----------------------

***Water and Wetlands***

Water has been, and continues to be, a defining force at the LHTF. In addition to being directly essential for the survival for all living things, water is a major transport system, carrying sediments, nutrients, seeds and animals, such as aquatic invertebrates. Because the LHTF is part of the headwaters of the LaPlatte River, the water here is only beginning its long journey downstream. The water drains down its low hills into a network of small streams and gullies that join the main stem of the LaPlatte on The River Parcel eventually flowing into Shelburne Bay 14 miles to the west. The waters in Shelburne Bay provide drinking water for more than 68,000 people in Chittenden County (Trust for Public Lands, 2006).

The LHTF’s long history of agricultural use has had a significant impact on the flow of water and on wetland communities on the property. Prior to agricultural use, The River Parcel in particular looked very different. It is likely that most of The River Parcel was, at one time, a mixture of forested, shrub, and open wetlands. However, the main stem of the LaPlatte River that flows through The River Parcel was ditched and the channel was straightened in order to drain the land for use as fields, pastures, and hay meadows. The LaPlatte River in this area was also regularly dredged to prevent flooding of the site. The result of this past activity is a series of straightened streams, a straightened and deeply incised river, and a near monoculture of reed canary grass on the property. A review of historic aerial photographs taken in 1942 indicates that at one time meandering streams crisscrossed the property. These streams likely flooded the fields on a regular basis and the LaPlatte River likely had access to its floodplain.

***LaPlatte River Geomorphology***

Stream geomorphic assessments were conducted on the section, or reach, of the LaPlatte River that runs through The River Parcel. The following paragraphs summarize the results of these studies, which are presented in more detail in the *LaPlatte River Corridor and Wetland Management Plan* written by Arrowwood Consulting in 2006 (Appendix E).

On the LHTF, the LaPlatte River is a low gradient stream running through a very broad, unconfined valley setting. This reach of the LaPlatte River appears to have been entirely straightened. There are several berms along the left bank in some areas, which were part of the effort to drain the surrounding land to create arable fields and pastures. Currently, channel sinuosity is low due to extensive straightening, although the upstream most section has some bends. The riparian buffer for this reach is in poor condition, being only 5-25 feet wide with mostly shrubs and saplings.

The straightening and resulting shortening of the river’s path acted to increase the speed of the water flowing through the riverbed since the water could not disperse into its floodplain. Faster moving water has a greater erosion force. Therefore, fast-moving flood waters

eroded the river bed deeper and deeper over time. The deepening of these channels led to the speeding-up of the flow of water through the upstream channels on the LHTF at Owl's Knoll as well, which is probably part of the cause of the on-going erosion of the stream heads at the site. This continuing erosion is particularly noticeable at the point where the trail crosses the head of the main stream at Owl's Knoll. Just downstream of the crossing, the streambed has been filled with a large number of tires. These tires were probably put into the streambed by previous landowners to slow the flow of water and reduce the rate of erosion. However, since the time that the tires were added, the streambed has continued to erode from underneath and upstream of the tires. This same erosion process is also deepening and lengthening the gullies in the forest on the eastern side of Owl's Knoll.

Currently, there is evidence that the river channel is now starting to grow wider, rather than deeper, which is part of the natural change in the channel's morphology as it evolves toward a more stable dimension, pattern and, profile where new floodplains will develop. The actions in the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E) are designed to allow this evolution process so that the river channel can return to pre-straightening equilibrium conditions more rapidly.

### ***Wetlands***

Currently, there are only a few small examples of wetlands on the LHTF: a cattail marsh at Owl's Knoll and part of a Red Maple-Green Ash Swamp on The River Parcel that extends onto an adjacent property. However, the soils in the fields and meadows of The River Parcel indicate that most of these areas were once wetlands before they were drained for agricultural use. The State *Clean and Clear* funding will provide the opportunity to restore wetlands to the riparian areas in the river corridor.

The soils present on The River Parcel suggest that a combination of natural community types was likely present prior to agricultural activity. The areas of Limerick soils (historic floodplain of the LaPlatte River) were likely dominated by riverine floodplain forests (such as the silver maple/sensitive fern forest type) and secondarily alluvial shrub swamps and alder swamps. Anecdotally, the previous landowner suggested that there were extensive alder swamps present on the property prior to hydrologic manipulations. The areas with Scantic silt loams may have been characterized by red maple/black ash swamp or possible conifer swamp. Adjacent undisturbed wetland areas are dominated by white cedar, supporting the proposal that the disturbed property may well have contained areas of conifer vegetation too.

The small area of upland soils on The River Parcel (Winooski fine sandy loam), was most likely characterized by riverine flood plain forest (such as silver maple/ sensitive fern).

It is likely that this large parcel had a combination of community types: riverine floodplain forest along the LaPlatte, alluvial and alder swamps along the meandering streams, and pockets of sedge meadow or emergent marsh in wetter depressional areas.

## Forests

### *Natural Communities*

Plant communities on a particular site change over time through the processes of succession and disturbance; this is especially true in places like the LHTF where humans have had major impacts on the forest by clearing land for agriculture and altering the forest's composition through practices such as logging. With or without human management and use, most of the forest stands that we see today will look very different in 50 or 100 years. For example, the pines in the pine plantation will die eventually and a new suite of tree species will likely establish and take over, changing structure and composition of that part of the forest.

Because conditions are ever-changing, sites are classified into natural communities based on what exists at the time of the inventory and also on the potential of the site. Classifying the forests at the LHTF into natural communities is a process that evaluates the current vegetation and physical site and makes a prediction of the type of plant community that will persist on the site over time in the absence of human disturbances, such as logging. Each natural community has its characteristic place on the landscape, such as on a hilltop or on a steep, east-facing slope.

As documented in site visits and reports by Liz Thompson, VLT Director of Conservation Biology, and UVM Field Naturalist Kristen Sharpless, in 2006 several different forested natural communities are found on the LaPlatte Headwaters Town Forest. The communities are described here, and those on Owl's Knoll, include a stand number reference, which corresponds to the stand descriptions in the following section.

### *Natural Communities of State-wide Significance and Woodland Special Treatment Areas (STAs)*

Two natural community types on the LHTF are of statewide significance: the Transition Hardwood Limestone Talus Woodlands and a portion of a Red or Silver Maple-Green Ash Swamp. These communities are significant because they are rare in the state of Vermont and they are sizable examples in good condition. Because of their significance, the swamp and several patches of the Transition Hardwood Limestone Talus Woodland are worthy of the highest level of protection possible and, as such, are protected by a Woodland Special Treatment Area clause in the conservation easement (Appendix B).

#### *Transition Hardwood Limestone Talus Woodland*

*Owl's Knoll Stand 7, and parts of stands 1, 2, 4, 5, 6, 8, 9 and 14*

This natural community is found on the steepest slopes at the LHTF, sometimes below a cliff, sometimes not. Many of these steep slopes are very rocky where calcium-rich talus is at or just below the surface. The soils on these steep, talus hillsides are unstable with frequent local slides. Where the soil is very thin and the talus and the site is regularly disturbed, the trees are large and widely scattered and in some places there are few shrubs, which results in an open, glade-like feeling. On the slopes where the soils are deeper and more stable, the trees grow tall, straight, and closer together. Depending on how much soil has accumulated, the vegetation is sparse to quite dense in places.

Common trees are Sugar Maple (*Acer saccharum*), Basswood (*Tilia americana*), American Ash (*Fraxinus americana*), Butternut (*Juglans cinerea*), Northern White Cedar (*Thuja occidentalis*), Paper Birch (*Betula papyrifera*), and Hop Hornbeam (*Ostrya virginiana*). The most common shrubs are Mountain Maple (*Acer spicatum*) and Red Elderberry (*Sambucus racemosa*). A wide diversity of herbs is present, including many that indicate enriched soils. Among these are Blue Cohosh (*Caulophyllum thalictroides*), Blue-stemmed Goldenrod (*Solidago caesia*), Broad-leaved Ricegrass (*Oryzopsis racemosa*), Plantain-leaved Sedge (*Carex plantaginea*), Bulblet Fern (*Cystopteris bulbifera*), Clearweed (*Pilea pumila*), Common Maidenhair (*Adiantum pedatum*), Early Meadow-rue (*Thalictrum dioicum*), False Melic (*Schizachne purpurascens*), Herb Robert (*Geranium robertianum*), Interrupted Fern (*Osmunda claytoniana*), Jack-in-the-pulpit (*Arisaema triphyllum*), Yellow Jewelweed (*Impatiens pallida*), Wild Ginger (*Asarum canadense*), Wood Nettle (*Laportea canadensis*), and the uncommon plants Walking Fern (*Asplenium rhizophyllum*) and Back's Sedge (*Carex backii*).

This natural community will be managed as a natural area, with minimal human intrusion. Fortunately, these areas can be easily enjoyed from the bottom of the slopes with no need to build trails through their fragile soils.

#### *Red or Silver Maple-Green Ash Swamp*

A portion of a Red or Silver Maple-Green Ash Swamp occurs on The River Parcel and continues onto an adjacent property. This natural community occurs in a wet depression near the meadows where its soils are flooded during the spring and remain saturated during the rest of the growing season. It is also of statewide significance and warrants special protection.

#### *Other Natural Communities*

##### *Northern Hardwood Forest*

###### *Owl's Knoll Stand 3*

The northern hardwood forest, dominated by maple, birch and beech trees, is by far, the most common natural community throughout Vermont, especially in cooler, moister, poorer sites, such as the eastern hills of Hinesburg. However, this natural community becomes less common in the Champlain Valley where yellow birch and American beech are often outcompeted by southern tree species, such as hickory and oak that are better adapted to milder climates and tree species that are well-adapted to rich sites, such as basswood.

##### *Mesic Maple – Oak – Ash - Hickory Forest*

###### *Owl's Knoll Stands 4 and 5*

The mesic maple-oak-ash-hickory forest is more common in the milder Champlain Valley than in the colder hills and mountains of Vermont. On these valley sites, beech and birch, which are common in Northern Hardwood Forest natural communities, tend to be out-competed by more southern species, such as hickory and oak.

##### *Clayplain Forest*

###### *Owl's Knoll Stand 16*

This natural community probably dominated the forests of the Champlain Valley before extensive land-clearing. However, because this natural community grows on fertile, clay soils, the sites it would grow on have continued to be used as farmland in the Champlain

Valley, making clayplain forests very rare in Vermont today. The silty-clayey soils that the pine plantation is currently growing on would support a variety of oak species, as well as hickories and hemlock. However, because the pine plantation is so different from what probably grew on the site before the land was cleared and then re-planted and no oaks currently grow on the site, it is difficult to know what plant community would eventually establish on the site after many years. However, based on the soil type, topography and climate, the clayplain forest is a reasonable guess.

*Hemlock - White Pine – Northern Hardwood Forest*

*Owl's Knoll Stands 10, 12, 13 and 15*

The fine sandy, well-drained soils make it likely that white pine will persist in these forests along with northern hardwood species such as red maple and birch that can tolerate less-rich soils. Hemlock also seems to do well on the site and can persist for long periods of time in the shade of other trees. Because these sites are all north-west facing, they may be slightly cooler than other places on the property, which favors hemlock.

*Hemlock – Northern Hardwood Forest*

*Owl's Knoll Stand 14*

This variant of the northern hardwood forest is similar to the one listed above, but does not include white pine. Because this site contains numerous shaded gullies, hemlock is likely to be favored over pine. In addition, these gullies have exposed deeper silt and clay layers below the sandy soils that are mapped in these areas. Hemlock tolerates these heavy, poorly-drained soils much better than pine.

***Current Forest Types or Stands***

Classifying forests by natural community type does not always reveal important differences in their current condition since human or natural disturbance can lead to the creation of many different forest types – or stands – within a single natural community. For example, one section of a northern hardwood forest can be logged creating a new sub-unit, or stand, with a species composition and structure that is different from the rest of the forest.

Field Naturalist, Kristen Sharpless, conducted a forest inventory of Owl's Knoll in 2006 and delineated the forest into stands based on the following characteristics:

- Plant characteristics
  - Tree species composition
  - Age, size and spacing of trees
  - Shrub and herbaceous species composition
  - Proportion of living to dead trees (including standing snags, downed logs, brush piles etc).
- Physical site characteristics
  - Slope of the land (flat, gradual, steep, vertical)
  - Aspect (north, south, east, west)
  - Bedrock and surficial geology
  - Soil type
  - Hydrology

**These stands were delineated for educational rather than management purposes in order to highlight the diversity of forest types at the LHTF. The boundaries of these stands may be changed based on the goals and objectives in this plan and once the entire forest, including that on The River Parcel, has been inventoried.**

*Stand 1 – Young Beech Grove*

This stand is comprised almost entirely of young beech trees growing densely together. It occurs in a small saddle between the southern calcareous cliffs and rocky rise up the ridge on the western knoll. Beech stumps and scarring at the bases of the remaining larger trees are evidence of past logging about 10-20 or more years ago. It is likely that the beech poles sprouted from the stumps and roots of the trees that were cut down. Many of the young trees are bent over, perhaps due to a heavy, wet, snow in October 2005. Moose scat and a tree with the bark rubbed off were present, as well as many songbirds.

*Stand 2 – Dry Sugar Maple – Hophornbeam – Ash Hilltop*

There is a gradual transition from the dominance of American beech in Stand 1 into greater tree species diversity farther up the ridge into Stand 2. The trees become spaced farther apart, the beech saplings disappear, and larger trees show signs of wind damage and stunted growth. Unusually large hophornbeams are present, along with sugar maple and white ash. The large size of some of these trees (including a particularly impressive red oak with a diameter of over 30 inches), lack of stumps, and lack of access trails or roads seem to indicate that logging has not happened here recently. Maidenhair spleenwort, an unusual rich site indicator, was found on a rock outcrop near the ridge top, along with blue-stemmed goldenrod, another rich site indicator. The soil becomes increasingly dry farther upslope. Old bear sign (claw marks on a tree) was found within this stand along with lots of animal trails and sign (deer and moose scat) and birds (woodpeckers, raptors and song birds). Large land snails and millipedes were also spotted here.

*Stand 3 – Young Beech – Red Maple Lowland*

Young beech and red maple trees are dominant in this stand along the western stream. The site appears to be more influenced by the stream than by the steep slope on its western boundary. The soil has a relatively acidic pH, but there are rich-site indicators, such as wild leek. Stumps are present. The stand may have been logged about 15-20 years ago. Many of the young red maples, and some basswoods have multiple trunks, which likely sprouted from stumps left after the logging or after heavy grazing by moose or deer. The soils appear silty to clayey, which could be due to sediments that are deposited by occasional flooding of the stream or were deposited much earlier at the bottom of Glacial Lake Vermont.

*Stand 4 - Southern Hardwoods Forest*

This southern hardwoods lowland surrounds the base of the eastern knoll on the north, west and east sides. The north side contains a fairly uniform combination of sugar maple, white ash, red oak, and bitternut hickory trees. The western side includes a noticeable mix of northern hardwood species including American beech and yellow birch. This portion of the stand is adjacent to the trail, which is an old woods road, so it is likely that some of these species have been selected for by past logging events. The southern portion of the stand transitions to a rock outcrop and rich site indicators become more present in the herb layer. A stream marks a portion of the western boundary of the stand and includes many eastern

hemlock trees growing along the shady, wet riparian area. Small-scale rock outcrops and boulders throughout the stand support a variety of rich site indicators.

*Stand 5 – Young Southern Hardwoods Grove*

This young grove of trees on the western portion of the property has a species composition and physical site characteristics similar to Stand 4, but is in an early stage of stand development; the trees are younger, smaller, and more densely-spaced.

*Stand 6 – Rich Sugar Maple – Ash Hillside*

This rich sugar maple – ash hillside faces east, which is cooler and moister than west-or south-facing sites. In addition to being moist, the soils in this stand have a high pH due to the constant movement of minerals and decaying organic matter down the steep slope. This site has the classic rich northern hardwood forest “look” of tall, well-spaced, straight sugar maple trees, including some white ash and basswood, with a green herbaceous layer of impatiens, nettles and other rich-site indicators. Given the high concentration of sugar maples in this stand, it is possible that, historically, this stand and Stand 7 were part of a sugarbush. On the flatter part of the hillside on the west side of the trail, species that have higher tolerances for poorer soils, such as beech, yellow birch, and red maple, are also present.

*Stand 7 – Rich Sugar Maple – Beech Hillside*

Stand 7 is very similar to Stand 6. The most noticeable difference in the southern part of the stand is that American beech makes up a significant part of the overstory.

*Stand 8 – Dry Sugar Maple – Hemlock Hilltop*

Stand 8 is very similar to Stand 2, but has a higher diversity of overstory species. Hemlock also makes up a significant portion of the under- and overstory, probably due to the proximity of larger hemlock trees growing on the lower slopes nearby. Northern white cedar is present in significant numbers, but many of the trees are dead or dying and there are very few seedlings present, probably because this species does not grow well in the shade of other trees. A white cedar cored on the site contained about 90 growth rings, indicating that the tree established around 1915. This could be around the time when the hilltop was abandoned as pasture and allowed to regenerate, or perhaps there was a large disturbance event, such as a fire that cleared out the overstory, allowing the cedars to begin growing. A few individuals of two species that were not found anywhere else at Owl’s Knoll are in this stand: white oak and butternut. The understory is sparse and comprised mostly of sedges.

*Stand 9 – Hemlock – Maple Lowland*

This stand marks a transition between several stands: the pine plantation, the southern hardwoods lowland, and the rich northern hardwood hillside. Although this stand contains tree species from all of these stands, it also contains a large number of hemlock trees. There are many hemlocks growing along the stream on the eastern boundary of the stand, which could be the seed source for this stand.

*Stand 10 – Red Maple – Hemlock Hillside*

Although there are a few big white pines on this site and there were probably more in the past, red maple and eastern hemlock currently dominate this stand. These species are more

likely to persist on this site in the absence of a major disturbance that might open up the canopy to let in enough light for white pine seedlings to establish. The understory is sparse without any rich-site indicators.

#### *Stand 11 – Cedar – Pine – Hardwood Hillside*

Northern white cedar and white pine trees make up a significant proportion of the overstory, but are not regenerating in the understory. Large, forked pines are probably remnants of early succession from old pasture. Sugar maple, white ash, and basswood appear to be starting to take over in the canopy. These species thrive on the high pH, calcium-rich soils of this site, which are further enriched on steep slopes where nutrients and minerals are constantly moving downhill. Hemlock is likely to persist on the shaded, northwest-facing slopes. The site is impacted by its proximity to the hay meadow and appears to have a long history of disturbance by humans. Wildlife probably use this area as an edge habitat. There is an apple tree in the stand that is being over-grown and shaded by other trees.

#### *Stand 12 – White Pine – Sugar Maple Forest*

This stand has been cut much less recently than Stand 13, which was logged in 2001. White pine is still dominant in the canopy and appears to grow well here. Sugar maples are also more numerous here than in Stand 13, perhaps because there are more dolostone rock outcrops near the surface that locally enrich the soil. A cored pine on the eastern edge of the stand near the meadow was estimated to be about 58 years old, which means that they established around 1948. This estimate is consistent with historical aerial photos from the time; the area is still cleared in a 1942 photo, but has revegetated by 1960.

#### *Stand 13 – Logged Red Maple – Hemlock – Sweet Birch Woodland*

Stand 13 is the most recently logged part of the forest at Owl's Knoll; it was cut in 2001. Based on the remaining stumps and the county forester's records, it appears that white pine was the primary species removed. There are still a few tall, white pines left on the site, but most of the remaining canopy trees are red maples, hemlocks and birches. The forest floor is thick with ferns, brambles, and seedlings growing in the light coming in through the open canopy.

#### *Stand 14 – Hemlock Gullies*

This stand encompasses the majority of the northeastern portion of Owl's Knoll. Hemlock dominates in the overstory, especially in the damp shade of the several gullies that run through the site, although hardwood species are present as well. The soils are variable because the gullies cut through surface sandy layers into deeper clayey layers. Generally, pH is low and the soils appear to be poor. Rich-site indicators only appear on the bedrock outcropping at the western edge of the stand. Past human activity in the waterway further downstream (primarily ditching and stream straightening) has led to a deepening of the channel in general and led to the creation and continuing erosion of the upstream gullies on this site.

#### *Stand 15 – Logged White Pine Plantation*

This area was probably logged 2-3 years ago, around the same time as Stand 13. The cutting process decreased the density of trees, letting more light into the understory. The remaining trees are tall and thin, with small crowns, indicating that the trees were originally very densely

spaced, or that the remaining trees were growing in the shade of larger trees that were removed. The understory is thick with ferns, brambles, and seedlings that are taking advantage of the increased light availability.

#### *Stand 16 – White Pine Plantation*

The white pines in this stand were planted, probably in an abandoned field. A cored pine in this area showed 44 rings. This age is consistent with the fact that the pines are just visible in a 1960 aerial photo. Currently, the trees in the eastern portion of this stand are very densely spaced with no understory regeneration. The western portion of the stand south of the woods road contains larger trees that are less densely spaced; perhaps this area was thinned, or is simply older.

#### ***Invasive Species***

Non-native invasive plant species are a concern for the future health and function of the forested and wetland communities at the LHTF. These plant species, such as European honeysuckle and reed canary grass, establish quickly on disturbed sites, outcompete native species, and often degrade the quality of habitat for many native wildlife species. They also often spread quickly and can be very difficult to manage and remove once established. Currently, it appears that most of the forested areas of the LHTF have not yet been dominated by invasive plant species, as forests in other parts of the Champlain Valley region have. However, several of these species, including European honeysuckle species and buckthorn, have been noticed, particularly along the edges of the fields and trails, and in the pine plantation at Owl's Knoll. Further work needs to be done to document other invasive plant species that may be present and the location of invasive plant species at the LHTF and on adjacent properties that can serve as seed sources. A plan must be developed for invasive species management and monitoring.

#### **Wildlife and Habitat**

##### ***Indiana Bat: An Endangered Species***

*The following text is adapted from the Indiana Bat Management Guidelines the full text of which can be found in Appendix D.*

This Indiana Bat was found by Vermont Fish and Wildlife Biologists on the LHTF property during the summer of 2006. The Indiana bat (*Myotis sodalis*) is a state and federally endangered bat the size of one's thumb and weighing less than three pennies (~ 7 grams). Like most bats in Vermont, Indiana bats are long-lived (> 20 years) and produce only a single pup each summer. Indiana bats are found throughout the central and northeastern United States.

Throughout its range, the Indiana bat occupies a patchy landscape of forest woodlots and agriculture, like those on the LHTF. The bat roosts and forages within the forested portions of its range.

##### *Population Abundance and Distribution in Vermont*

Research since 2001 indicates that the Champlain Valley of Vermont provides important summer range for Indiana bats. Female Indiana bats have been tracked from a New York

hibernaculum containing 9000 Indiana bats to several sites in the Champlain Valley, ranging from Orwell to Hinesburg. By 2007, a total of 10 maternity colonies (some with more than 300 individuals/colony) have been identified in Vermont. These colonies make up New England's only known summer maternity range, and include one of the largest known maternity colonies across the species' range.

Ensuing surveys have also captured male Indiana bats as far south as West Haven. Surveys conducted outside of the known distribution, yet still within the Lake Champlain Valley and Valley of Vermont Biophysical Regions have not located any Indiana bat maternity colonies.

Recent hibernacula surveys have identified a small number (472) of Indiana bats in three caves/mines in the towns of Manchester, Dorset, and Brandon.

Since 2008 White-Nose Syndrome (WNS) has caused significant decline in Indiana Bat populations in the Northeast. Recovery of the species requires diligence in the conservation and enhancement of Indiana Bat habitat. In particular, habitat on the LHTF will be critical to restoring the species to its recent distribution.

#### *Endangered Species Status*

The Indiana bat was first officially listed as federally endangered in 1967 (the bat was officially listed as one of Vermont's first endangered species in 1972), several years prior to the establishment of the federal Endangered Species Act (ESA). Since that time, Indiana bat populations have continued to decline from an estimated 600,000 to now less than 350,000 animals. It is notable that populations continue to decline in the southeastern United States, but have been stable or slightly increasing here in the Northeast. Furthermore, the Indiana bats found in the Northeast may be very important to the species recovery given two facts – 1) Vermont is at the species' northeastern-most edge of its range and 2) Indiana bats in the Northeast appear to be genetically distinct from other portions of the species' range.

The bat is protected from taking (i.e., harming, killing, harassing) both at the federal and state levels. Although the Vermont endangered species law specifically exempts normal silvicultural practices, the US Endangered Species Act does not. (Note: the Public Service Board Order regarding chip harvesting for energy does require endangered species takings and habitat to be addressed). The forest management activity most vulnerable to killing Indiana bats is the cutting of trees within which bats are currently roosting. There are numerous reports of northern long-eared bats found within felled trees.

#### *Habitats*

The Vermont Fish and Wildlife Department recognizes two specific critical habitats that are important to the survival and productivity of Indiana bats: hibernaculum habitat and maternity colony habitat. Maternity colony habitat is the only habitat located on or near the LHTF and is described below.

#### *Maternity Colony Habitat*

Until recently, little has been known about the summer habitat of Indiana bats. Female Indiana bats emerge from hibernation and travel, potentially great distances, to their summer range. Bats emerge with stored sperm, and quickly become pregnant. The females appear to

migrate to their maternity habitats, although they are initially more dispersed, and gather into larger maternity colonies as parturition approaches. In Vermont, maternity colony habitat appears to be focused in the southern portions of the Champlain Valley, where the lower elevations provide for warmer, drier summer seasons. The forests at the LHTF provide the northernmost known maternal colony habitat in Vermont.

Maternity colonies congregate in primary and secondary (the latter often termed “alternate”) roost trees. The primary roost trees are generally occupied by many bats (as many as 200+ in some cases). Research from Vermont and elsewhere on the characteristics of primary and secondary roost trees indicate that they are:

- Live shagbark hickory or black locust trees, or dead or dying trees (in the earlier stages of decay) of any species
- Possess exfoliating bark under which bats roost
- Greater than 8-10 inches dbh
- Dominant or co-dominant in the forest stand
- Receive some level of direct solar radiation
- Generally within 20 feet of forested cover

On the LHTF, Indiana bats have been captured using mist nets in the pine plantation area of Owl’s Knoll in 2006 and 2008, and a roost tree was documented in another part of the forest near the plantation (Indiana Bat Survey Report, July 2007). In 2008, Vermont Fish and Wildlife Department biologists documented a colony of 300+ bats in a roost tree near the LHTF.

Research from other areas also indicates that the roost trees are often clustered on the landscape, and may exist in areas having a good supply of snags. It is also noteworthy that directly after emergence, female bats have been found to roost in trees as small as 8 inches dbh.

One element of maternity colony habitat is suitable foraging areas where bats feed on insects. Radio telemetry work in Vermont suggests bats forage within approximately 2.5 – 2.75 miles of their roost trees. There is little published information on the importance and characteristics of quality foraging habitat in and around the maternity roost trees. However, research does indicate that Indiana bats prefer to forage and travel in forested stands and along forest edges/hedgerows. Open fields are generally avoided during foraging activity.

General forest bat research suggests that high quality foraging habitat is a relatively open stand condition below a main canopy of small sawtimber and larger size classes. Mature and over-mature uneven-aged stands that exhibit structural diversity and occasional gap openings can provide similarly high quality roosting and foraging habitat. In contrast, stand-wide sapling to pole size classes are less favorable as these limit bat flight and foraging to the stand edge or above the canopy. While it is not necessary for the entire Town Forest to be dedicated to suitable roosting and foraging habitat, it is important that these habitats are available in an interconnected network of forest patches and riparian areas.

### ***Other Wildlife Species***

Although a systematic wildlife inventory of the entire LHTF has not yet been undertaken it is known to be the home of a diversity of other wildlife species including mammals, birds, amphibians, reptiles, insects, and other invertebrates. A list of potential and confirmed wildlife species was generated by Kristen Sharpless in 2006 during her fieldwork on Owl's Knoll and is recorded in Appendix F of *A Local Educator's Field Guide to Owl's Knoll*. Audubon Vermont conservation biologists Steve Hagenbuch and Mark LaBarr also conducted a forest, grassland, and shrubland bird habitat assessment of the LHTF during 2008 (Appendix F). This assessment summarizes the importance of Vermont's habitats for breeding birds, identifies some key responsibility species that should be the focus of conservation and habitat enhancement efforts, lists species identified at the LHTF, and makes some management recommendations for how to enhance habitat on the LHTF.

### ***Landscape Context and Connectivity***

Since wildlife do not observe property boundaries, in general, it will be important to consider the LHTF's place within the larger landscape and how it connects to other habitats within the area and region when thinking about wildlife habitat management. Many of the wildlife species documented on the LHTF only spend part of their lives on the property and must travel to other areas during seasonal migrations, to forage for food, to mate, and/or to disperse.

### ***Stand-Level Habitat Features and Attributes***

A comprehensive inventory and assessment of wildlife habitat has not yet been conducted at the LHTF. When designing a wildlife habitat inventory and assessment is or proposing forest management activities, consider the following habitat features and attributes:

#### *Horizontal and Vertical Forest Structure*

Vertical forest structure refers to the presence of different forest layer including: litter layer, ground or herb layer, shrub layer, understory, midstory, and canopy. Horizontal forest structure refers to the presence of patches of forests in different successional stages across the landscape (i.e. regenerating forest patches next to mature forest patches). Wildlife species use different layers of the forest and different age classes for foraging, nesting, and denning. Therefore, a diverse forest structure is likely to support a diversity of wildlife species.

#### *Early successional habitat*

Early-successional habitat has a canopy closure of <30% and is primarily comprised of shrubs and saplings. It provides nesting and foraging habitat and cover for a diversity of wildlife species, including forest song birds and bats. A small patch of early-successional habitat was created by recent logging near the small wetland at Owl's Knoll. A chestnut-sided warbler, which breeds in early-successional forest, was heard singing in this area during the summer of 2008 (Audubon Habitat Assessment, Appendix F).

Regenerating floodplain forest in the River Parcel will likely provide more early-successional and shrubland habitat over time.

### Closed-canopy/ Mature forest habitat

Most of the existing forest at the LHTF is currently closed-canopy, although many areas are in a successional stage where there is little understory or regeneration. Closed-canopy forests with a dense understory are particularly important for several breeding forest birds that are common within our region, but whose populations are declining globally (i.e. black-throated blue warbler, which has been documented at the LHTF, Audubon Habitat Assessment, Appendix F). Other bird species, such as the scarlet tanager, nest and forage in the forest canopy.

### Native Plant Species Composition

Wildlife species rely directly and indirectly on native plants for food and shelter. For example, yellow birch supports a diversity of native insects and is the preferred foraging tree species for many songbirds in the northern forest. Diverse, healthy, native forest communities are most resilient to disease and pest outbreaks, and as a result provide the best habitats for wildlife species. See the *Forest Stand* and *Natural Communities* sections for descriptions of the forest types and communities at the LHTF.

### Downed Woody Material, Snags, and Cavity Trees

#### Downed Woody Material

Downed woody material includes logs, large limbs, stumps, upturned roots, and smaller branches that have fallen to the forest floor and are in the process of rotting. Leaves, small branches and limbs quickly recycle nutrients back into the soil and can help improve water quality by trapping sediments and reducing erosion. Larger rotting logs and stumps decay more slowly and are used by wildlife for nesting and cover, thermal and drought refuges, places to find and store food, look out, drumming, preening, and sunning sites, and as natural bridges to cross openings and streams. Woody material that falls into streams can help to create pools and riffles that create habitat for a diversity of aquatic macroinvertebrates and fish. Examples of wildlife species that have been documented at the LHTF that rely on downed woody material include eastern newts, wood frogs, and ruffed grouse.

Downed woody material is present at Owl's Knoll in the greatest abundance in Stands 12, 13, 15, as well as on knoll tops (Stands 2 and 8) where large old trees are in the process of decay.

#### Snags and Cavity Trees

Snags are standing dead or dying trees. Cavity trees are standing living, dying or dead trees that have holes in them. Cavity trees are used by many birds and mammals, such as woodpeckers, owls, porcupines, and chickadees, as nest and den sites, perches and roosts. Woodpeckers play a significant role in excavating cavities in trees when they foraging for insects within the wood. Large snags provide important perching and nesting habitat for raptors, and bats, such as the Indiana bat, roost beneath the loose bark of dead or dying trees.

At Owl's Knoll, snags and cavity trees appear to be found in the greatest concentration in the pine plantation (Stand 16), on the knoll tops (Stands 2 and 8), and in the recently logged

areas (Stands 12, 13, and 15). Numbers of snags and cavity trees were collected as part of the forest inventory conducted by Field Naturalist, Kristen Sharpless in 2006, but percentages or trees/acre were not calculated from the data.

### ***Mast***

Mast is nuts, seeds, berries, or fruits produced by trees, shrubs, vines, and flowering herbs. Mast of various plant species is an important food source for many wildlife species, from squirrels and black bears who need to store food and fat for the winter month, and migrating song birds who feast on fruits and berries in order to make their long migrations south each fall.

Hard mast (nuts) found in the forests at Owl's Knoll includes red and white oak, bitternut hickory, American beech, and butternut. Other species may be present elsewhere on the LHTF. These species are found in the highest concentration on the knoll tops at Owl's Knoll (Stands 2 and 8).

Soft mast species (fruits and berries) found include black cherry, apple, red raspberry, blackberry, elderberry, false Solomon's seal, Canada mayflower, wild grape, and red trillium. Raspberries and blackberries are particularly abundant in the recently logged areas of Stands 12, 13, and 15.

### ***Special Habitats***

#### *Riparian Ecosystems and Wetland*

Riparian ecosystems and wetlands provide important breeding, wintering, and migratory habitats for a wide diversity of wildlife species, such as birds, moose, black bear, macroinvertebrates, and amphibians.

On The River Parcel, both of these habitats are present, but the riparian forests are currently very narrow and in poor condition and the only wetland on this part of the property is a portion of the Red or Silver Maple – Green Ash Swamp. Part of the *LaPlatte River Corridor and Wetland Restoration Plan* (Appendix E) includes planting many native trees and shrubs along the riparian corridor to create habitats that will be more valuable to wildlife and work to restore the floodplain forest and wetland natural communities that once dominated this area before clearing.

On the Owl's Knoll portion of the LHTF, wildlife, such as moose, raccoons, and small mammals, clearly use the riparian areas along the small streams as travel corridors and places to forage for food. The small wetland at Owl's Knoll also appears to be important foraging habitat for insect-eating animals such as bats and birds and for birds of prey, such as owls.

#### *Grasslands*

A significant part of the fields, meadows and pastures of the River Parcel have been maintained through annual mowing and grazing. The larger fields along Gilman Road have been documented as supporting nesting grassland bird species such as meadowlarks and boblinks (Mark LaBarr, Audubon Vermont, personal communication). Most of these areas are already being allowed to revert to forest and wetland habitat. However, several acres

along Gilman Road (*LaPlatte River Corridor and Wetland Management Plan* map, Appendix E) will continue to be mowed up to 100 feet from the river channel until the quality of the hay in the fields declines to the point where plowing and fertilizing would be needed to maintain agricultural value. Only the Bissonette Meadow will be kept open through mowing.

#### *Deer Wintering Areas*

Deer wintering areas are stands of dense softwoods that provide cover and food sources for deer populations. Part of the LHTF is designated as a deer wintering area and should be ground-truthed to see how much deer are actually using the area.

### **Current Uses**

#### ***Recreation***

Previous private landowners of the LHTF, including the Bissonette Family, have upheld the Vermont tradition of allowing public recreational access to private land. It is evident from on the ground observation, comments at public meetings, and input from user groups that the LHTF has become a popular venue for a wide range of recreational activities including walking, biking, skiing, snowshoeing, horseback riding, hunting, birding, and snowmobiling. The land has been un-posted and has been open for deer, turkey, and grouse hunting. The Main Map shows the existing trails and woods roads that have been developed over time, access points, and parking areas.

#### *Existing Trails*

The main access into the southern portion of the LHTF has been from a small pull-off in a field along Gilman Rd. An old farm/logging road extends from the pull-off across a field and into the woods. The road is used for hiking, skiing, biking, horseback riding, hunting and occasionally by ATVs and other motorized vehicles. Access to the “Hidden Meadow” on adjoining state land is via this road as well. The road is extremely rutted in places and is in danger of being completely washed out at its western end by headward erosion of a north-south running tributary to the LaPlatte River. The Hinesburg Trails Committee has marked this road and the main trail loop around the eastern of two adjacent knolls with white paint blazes to designate the primary trail system in the LHTF.

From the main trail loop existing trails lead 1) south into Hidden Meadow, 2) west and north around the western knoll and onto common land owned by the Mead Farm Road Association, and 3) north down into a muddy ravine where several streams converge. This northbound trail climbs up out of the ravine and branches. One branch turns west and crosses onto common land owned by the Mead Farm Road Association. One branch continues north and also crosses MFRA land and land owned now or formerly by Henry and Carleen Tufo.

The main access into the northern portion of LHTF has been from a small pull-off where the VAST snowmobile trail crosses Gilman Rd. Heading west into the LHTF, the snowmobile trail crosses the LaPlatte River and heads west and north following a private right-of-way, which provides access to the Wilson property. Farm machinery, hunters, walkers, and skiers have also gained access to the fields and “Bissonette Meadow” from this point.

Currently there is no trail connecting the southern and northern portions of the LHTF. Obstacles include a stream, wetlands, steep terrain, and privately owned land.

### ***Education***

So far, the LHTF has been used as a demonstration site for forest professionals, as a fieldtrip site for local school children, and as a site for public walks and talks on local natural and cultural history topics. Educational uses have been encouraged during and since the creation of the LHTF and are a primary component of the vision for the Town Forest.

### ***Monitoring and Science***

Extensive information has been gathered on the ecology and natural history of the LHTF during the process of conserving this property as a Town Forest. The results appear here in this management plan. In addition, Indiana bats have been specifically monitored on the LHTF since 2006.

## SECTION II: MANAGEMENT OBJECTIVES, GUIDELINES, AND ACTIONS

### *PERMANENT MANAGEMENT COMMITTEE*

The LaPlatte Headwaters Town Forest (LHTF) Management Planning Committee is a temporary committee that will dissolve after the creation and approval of this plan. The Committee recognizes that the Town will be responsible for implementing and updating this plan over time and will likely need a permanent committee to fulfill this responsibility.

Since Hinesburg has two Town Forests and an exiting Town Forest Committee that oversees the management of the older Hinesburg Town Forest, **the LHTF Management Planning Committee recommends that the existing Town Forest Committee be revitalized and take on the additional responsibility for the management of the LHTF into the future.** Combining the management of both of Hinesburg's Town Forests under the responsibility of one permanent committee will allow the management of these different, but related, town properties to be well-coordinated and complementary.

The following is a summary list of the recommended responsibilities of the Town Forest Committee outlined in the following sections that are related to implementing this plan and overseeing the long-term management of the LHTF:

- Oversee implementation of management plan and update every five years.
- Approve specific project plans related to general, forest and wildlife habitat management, and recreation projects.
- Approve public events uses.
- Approve scientific uses, maintain a record of research and monitoring results, and use research to adapt management and update plan.
- Encourage educational uses of the LHTF.
- Coordinate and collaborate with the management of the Hinesburg Town Forest, as well as with other town committees, such as the Planning Commission and Conservation Commission.

## ***LANDSCAPE CONNECTIONS***

The management of the LaPlatte Headwaters Town Forest (LHTF) for “protection of Indiana Bat and wildlife habitat, biological diversity, natural communities, natural river processes aquatic habitat and wetlands , water quality native flora fauna...(Conservation Easement, Appendix B)” is made possible and further enhanced by the ownership pattern and known management goals and objectives of adjoining and nearby public and private conserved land. These management goals cannot be met on a single property, like the LHTF; they are met on a landscape scale across multiple properties.

Conservation of land that includes the LHTF (301 acres) and the other conserved parcels (about 345 acres) associated with the LaPlatte Headwaters Conservation Initiative on the Bissonette Farm was guided by an understanding of conservation planning principles recognizing that significant ecosystems and wildlife habitat are generally defined by the quality and quantity of natural features and their potential to insure important ecological functions and biological diversity. These include:

- Representative landform level ecosystems.
- Intact surface and groundwater ecosystems
- Undisturbed natural areas
- Connectivity and cohesiveness
- Priorities species/natural areas
- Rare/unique species & natural communities.

Management for the conservation values of the LHTF is also supported by the 2005 Hinesburg Town Plan. Several sections of the Town Plan reflect the importance of maintaining ecological complexity and connectivity in the Hinesburg landscape. Management of the LHTF serves to support these broader goals for the whole town. Chapter 3 of the Town Plan states that:

*the permanently conserved private and public farmland and forests are important assets to the Town for their capacity to support a local economy and as natural infrastructure for ensuring water and air quality, recreation, and education. In addition to planning efforts targeting residential, agricultural and natural resource issues within the town, future planning should also consider the identification and preservation of wildlife corridors and habitat which contribute to both the rural character and recreation opportunities within the town as well as the preservation and restoration of the town's wetlands, streams, surface waters and ground waters.*

Chapter 4 of the Town Plan is titled *Natural Resources* and includes descriptions and recommendations with "the overall objective of these recommendations [being] to protect the town's natural resources with special concern for the biological diversity and natural processes that sustain life."

The goals and recommendations in this section of the LHTF management plan identify both the broader landscape connections that are important to consider and the specific ways in which management of this property works to meet the objectives in the Hinesburg Town Plan.

A listing of the sections of the 2005 Town Plan that relate to management of the LHTF is found at the end of this section.

**Goal: Maintain and enhance ecological connections between the LHTF and the larger landscape.**

**Objective:** The LHTF will be a place where conservation planning principles are modeled and put into action as part of the town planning process.

***Management Guidelines***

- Encourage continued education, research and communication among and between LHTF management committee and other conservation organizations.

***Actions***

- Write a letter to the Planning Commission stating that public lands should be considered a natural and cultural resource worthy of consideration and protection in the rural zoning changes.
- Meet and coordinate with local town committees such as: Conservation Commission, Planning Commission, Hinesburg Land Trust, and Trails Committee.
- Communicate with regional conservation organizations such as the Lewis Creek Association, the LaPlatte Watershed Partnership, the Nature Conservancy, and Audubon Vermont.

**Objective:** Habitat connections between the LHTF and the larger landscape will be maintained.

***Management Guidelines***

- Be aware of sensitive plants and animals located within the LHTF, particularly those prone to isolation or seasonal disruption because of limited mobility or range restrictions.
- Avoid management activities that isolate streams, wetlands, vernal pools, deer wintering areas, cliffs and talus, and ridges or other sensitive habitats.
- Avoid management that blocks movement of wildlife between different habitats used during different seasons or at different times of day.
- Maintain the matrix of the LHTF landscape in relatively mature, well-stocked stands.
- Forested habitat connections should have a closed canopy with a minimum canopy height of 40 feet.
- Manage recreational trails, woods roads, and riparian areas as habitat corridors.
- Maintain hedgerows of 25 feet or more in width that provide flight corridors between forest blocks for Indiana Bats.

***Actions***

- Develop an understanding of the habitats found on adjacent lands and identify how plants and animals move between these habitats and habitats on the LHTF.
- Monitor wildlife use of travel corridors.

- Coordinate management of the LHTF with other properties in the area between Sliver Street, Gilman Road, Lewis Creek Road, and the Village through the creation of a neighborhood management plan.
- LHTF management committee participates in town plan and zoning regulation updates, and revisions.

**Objective:** Forest management decisions will be evaluated in the context of the larger landscape.

***Management Guidelines***

- Coordinate age-class distribution of forest stands across the connecting landscape whenever possible.
- Working with neighboring landowners to keep a the matrix of the forested landscape the LHTF is a part of as late-successional, closed-canopy forest.
- When considering even-aged management and maintaining early successional habitat, evaluate proposed treatments in relation to the presence and maintenance of similar habitats and forest types on adjacent lands.

***Actions***

- With the help of neighboring landowners, field visits and orthophotos, map the spatial layout of forest ages and types in the roughly 1000 acres surrounding the LHTF.

**Objective:** Beavers activity will be managed in a way that considers impacts on adjoining landowners and roads.

***Management Guidelines***

- Allow beavers to make homes and flood public land whenever possible.
- Work with neighboring landowners and the town road crew to resolve human-beaver conflicts in a way that allows beavers to remain active on the LHTF whenever possible (i.e. use of baffle systems to control flooding rather than trapping).

***Actions***

- Approach adjacent landowners about evaluating and planning for potential beaver conflicts before they happen.

**Relevant 2005 Town Plan sections**

*3.4.5) To develop policies throughout the rural areas that preserve conservation lands for their ecological, recreational, and traditional uses.*

- Revise zoning bylaws to create one or more conservation districts. Lands to be included within this district may include the Town Forest, Fred Johnson Wildlife Management Area, and other publicly owned lands to be protected from development or inappropriate use.
- Within conservation districts, permit only those uses that will preserve the natural and aesthetic values of these lands.

- Permit structures, roads and parking areas that further the recreational and education use of these lands only if their placement does not adversely impact sensitive areas.
- Ensure access and proper right of ways.

4.7.1) *To protect important natural areas, critical wildlife habitat and overall biodiversity, with the help of landowners.*

- Conduct and maintain inventories of natural areas and wildlife habitat, with the help of landowners.
- Protect areas of sufficient size and character to support continued preservation of critical wildlife habitat and hunting through mechanisms like landowner covenants, conservation easements, etc.
- When reviewing new development, encourage the preservation of small and large blocks of forest.

4.7.2) *To provide connectivity among natural areas and critical wildlife habitat.*

- Identify connections that would enhance existing wildlife habitat.
- When reviewing new development, encourage areas separate from housing sites to provide connectivity between forest blocks, riparian corridors, and wetlands.

Develop a greenway network with wildlife habitat corridors separate from trails and human movement. Consider protection of these corridors via lower levels of development (also see sections 3.4.5 and 4.9 for related recommendations).

#### *Section 4.1*

....Most of the Town's forest resources are managed by private landowners. However, a small percentage is in public ownership (both Town and State). These lands include the Town Forest, the Fred Johnson Wildlife Management Area, and other streambank lands owned by the State along Lewis Creek (Map 11, Town Facilities & Conserved Lands). Timber management on these lands is used as a tool to implement the primary goals of providing wildlife habitat (State lands & Town Forest) and recreational opportunities (Town Forest). The continued protection of these parcels is important in that they serve as anchors for the extensive forest land in the eastern portion of Town, and the Lewis Creek corridor.

Planning for all of Hinesburg's forest resources could be improved through a more thorough evaluation of site-specific potential and value to the community. Frequently, during local development review, town boards find it difficult to assess the value of a particular area for residential development versus timber production versus conservation. Given the wealth of GIS data available, it may be possible to develop a system or model that better establishes the value of a particular area for a number of competing values.

3.4.4) *To develop policies throughout the rural areas that preserve forestry uses.*

- Examine density in forested areas (e.g., RR1 & RR2 districts (Need to be sure that Ag district also recognizes value of the forests in this western part of town) for compatibility with the conservation of forest lands. Implement zoning using a form of area-based density for these districts, which may consider changing the overall density.

- Develop zoning techniques for the preservation of Hinesburg’s forest resources. The techniques may include a separate forestry district, overlay districts for important forest land or other development and management standards specific to forest preservation.
- Direct development in areas with forest resources to land that is less suitable for active timber management because of poor soils, existing forest conditions or size and location of the parcel.
- Give strong consideration to preservation of wildlife corridors, viable wildlife habitat, groundwater recharge areas, and ridgelines in planning any development of lands with forest resources.
- Establish guidelines for placement of roads, utilities, and house lots in locations that do not disrupt the forestry or natural resource potential of a parcel.
- Site new development to minimize fragmentation of forest lands and to maintain access to forest lands

## *EDUCATION AND COMMUNITY USES*

**Goal: Promote educational and community uses of the LHTF that are compatible with other management goals.**

### *Management Guidelines*

- Design parking areas to accommodate parking and turn around space for at least one school bus.
- Scientific studies should avoid causing any negative impact on the condition of the ecological communities at the LHTF or leaving any lasting markers whenever possible (i.e. flagging, plot markers, etc).
- Teachers and tour leaders should avoid taking their groups into the STAs or other sensitive areas where they could have a collectively damaging impact. Access to these areas should be limited to the perimeter whenever possible (i.e. observing woodland flowers at the base of talus slopes).
- Small groups and individuals should minimize use of STAs and should take care to minimize their negative impact.
- Large groups (20+ participants) should minimize their off-trail access of the LHTF.
- Teachers and group leaders should be aware that hunting on the LHTF is allowed during legal seasons.
- If educational or community uses begin to conflict with each other or other management goals, stakeholders should work together with the LHTF management committee to devise and implement a solution(s).
- Allow periodic, temporary, non-commercial events in the designated “Public Events Area” (Bissonette Meadow), assuring that there is adequate provision for parking and septic disposal, and that there will be no lasting harm to natural systems. Such events require advance written permission from the Management Committee (see Recreation Section).
- Proposed scientific research projects taking place on the LHTF should be submitted to the LHTF management committee for review and approval.
- Use the Town website to list information about and contacts related to scientific projects happening on the LHTF.
- Publicize community events on the Town website.

- Ask or require researchers to share their findings with the LHTF management committee and/or the public through a copy of a written publication, a walk, a talk etc.

### ***Management Objectives and Actions***

**Objective:** Teachers and students at HCS, CVU, UVM and other educational organizations and institutions will use the LHTF as an outdoor classroom.

#### ***Actions***

- Offer opportunities for teachers to learn about the LHTF at the LHTF.
- Seek funds to offer small incentive grants to cover fieldtrip costs for teachers to bring their classes to the LHTF.
- Develop a list of potential service-learning projects that the TF Committee could partner on with teachers and their students at the LHTF (i.e. development of interpretive/informational material at a kiosk or creating and maintaining trail markers).
- Make *A Local Educator's Field Guide to Owl's Knoll on the Bissonette Farm* available to any educators who might want to use the LHTF as an outdoor classroom.
- Expand *A Local Educator's Field Guide to Owl's Knoll on the Bissonette Farm* to include information on the northern parcel.
- Seek input from local teachers on what resources would be helpful for bringing their students to the LHTF.
- Find a way to make Port-a-lets available in the parking areas during the times when teachers are likely to bring their students to the LHTF (fall and spring).

**Objective:** Student, academic, and government scientific researchers will use the LHTF as a study site.

#### ***Actions***

- Designate a contact person on the LHTF management committee to act as a liaison with scientists who are using or may want to use the LHTF as a study site. List contact information on Town website and in all relevant documents.
- Coordinate with academic and state scientists to accomplish monitoring goals.
- Ask or require researchers to share their findings with the LHTF management committee and/or the public through a copy of a written publication, a walk, a talk etc.
- Maintain a list of research projects that have been completed at the LHTF.

**Objective:** The LHTF will be used as a community education and outreach site for educational demonstrations and tours.

***Actions***

- Designate a contact on the LHTF management committee to act as a liaison between County Foresters, Fish and Wildlife Department Biologists and others who would be likely to want to use the LHTF for education and demonstration purposes.

**Objective:** Community uses will promote awareness of the ecological values of the LHTF.

***Actions***

- Develop a flyer that summarizes the vision and goals for the LHTF along with guidelines for public uses (events and recreation) that can be downloaded from the Town website and available at the kiosk at the LHTF.



## ***FORESTS AND WILDLIFE***

All management for forest products and/or wildlife habitat at the LaPlatte Headwaters Town Forest (LHTF) shall be overseen by the Chittenden County Forester and – due to the presence of the endangered Indiana Bat in the Town Forest – Vermont Fish and Wildlife Department biologists. All management activities shall be directed by a specific project plan based on data from a recent forest inventory and approved by the LHTF Management Committee working in consultation with the County Forester and Vermont Fish and Wildlife biologists. The specific project plan should conform to the permitted and restricted uses outlined in the conservation easement and address the following goals, objectives, guidelines and actions within this plan.

### **Related Goals**

- Allow natural processes to govern the LHTF's ecosystems and model any active management on these processes to the extent possible.
- Demonstrate sustainable forestry practices that protect and enhance ecosystem function and health.
- Monitor and respond to ecological changes.
- Protect and enhance habitat for the endangered Indiana Bat and a diversity of other native species.

### **Objectives**

- Forest stands will maintain a diversity of vertical structures and degrees of crown closures through small-scale, patch-creating natural disturbance events, such as wind and ice storms, or through single tree and group selection, crop tree management, or small patch cutting silvicultural treatments intended to mimic these disturbances.
- Forest stands will likely be replaced on large spatial (>2 acres) and temporal scales (100+ years) by natural disturbances, such as hurricanes or micro-bursts, but not through management.
- Native tree-species composition will be maintained in each natural community, as appropriate within successional stages of development. Vermont natural community descriptions will be referenced from the publication *Wetland, Woodland, and Wildland* (Thompson and Sorenson, 2005) or any updated descriptions from the Vermont Nongame and Natural Heritage Program.
- The presence, structure, function and condition of significant natural communities will be maintained or enhanced.
- Active management of vegetation and animal habitats will provide opportunities for demonstration, use of experimental techniques and community involvement.
- Populations of rare, threatened or endangered plants and animals on the LHTF will be viable and healthy enough to be resilient to change and stress over time and to serve as sources for the colonization of nearby habitat patches.

- Wide-ranging wildlife species that require large areas of contiguous and/or connected forest will be present at the LHTF.
- Habitats for the full assemblage of organisms associated with the natural communities at the LHTF will be maintained and/or enhanced wherever possible.
- Wildlife will be able to move freely between the LHTF and the surrounding landscape.

### **Permitted Uses Related to Forests and Wildlife**

Under the terms of the conservation easement the following uses are permitted to the extent they are consistent with the purposes of the easement:

***Management Plan Activities:*** The Town may conduct activities that are reasonably necessary to carry out the Purposes of this Grant and are permitted in the Management Plan. These activities may include management of vegetation and wildlife.

***Forest Management:*** The Town may harvest timber and conduct maple sugaring operations by tapping a minimal number of trees, but vegetation management to create a sugarbush is not permitted. The Town has the right to construct and maintain logging roads. All timber management must be in accordance with Forest and Wildlife Habitat Management Guidelines and a project plan.

### **Restricted Uses Related to Forests and Wildlife**

Under the terms of the conservation easement the following uses are restricted:

***General:*** The LHTF shall be used for habitat conservation, wetland and river restoration, education, non-motorized and non-commercial recreation, natural area, open space, agricultural and forestry purposes only. Unless specified in the easement no residential, commercial, industrial or mining activities are permitted. No building or structures may be constructed, created, erected or moved onto the property, unless specifically permitted in both the easement and this Management Plan.

***Motor Vehicles:*** Motor vehicles may not be operated on the property except for uses specifically permitted under the easement such as wildlife and habitat management, trail grooming, maintenance, handicap access, safety or emergency purposes, and such agricultural and forestry uses as may be compatible with the primary Purposes of the easement.

***Water Resources:*** The easement prohibits manipulation of natural water courses or other water bodies. No activities that would be detrimental to water purity, natural water level, or flow are permitted except as reasonably necessary to carry out the uses permitted in the easement and as may be more specifically permitted or limited under the LaPlatte River Corridor and Wetland Management Plan.

**General Clause:** No use may be made of the LHTF that is inconsistent with the purposes of the easement. Proposed uses not addressed in the easement, or changes in existing uses, may be approved by VLT if they are consistent with the purposes of the easement.

### **Easement Limitations Related to Woodland Special Treatment Areas (STAs)**

These limitations are fully described in the Conservation Easement (Appendix B) and should be considered when any management is being planned in the Woodland STAs (Main Map).

**Management Goals:** Any activities planned and conducted in the Woodland STAs will focus on (1) conserving and improving maternal roosting habitat for the Indiana Bat and (2) protecting the integrity and natural species composition of the natural communities in the areas.

**Machinery:** No machinery will be operated within the Woodland STAs, with the exception of existing or subsequently approved roads and landings, where relocation is not feasible, or where negative impacts would be increased by relocating such roads and landings.

**Forest Management:** Forest management activities not required for improving maternal roosting habitat for the Indiana Bat or for control of exotic species are prohibited in the Woodland STAs.

**Agricultural Activity:** No agricultural activity shall be conducted within the Woodland STAs.

### **Management Guidelines**

#### **General**

- Until more specific guides are available for Vermont, consult the following publications for more detailed guidelines on protecting and enhancing forest health, function and biodiversity by mimicking natural processes:

*Natural Stand Dynamics Silviculture: A Discussion of Natural Community-Based Forestry Practices* published by the Nature Conservancy (2000).

*Natural Disturbance and Stand Development Principles for Ecological Forestry* by Jerry F. Franklin, Robert J. Mitchell, and Brian J. Palik, Department of Agriculture Forest Service Northern Research Station General Technical Report NRS-19 (2007)

*Biodiversity in the Forests of Maine* by Gro Flatebo et al. (1999)

#### **Wildlife Habitat**

- Follow the Vermont Fish and Wildlife Department's *Indiana Bat Forest Management Guidelines for Indiana Bat Habitat* for "Lands within Known Indiana Bat Maternity Colony Habitat" for all forests at the LHTF. If conflicts arise between guidelines for

management of Indiana Bat habitat and other guidelines in this plan, consult with Vermont Fish and Wildlife Department biologists and the Chittenden County Forester.

- Avoid disturbing roosting and cavity trees, snags, and upturned tree roots from April 1 to November 1 to so as not to disrupt Indiana Bats, nesting birds and denning animals.
- Avoid forest management activities during breeding forest bird and Indiana Bat roosting seasons (April 1 – November 1).
- Consider all management activities within the surrounding landscape context (3000 acres). Work to create and/or maintain a forested landscape capable of supporting viable populations of species associated with a variety of forest types, successional stages, and patch sizes (horizontal diversity). Pay special attention to ensuring habitat for species whose life-history requirements include large areas of contiguous forest.
- Enhance vertical structure of forest stands where it is lacking to ensure nesting and foraging habitat for a diversity of breeding forest birds and other wildlife.
- Soften edges along fields to minimize edge effects, such as predation and brood parasitism by cow birds, on breeding birds and other wildlife. Seek advice from Audubon Vermont on how to do this.
- Protect and enhance long-term hard and soft mast production in hardwood stands with significant beech, oak, hickory, cherry and/or apple densities.
- Maintain and regenerate inclusions of softwood cover in predominantly hardwood stands and inclusions of hardwood cover in predominantly softwood stands.
- Manage existing and potential deer wintering areas according to the Vermont Fish and Wildlife Department Guidelines for managing deer wintering areas.
- Retain a high percentage of trees >24” dbh (diameter at breast height) and at least 1 snag/acre >18” dbh where present. Plan for the recruitment of these sizes, types, and densities of trees into the future.
- Manage for coarse woody debris by retaining material that currently exists and allowing its accumulation where it is currently missing.
- If any vernal pools are identified at the LHTF, document the location and condition of the pool, and follow VT Fish and Wildlife forest management guidelines for protecting vernal pools (currently being developed).
- Allow beavers and other native wetland species to recolonize and influence the areas along and around the LaPlatte. If beaver activity comes in conflict with other purposes of the conservation easement, town roads or culverts, or neighbors, consult with Vermont Fish and Wildlife biologists and the Chittenden County Forester. Trapping

may be authorized by the Select Board on a case-by-case basis to resolve conflicts when it is recommended by the Town Forest Committee and Conservation Partners (Appendix A).

- Create, retain and enhance a diversity of wildlife habitats, including riparian forest, wetland and grassland, within The River Parcel in the northern part of the LHTE, with particular focus habitat for the Indiana Bat. See the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E) for more specific guidelines and prescribed management activities.

### ***Silviculture***

- Apply the principles of sustainable forestry to protect biodiversity, ecological health, water quality, and site productivity.
- The single-tree and small group (up to one acre) selection methods should be used for shade tolerant species and the deferred shelterwood with legacy tree retention method should be used for shade intolerant species. Large patch cuts (>2 acres) and clearcuts (>10 acres) should be avoided.
- Grow the largest trees and use the longest rotations possible within site and log quality limitations. (For example, for high quality red and sugar maple, yellow birch, beech, and white ash, the diameter objective should be 22 inches or greater.) Culmination of mean annual board foot growth for these species occurs at 100 to 120 years.
- When planting, use only local sources of native species to the maximum practical extent and attempt to match species composition to the known or suspected natural community type.
- When thinning or regenerating stands, favor native species over non-native ones.
- Use natural regeneration to the maximum practical extent.
- Biological legacies of the forest community -- including coarse dead wood, logs, and snags; trees that are large, living, and old; buried seeds; soil organic matter; invertebrates; sprouting plants; and mycorrhizal fungi -- should be retained to aid in post-harvest recovery and to keep the forest from becoming oversimplified.
- Promote the seed bearing capacities of poorly represented plant species of the stand.
- Tree felling should be avoided on slopes exceeding 50%.
- Leave on the site all woody materials that are less than 4 inches in diameter.
- Remove slash from all trails and lop it to 3 feet within 25 feet of trails. Retain large specimen trees and trees with unusual shape or interesting character along trails.

- Promote a vertical stand structure that includes differentiated overstory and midstory strata, as well as diverse shrub and herbaceous vegetation layers.
- Maintain a closed canopy (75-80%) and prohibit the use of machinery within at least 25 feet adjacent to streams and the wetland areas. Enforce strict water quality protection practices at all times.

### ***Forestry Operations***

- The use of pesticides – including insecticides, fungicides, and herbicides – should be extremely limited and only those pesticides accepted by the Northeast Organic Farming Association and herbicides recommended by The Nature Conservancy should be used.
- Residual stand damage – including basal wounds, broken and/or scraped tops, and exposed roots – should be confined to 10% or fewer of the dominant or codominant trees.
- All trees to be removed should be marked prior to the inception of harvest.
- Average annual harvest volumes should not exceed 75% of the average annual growth.
- Avoid spring harvests and/or rutting that extends beyond the A soil horizon.
- Minimize the number and extent of truck roads and skid trails -- particularly in or near sensitive areas such as stream crossings, protective strips, and steep slopes.
- All skid trails, truck roads, and log landings should be carefully designed and flagged or otherwise marked prior to the inception of harvest and should be carefully constructed should not exceed 10% of the land area of the harvest zone.
- Truck roads should be built at grades from 0% to 10% and skid trails from 0% to 15%.
- Skid trails, truck roads, and log landings -- located on easily compacted soils --should only be used when adequately dry or frozen.
- Truck roads and skid trails should be properly drained during and after use according to the Vermont AMP manual.
- Log landings should be located on nearly level, stable ground, be kept away from protective strips, have water diversions installed, and be graded to prevent erosion and sedimentation.
- Protective strips -- characterized by minimal soil disturbance, nearly-complete canopy closure, and many large mature trees -- should be maintained between the access network and surface waters according to Table 4 in the Vermont AMP manual.

- Areas of exposed soil that occur within the protective strip should be seeded and mulched according to Table 3 in the AMP manual.
- Stream buffer strips should be kept free of logging vehicles and have only little or no tree cutting.
- Check with Conservation Partners (Appendix A) for current buffer guidance when planning any management around streams.
- Stream crossings should be restored and non-permanent structures should be removed as soon as possible.
- Streams should be crossed with bridges or culverts that are properly sized according to Table 2 in the AMP manual and installed at right angles to streams.
- Sediment should be prevented from entering streams by using turn-ups or broad-based dips on truck roads and skid trails prior to all stream crossings.
- Drainage ditches should not feed directly into streams or other surface waters.
- Post-harvest use of the access network should be restricted in order to prevent erosion, compaction, and site disruption.

#### **Actions**

- Mark boundaries of Woodland STAs and post signs along trails to let the public know they are entering an STA and significant natural community.
- Request that the Chittenden County Forester inventory the forest and provide a written report of the inventory and recommendations for management, including an assessment of the feasibility of a sugaring operation.
- Conduct an inventory of wildlife and habitats, and create recommendations for protection and enhancement. Create a map of wildlife sightings and signs, and significant habitat features that can be added to and updated periodically.
- Set up monitoring programs including vegetation plots, and birds, bats, and other wildlife. Approach local schools and institutions (HCS, CVU, UVM) to get assistance with monitoring.



## ***WATER AND WETLANDS***

The primary purposes of the Grant of Development Rights, Conservation Restrictions, and Public Access Easement covering the property are to “...conserve, improve and extend maternal roosting and feeding habitat for the Indiana Bat...” and to “...conserve riparian areas and natural river processes and morphology, wetlands, water quality, and aquatic habitats...” Forestry management and recreation activities are secondary and must be compatible with the primary purposes of the easement (Appendix B) and approved by the LaPlatte Headwaters Town Forest (LHTF) Management Committee.

Wetland restoration activities will follow the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E) and must comply with the conservation easement (Appendix B). Any management activity within the LHTF should be created in consultation with and must be reviewed by all the conservation partners in Appendix A.

### **Related Goals**

- Allow the LaPlatte River and its tributaries to recreate natural channels and floodplains over time.
- Protect the water quality of the LaPlatte River and its tributaries.
- Restore and conserve wetlands.

### **Objectives**

- Restore and preserve the natural values of the Special Treatment Areas (STAs) and to maintain and improve the natural functions of the STAs.
- Allow stream channels to continue to adjust (migrate, erode, deposit sediment, etc.) in order to regain equilibrium conditions (slope, channel dimensions) over the long term through a passive restoration approach.
- Improve water quality by allowing streams to regain natural (equilibrium) form and thereby reduce sediment and phosphorus loading.
- Conserve and improve aquatic and wildlife habitats.
- Reduce erosion hazards by allowing streams to regain natural (equilibrium) form and thereby reduce water speeds during high flows.
- Maintain native riparian plant communities along streams and wetlands.
- Maintain forest connectivity between upland habitats and wetlands and waters.

### **Restrictions**

- Construction of permanent structures in the wetland restoration area or within stream buffer areas is prohibited. Permanent structures include but are not limited to: buildings, trailers, signs, bridges or culverts (except to accomplish goals of the easement), livestock

facilities, etc. Trails, footbridges, and fences are allowed as long as they do not interfere with the stated goals above and are compatible with the easement.

- Filling, excavation, or removal of dirt, soil, rock, gravel, etc is not permitted except related to wetland restoration activities described above.
- Manipulation of rivers, streams, or wetlands (except as prescribed in the Wetland Restoration Plan) is not permitted. Manipulation includes but is not limited to: any activity that interferes or alters the natural course, movement, flow, or adjustment of any water body such as installation of levees or revetments, gravel removal, filling, encroachment, etc.
- Any activity that would be detrimental to water quality is not permitted.

## **Management Guidelines**

### ***General***

- Consult the Vermont Department of Environmental Conservation River Management Program (RMP) website for more specific guidelines regarding stream buffers, passive restoration, and river corridor management at:  
[http://www.anr.state.vt.us/dec/waterq/rivers/htm/rv\\_EducationalResources.htm](http://www.anr.state.vt.us/dec/waterq/rivers/htm/rv_EducationalResources.htm)
- No agricultural activities will be allowed within the special treatment areas.

### ***Restoration***

- Follow the wetland restoration plan for the northern portion of the LHTF as detailed in the LaPlatte River Corridor and Wetland Management Plan.
- Allow the LaPlatte River and its tributary streams to migrate, create meander bends, erode banks, and complete any other adjustments without intervention, even if such adjustments result in erosion of ditch plugs, depressional areas, or plantings and require the relocation of trails and bridges.
- Woody debris shall remain in stream channels to allow for sediment deposition, pool formation, and habitat creation.
- Allow beavers and other native wetland species to recolonize and influence the areas along and around the LaPlatte. If beaver activity comes in conflict with other purposes of the conservation easement, town roads or culverts, or neighbors, consult with Vermont Fish and Wildlife biologists and the Chittenden County Forester.

### ***Riparian Buffers***

Along the LaPlatte River, buffers are 100-foot wide planted and naturally regenerating areas along the river channel (see LaPlatte River Corridor and Wetland Management Plan Map, Appendix E). Buffer widths may vary along tributary streams depending on the site. Check with Conservation Partners (Appendix A) for current buffer guidance whenever planning management activities.

- Avoid disturbance of soil within the stream buffers so as not to contribute sediment or excessive runoff or erosion into the streams. Exception: unless done so under the conditions of the LaPlatte River Corridor and Wetland Management Plan for restoration purposes.
- Forest Management and other activities within riparian buffers must be compatible with the easement and reviewed by the LHTF Management Committee.
- Maintain natural vegetation (native plant species) within the riparian buffers to limit erosion and enhance wildlife habitat. Any non-native or invasive plants that are removed should be immediately replaced by native plant species. Native riparian vegetation may be removed for such purposes as treating pest infestations or accomplishing other activities compatible with the easement.
- Plant native vegetation and allow for natural growth within the stream buffers in areas where such vegetation is lacking.

### ***Trails***

River processes take precedence over trails as stated in the easement.

- Protect stream buffers from excessive pedestrian use and manage any trails within the stream buffers so as to minimize their impact on buffer vegetation and habitat.
- Trails will be designed and built in response to the changing stream profile and wetlands dimensions. Trails will be adapted as necessary when such changes happen so as not to impede stream or wetland processes.
- Trails occurring within buffers or the STAs will be designed and managed to maintain the integrity of the natural plant communities.

### ***Stream Crossings***

- Stream crossings will be minimized and improved so as not to impede stream function.
- Size crossing structures according to the VT DEC River Management Program guidelines and Guidelines for the Design of Stream/Road Crossings for the Passage of Aquatic Organisms in Vermont (VT DFW) and/or consult with the District Stream Alteration Engineer and District Fisheries Biologist for sizing, placement, and permitting requirements.

### ***Aquatic Habitat***

- Depressions and open water wetland areas will be created and maintained to provide habitat for waterfowl and amphibians.
- Cattails may be removed if they begin to take over open water areas.
- Woody debris will be allowed to accumulate in the open water habitats and will be allowed to accumulate in the river and streams to create and maintain varied habitat.

### ***Invasive Species***

- Invasive plant species such as reed canary grass, purple loosestrife, and phragmites may be removed from wetland areas and replaced with native vegetation.
- Best attempts will be made to monitor wetland sites for invasive plant species and remove them when found before they produce seeds.
- The LHTF Management Committee will consult state and other invasive species experts as needed for current guidance on invasive species management.

### ***Monitoring and Science***

- Evaluate the progress of the wetland restoration and make recommendations for future actions.
- Monitor the progress of the passive restoration of the LaPlatte and its tributaries.

### ***Demonstration and Education***

- Take advantage of opportunities to involve and educate the public about wetland and river processes and restoration and the importance of aquatic habitats.

### **Actions**

- Implement the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E):
  - Plant a 100-foot wide naturally vegetated buffer along the LaPlatte River of riverine floodplain forest species.
  - Install ditch plugs and excavate depressions in the open meadow areas to recreate areas of open water.
  - Plant wetland marsh and meadow species in open meadow areas.
  - Allow previously ditched tributaries to regain natural channel form and plant buffers with shrub and floodplain forest species.
  - Plant the small area of upland soils with valley clay plain forest species.
  - Remove reed canary grass and establish a grassland community to enhance wildlife habitat.
  - Establish an area of early successional scrubland to enhance wildlife habitat.
  - Enhance existing intact wetlands through removal of invasive plant species and planting of native vegetation where applicable.

- Replace the stream crossing structure (culvert/tank) associated with a Right Of Way for an adjacent property along Gilman Rd with a bridge of appropriate size that spans the stream and does not impede water or sediment flow or fish passage. Size the crossing structure according to RMP guidelines and Guidelines for the Design of Stream/Road Crossings for the Passage of Aquatic Organisms in Vermont (VT DFW) and/or consult with the District Stream Alteration Engineer and District Fisheries Biologist for sizing, placement, and permitting requirements.
- Plan for a stream crossing or trail relocation where the gully is eroding the main access trail at the intersection of the trail loop at Owl's Knoll. Monitor this site and relocate the trail or install a structure (bridge) that does not interfere with the natural erosion process, as necessary.
- Remove tires from the gully where it is eroding the main access trail at the intersection of the trail loop at Owl's Knoll. These were placed in the gully under old government recommendations for erosion control. Removal will likely result in increased erosion, but the tires are ineffective and leach pollutants into the stream.
- Monitor the wetland restoration areas following NRCS protocols for the first 15 years. The site will be monitored for proper functioning of ditch plugs and depressions, condition of plantings, control of invasive and nuisance plants, and the progress of the restoration. Any further monitoring will be identified in future revisions of the management plan as recommended by initial monitoring results.
- Conduct a habitat assessment for all streams using updated RMP habitat assessment protocols.
- Set up permanent monitoring sites along stream and river channels for cross sections, pebble counts, and photographs and define a monitoring schedule (every 5-10 years) to track channel adjustments. Possibly coordinate with UVM to combine this with education as a student project.



## ***RECREATION***

Future recreational activities and management of the LaPlatte Headwaters Town Forest (LHTF) for recreation should be undertaken only with the specific approval of the LHTF Management Committee. Recreation and recreation management must be guided by the permitted and restricted uses set forth in the conservation easement (Appendix B) and also should adhere to several other guiding principles.

**Goal: Promote and manage recreational uses that are compatible with other management goals for the LHTF.**

### **Permitted Uses Related to Recreation**

Under the terms of the conservation easement the following uses are permitted to the extent they are consistent with the purposes of the easement:

***Recreation:*** The property may be used for all types of non-motorized, non-commercial recreation including bird watching, cross-country skiing, fishing, hiking, hunting, snowshoeing, trapping, walking, and wildlife observation. Snowmobiling, and non-motorized, mechanized recreation (such as mountain biking), and horseback riding may be permitted if such activities are regulated in the Management Plan. Recreational uses may be more restricted within the Riparian Corridor Special Treatment Area than on the rest of the property.

***Fields:*** The fields and pastures may be used for agricultural and/or horticultural purposes, recreational, scenic or open space purposes and/or for the purpose of maintaining or enhancing wildlife habitat, unless such use conflicts with management for Indiana Bats.

***Trails:*** Existing trails may be used for non-motorized, non-commercial recreational activities. New trails may be cleared and constructed as described in this Management Plan.

***Public Events:*** The Town may conduct periodic, temporary, non-commercial, community, and public gatherings and events on the unforested portion of the LHTF depicted as “Public Events Area” on the Bissonette Parcels 1 and 3 in the Baseline Documentation Report (Appendix C). Such Events Area must be provided for in this management plan.

***Parking Areas:*** The Town may construct, maintain, and replace a permeable surfaced parking area, not to exceed 0.3 acres, at the location depicted as “Parking Area” on the Bissonette Parcels 1 and 3 in the Baseline Documentation Report (Appendix C). This parking area shall be used for such uses as are permitted in the easement. Prior written approval from VLT is required for the construction of the access drive and parking area.

### **Prohibited Uses Related to Recreation**

Under the terms of the conservation easement the following uses are prohibited:

**General:** No building or structures may be constructed, created, erected or moved onto the property, unless specifically permitted in both the easement and this Management Plan.

**Motor Vehicles:** Motor vehicles may not be operated on the property except for uses specifically permitted under the easement such as wildlife and habitat management, trail grooming, maintenance, handicap access, safety, or emergency purposes.

**Water Resources:** The easement prohibits manipulation of natural water courses or other water bodies. No activities that would be detrimental to water purity, natural water level, or flow are permitted except as reasonably necessary to carry out the uses permitted in the easement and as may be more specifically permitted or limited under the LaPlatte River Corridor and Wetland Management Plan.

### **Other Guiding Principles**

As a result of its on-site investigations, discussion with experts, and public input the LHTF Management Committee developed the following additional principles to guide the management of recreation within the LHTF.

- Encourage recreational use that
  - Is consistent with protection and enhancement of natural systems;
  - Adheres to the terms of the conservation easement;
  - Minimizes conflict between recreational uses;
  - Respects the rights and privacy of adjoining landowners.
- Temporarily restrict or curtail recreational activities when needed to allow for other management activities provided for by this plan (e.g. timber management) or when conditions are not suitable.
- Update recreation recommendations as needed to reflect changes in recreational demand and changes in natural systems within the LHTF.
- Recognize and take advantage of the educational opportunities created by recreational use of the LHTF.
- Concentrate recreational use on existing trails and prohibit the creation of new trails *except to replace unsuitable trails or to complete trail loops.*
- Adhere to relevant trail and recreational standards and the best available professional judgment to protect soils, water quality, and other LHTF resources.

### **Objectives and Guidelines**

**Objective:** Establish and maintain a multi-use trail system.

Because most recreation on undeveloped, natural sites is trail-based the key to encouraging recreation is a trail system that is appropriate for a variety of uses, is well marked, and has convenient access.

### ***Management Guidelines***

- Maintain a permanent gate to block unauthorized motorized vehicle access to the woods road on Owl's Knoll.
- Encourage multi-use trails.
- Develop and maintain the main trail loop for the most intensive allowed uses – biking and horseback riding – thereby assuring it can accommodate other less intensive uses such as walking and skiing.
- Prohibit the creation of new trails except as needed to 1) bypass wet, steep, or otherwise unsuitable stretches of existing trails, 2) connect the northern and southern portions of the Forest, and 3) complete the loop around the west knoll when and if the Mead Farm Road Association (MFRA) allows and (4) to connect to the Village.
- Because radiating trails lead onto adjacent properties and are narrow and wet in places, restrict use to walking, skiing, and snowshoeing where access is permitted until such times as issues of access and erosion can be adequately addressed.
- Unless public trail access is secured on the adjacent private properties discourage trespass by the placement of signs and/or other appropriate means.
- Mark the trails in a manner consistent with the town-wide trail system.
- Collaborate with the Hinesburg Trails Committee to maintain the trail system.
- Coordinate the use and maintenance of the woods road that leads into the “Hidden Meadow” with the Vermont Department of Fish and Wildlife.
- Install signs to designate the allowed uses of each trail, to encourage trail safety and etiquette, and to minimize conflicts between recreational uses.
- Install bridges, culverts, and other trail amenities as needed to minimize impacts on soil, water, and other resources.
- Allow snowmobiling only on the designated VAST trail. For reasons of safety, no other uses of this trail should be allowed in winter.
- To facilitate access, provide and maintain (including snow plowing) two parking areas on Gilman Rd. (Snowplowing and parking in the northern area must not interfere with grooming or use of the snowmobile trail or the use of the private right-of-way.)

- Post signs at both parking areas and at other access points to the LHTF that indicate allowed and prohibited uses of the trails and the Forest in general.
- Publicize the trails, and the Forest in general, via the Town website, downloadable maps, and Town reports. Maintain barriers to motorized vehicle access to trails and woods roads (i.e. permanent gate, stones, trail design).
- Close trails to certain uses when conditions warrant.
- Adhere to the trail standards set out in the VT Trails and Greenways Manual (2007) and other appropriate trail standards established by recognized recreational groups.
- Trail creation and maintenance activities involving cutting standing trees should be conducted between November 1 to April 1 to avoid harming roosting Indiana Bats and nesting song birds.

**Objective:** Minimize the impact of dispersed (non-trail) recreation on the LHTF resources.

#### ***Management Guidelines***

- Allow overnight use and camping only in conjunction with on-site research activities or educational programs, and only after written permission has been obtained from the LHTF Management Committee.
- Designate areas where campfires may occur and allow campfires only when a permit has been issued by the fire warden.
- Allow dogs under the physical or verbal control of their owners/handlers and in accordance with the Town dog ordinance. Dog owners/handlers must remove their dogs' droppings from the LHTF.
- Dispersed activities must cause no harm to LHTF resources and must follow Leave No Trace guidelines.
- Flora, fauna, and mineral materials may not be disturbed, picked, collected, or removed from the LHTF except as needed to further the purposes of the conservation easement and objectives of this management plan, the collection of mushrooms or berries and other edible items for non-commercial purposes, legal hunting, educational, or research purposes.

**Objective:** Allow non-commercial hunting, trapping and fishing in the LHTF in accordance with all state and federal regulations.

***Management Guideline***

- To promote safety and to minimize conflicts between hunters and other users of the LHTF, post permanent signs at parking areas and trail heads indicating that hunting for deer, bear, turkeys, grouse, and other legal game is permitted within the LHTF.

**Objective:** Encourage appropriate public events and group use.

***Management Guideline***

- Allow periodic, temporary, non-commercial events in the designated “Public Events Area” (Bissonette Meadow), assuring that there is adequate provision for parking and septic disposal, and that there will be no lasting harm to natural systems. Such events require advance written permission from the Management Committee.

**Objective:** Adapt recreation management recommendations to reflect changes in resource conditions and changes in the types of intensities of human uses.

***Management Guideline***

- Annually monitor the forest, particularly the trails, for evidence of abuse or damage to natural systems due to recreational activities and modify management recommendations and actions appropriately.

**Actions**

- Mark property boundaries to facilitate 1) the placement of trail signs, and 2) discussion with adjoining property owners about trail access and development.
- Create and maintain the two parking areas, including appropriate signs.
- Engineer a solution (bridge, etc.) to maintain access to the main trail loop and Hidden Meadow despite the ongoing erosion that threatens the integrity of the existing farm road.
- Approach the Hinesburg Trails Committee about taking leadership to work toward the long-term objectives of (1) creating a public trail connection between the northern and southern portions of the LHTF that is acceptable to affected landowners and (2) working with the Mead Farm Road Association to complete the trail loop around the western knoll on Owl’s Knoll.
- Relocate the trail in the ravine or install trail structures to eliminate the current muddy, eroded conditions.

- Reroute walking trail through the hay field from the parking area to the woods road on Owl's Knoll around the perimeter of the field and through the woods (see "Proposed Trail" on Main Map).

## ***AGRICULTURE***

Most of the LaPlatte Headwaters Town Forest (LHTF) has been used for agricultural production for many years, which has shaped the current condition of the property. Agricultural uses will continue to be allowed in appropriate areas of the LHTF in order to maintain a connection to historical uses of property, to maintain a diversity of wildlife habitats, to enhance scenic values, and to provide recreational opportunities and a community gathering area.

The conservation easement (Appendix B) recognizes the agricultural values of the LHTF and identifies 55 acres of prime and statewide agricultural soils on the property. However, agricultural values are secondary to the primary purposes of protecting water quality and Indiana Bat habitat. The easement permits agricultural use in areas not designated as Special Treatment Areas.

**Goal: Allow agricultural uses that are compatible with other management goals in designated areas of the LHTF.**

### ***Objectives***

- Keep the highly productive, eight-acre field located on the River Parcel of the LHTF (known as The Bissonette Meadow - Main Map) open through agricultural use.
- Utilize the 48-acre field shown on the Agricultural Fields Map for hay production in a manner that enhances grassland habitat on the abutting property until maintaining productivity of the field requires practices that conflict with the primary purposes of the easement.
- Maintain the option of using the Bissonette Meadow as a community gathering area by keeping it open through appropriate agricultural use.

### ***Management Guidelines***

- Consult with NRCS to determine current Best Management Practices related to soil cultivation and crop production that is consistent with conservation restrictions.
- Conduct agricultural practices in a manner that recognizes the primary purpose of protecting water quality.
- Agricultural use should be at no or little cost to the Town.
- Allow agricultural use on portions of the property until maintaining productivity requires practices that conflict with the primary purpose of the easement.
- Consult with Conservation Partners (Appendix A) to ensure agricultural practices are consistent with the primary purposes of easement.

- Mowing of areas identified as significant breeding habitat for grassland birds should occur only between July 15th and September 1st.

***Actions***

- Develop a 10-year contract between the Town and a local farmer that ensures management of designated agricultural fields that is consistent with the purposes of the easement and maintains soil productivity.

## SECTION III: SUMMARY OF ACTIONS

### Completed

- Create ditch plugs on the River Parcel in areas designated by the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E) in order to facilitate flooding (September 2009).
- Plant native tree species on the River Parcel in areas designated by the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E) to facilitate the revegetation of riparian buffers (partially completed during 2009 growing season – rest to be completed in 2010).
- Develop a 10-year contract between the Town and a local farmer that ensures management of designated agricultural fields that is consistent with the purposes of the easement and maintains soil productivity (September 2009).
- Make *A Local Educator's Field Guide to Owl's Knoll on the Bissonette Farm* available to any educators who might want to use the LHTF as an outdoor classroom (available on the web and in the HCS library).

### Highest Priority

#### ***Recommended to be completed in 2010***

- Revitalize the permanent Town Forest management committee. Since Hinesburg has two Town Forests and an existing Town Forest Committee that oversees the management of the older Hinesburg Town Forest, the LHTF Management Planning Committee recommends that the existing Town Forest Committee also be responsible for the management of the LHTF into the future.
- Work with the Hinesburg Town Planner to make improvements to the existing property base map and create additional necessary maps: landscape context, soils, natural communities, stands, and wildlife habitat.
- Mark property boundaries.
- Request that the Chittenden County Forester inventory the forest and provide a written report of the inventory and recommendations for management, including an assessment of the feasibility of a sugaring operation.
- Write a letter to the Planning Commission stating that public lands should be considered a natural and cultural resource worthy of consideration and protection in the rural zoning changes.
- Designate a contact person on the LHTF management committee to act as a liaison with scientists who are using or may want to use the LHTF as a study site. List contact information on Town website and in all relevant documents.

- Designate a contact on the LHTF management committee to act as a liaison between County Foresters, Fish and Wildlife Department Biologists, and others who would be likely to want to use the LHTF for education and demonstration purposes.
- Develop a flyer that summarizes the vision and goals for the LHTF along with guidelines for public uses (events and recreation) that can be downloaded from the Town website and available at the kiosk at the LHTF.
- Create and maintain the two parking areas, including appropriate signs.
- Engineer a solution (bridge, etc.) to maintain access to the main trail loop and Hidden Meadow despite the ongoing erosion that threatens the integrity of the existing farm road.
- Initiate a conversation with the Vermont Fish and Wildlife Department and farmers about how to maintain access to the Hidden Meadow for mowing, given the deteriorating condition of the current access through Owl's Knoll.
- Approach the Hinesburg Trails Committee about taking leadership to work toward the long-term objectives of (1) creating a public trail connection between the northern and southern portions of the LHTF that is acceptable to affected landowners and (2) working with the Mead Farm Road Association to complete the trail loop around the western knoll on Owl's Knoll.

### **High Priority**

#### ***Recommended to be completed in 2010-2011***

- Develop a list of potential service-learning projects that the LHTF Management Committee could partner on with teachers and their students at the LHTF (i.e. development of interpretive/informational material at a kiosk or creating and maintaining trail markers).
- Mark boundaries of Woodland STAs and post signs along trails to let the public know they are entering an STA and significant natural community.
- Remove tires from the gully where it is eroding the main access trail at the intersection of the trail loop at Owl's Knoll. These were placed in the gully under old government recommendations for erosion control. Removal will likely result in increased erosion, but the tires are ineffective and leach pollutants into the stream.
- Reroute walking trail through the hay field from the parking area to the woods road on Owl's Knoll around the perimeter of the field and through the woods (see "Proposed Trail" on Main Map).

### **Medium Priority**

#### ***Recommended to be completed in 2010-2015***

- Approach adjacent landowners about evaluating and planning for potential beaver conflicts before they happen.
- Find a way to make Port-a-lets available in the parking areas during the times when teachers are likely to bring their students to the LHTF (fall and spring).

### **Ongoing and Long-term (5+ years)**

- Meet and coordinate with local town committees such as: Conservation Commission, Planning Commission, Hinesburg Land Trust, and Trails Committee.
- Communicate with regional conservation organizations such as the Lewis Creek Association, the LaPlatte Watershed Partnership, the Nature Conservancy, and Audubon Vermont.
- Coordinate management of the LHTF with other properties in the area between Sliver Street, Gilman Road, Lewis Creek Road, and the Village through the creation of a neighborhood management plan.
- LHTF management committee participates in town plan and zoning regulation updates, and revisions.
- Offer opportunities for teachers to learn about the LHTF at the LHTF.
- Maintain a list of research projects that have been completed at the LHTF.
- Implement the *LaPlatte River Corridor and Wetland Management Plan* (Appendix E):
- Plan for a stream crossing or trail relocation where the gully is eroding the main access trail at the intersection of the trail loop at Owl's Knoll. Monitor this site and relocate the trail or install a structure (bridge) that does not interfere with the natural erosion process, as necessary.
- Monitor the wetland restoration areas following NRCS protocols for the first 15 years. The site will be monitored for proper functioning of ditch plugs and depressions, condition of plantings, control of invasive and nuisance plants, and the progress of the restoration. Any further monitoring will be identified in future revisions of the management plan as recommended by initial monitoring results.
- Relocate the trail in the ravine or install trail structures to eliminate the current muddy, eroded condition (after access to connecting trails on abutting private property is obtained).

### **Wish List**

*To be completed as resources and opportunities allow. These projects may be particularly well-suited for academic research/projects so this list should be made available to local schools and academic institutions.*

- Develop an understanding of the habitats found on adjacent lands and identify how plants and animals move between these habitats and habitats on the LHTF.
- Monitor wildlife use of travel corridors.
- With the help of neighboring landowners, field visits and orthophotos, map the spatial layout of forest ages and types in the roughly 1000 acres surrounding the LHTF.
- Seek funds to offer small incentive grants to cover fieldtrip costs for teachers to bring their classes to the LHTF.
- Expand *A Local Educator's Field Guide to Owl's Knoll on the Bissonette Farm* to include information on the northern parcel.
- Seek input from local teachers on what resources would be helpful for bringing their students to the LHTF.
- Coordinate with academic and state scientists to accomplish monitoring goals.
- Conduct an inventory of wildlife and habitats, and create recommendations for protection and enhancement. Create a map of wildlife sightings and signs, and significant habitat features that can be added to and updated periodically.
- Set up monitoring programs including vegetation plots, and birds, bats, and other wildlife. Approach local schools and institutions (HCS, CVU, UVM) to get assistance with monitoring.
- Replace the stream crossing structure (culvert/tank) associated with a Right Of Way for an adjacent property along Gilman Rd with a bridge of appropriate size that spans the stream and does not impede water or sediment flow or fish passage. Size the crossing structure according to RMP guidelines and Guidelines for the Design of Stream/Road Crossings for the Passage of Aquatic Organisms in Vermont (VT DFW) and/or consult with the District Stream Alteration Engineer and District Fisheries Biologist for sizing, placement, and permitting requirements.
- Conduct a habitat assessment for all streams using updated RMP habitat assessment protocols.
- Set up permanent monitoring sites along stream and river channels for cross sections, pebble counts, and photographs and define a monitoring schedule (every 5-10 years) to track channel adjustments. Possibly coordinate with UVM to combine this with education as a student project.

## REFERENCES AND RESOURCES

- Daley, Jad ed. *The Vermont Town Forest Stewardship Guide: A Community Users' Manual for Town Forests*. 2008. Vermont Town Forest Project.
- Flatebo, Gro, Carol R. Foss, and Steven K. Pelletier. 1999. *Biodiversity in the Forests of Maine: Guidelines for Land Management*. University of Main Cooperative Extension.
- Franklin, Jerry F., Robert J. Mitchell, and Brian J. Palik. 2007. *Natural Disturbance and Stand Development Principles for Ecological Forestry*. Department of Agriculture Forest Service Northern Research Station General Technical Report NRS-19.
- Natural Stand Dynamics Silviculture: A Discussion of Natural Community-Based Forestry Practices*. 2000. The Nature Conservancy.
- Sharpless, Kristen. 2006. *A Local Educator's Field Guide to Owl's Knoll on the Bissonette Farm*. University of Vermont Field Naturalist Program Master's Project.
- Thompson, Elizabeth H. and Eric R. Sorenson. 2005. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. The Nature Conservancy and the Vermont Fish and Wildlife Department.
- Vermont Trails and Greenways Manual*. September 2007. Vermont Trails and Greenways Council.

## GLOSSARY OF TERMS

Downed woody debris – Dead woody branches, limbs, and logs lying on the forest floor

Co-dominant – Refers to a tree species in the forest canopy that shares the majority of percent species composition with another tree species.

Conservation easement – A legal document that dictates the purposes for which a conserved property can be used or managed. May include specific permitted and restricted uses.

DBH (Diameter at Breast Height) – A measurement of the diameter of a tree 4.5 feet off the ground

Dominant – Having a very slow or temporarily stopped metabolism, as in the case of an overwintering animal or tree

Early-successional habitat – Young forest that is characterized by an open canopy (<30% closed) and dense shrub and sapling growth.

Ecosystem – The living (biotic) and non-living (abiotic) pieces of an environment and their interactions.

HLT – Hinesburg Land Trust

HTF – Hinesburg Town Forest located in the eastern foothills of Hinesburg and accessed off of Hayden Hill East and West Roads.

Hardwoods - Deciduous trees that lose their leaves each autumn (e.g. maple, ash)

Herb – An herbaceous plant that dies back and re-grows each year. Most herbs in the woods are perennials; they re-grow leaves and stems from an established root system rather than starting from seed each spring (e.g. asters)

Herb layer – the layer of herbs growing on the forest floor

Hibernacula – Habitats where large numbers of bats congregate to overwinter or hibernate (i.e. caves)

Invasive species – A plant or animal that outcompetes and prevents the establishment or succession of other species.

LHTF – LaPlatte Headwaters Town Forest

Large sawtimber – A tree with a DBH of greater than 23.5 inches.

MFERA – Mead Farm Road Association

Medium sawtimber – A tree with a DBH of 17.5-23.5 inches.

Natural Community – ‘an interacting assemblage of organisms, their physical environment and the processes that affect them.’ (taken from the book *Wetland, Woodland and Wildland*)

Non-native species – A species living in a place where it did not evolve

Overstory – The layer of trees whose crowns make up the top layer of the forest.

Pole – A tree with a DBH of 5.5-11 inches.

Rich site indicators – Plant species that are restricted to growing on rich sites, indicating a high soil pH (6.5-8.5).

Bat roosting tree – A tree under whose peeling bark forest bats, such as the Indiana Bat, roost and rear their young

Sapling – A tree with a DBH of 1-5.5 inches.

Seedling – A tree with a “diameter at breast height” (DBH) of less than 1 inch.

Shrub – A woody plant with multiple stems that does not grow to the full size of a tree (e.g. dogwood)

Small sawtimber – A tree with a DBH of 11-17.5 inches.

Snag – A standing dead tree

Softwoods - Coniferous trees with needles that usually stay green throughout the winter (i.e. white pine, white cedar)

Spring ephemerals – Woodland herbs that grow and flower in the spring before the tree canopy leafs out.

Stand – A sub-unit of the forest defined by a common physical site and/or tree species composition, age, quality or size.

TPL – Trust for Public Land

Understory – The layer of tall shrubs, seedlings, saplings and poles growing in the shade of the dominant trees

VLT – Vermont Land Trust

Wetland – A plant community characterized by permanently or seasonally wet soils.



## APPENDICES

### ***APPENDIX A: CONSERVATION PARTNERS***

The Town of Hinesburg owns and has primary responsibility for managing the LHTF, including the LaPlatte River corridor and wetlands. Floodplain forest, river management, & wetland restoration activities and bat habitat management activities will be carried out, in consultation with, approval by, and in some instances participation by (as needed) the Vermont Land Trust and three departments of the Vermont Agency of Natural Resources – the Department of Fish & Wildlife, the Department of Forests, Parks, and Recreation, and the Department of Environmental Conservation. The conservation easement and various components of this Management Plan articulate the required consultation and advice.

The Hinesburg Land Trust will provide ongoing assistance, as needed, to the Town in managing the LHTF and, in particular, its trail system. The primary contact for the Hinesburg Land Trust is Paul Wiczoreck, 2800 Lincoln Hill Road, Hinesburg, VT 05461; 434-4216; mgcpw@gmavt.net

The Vermont Land Trust will have primary responsibility for stewardship of the conservation easement on the LHTF. As needed, VLT will consult with the Vermont Housing & Conservation Board, co-holder of the conservation easement, and three departments of the Vermont Agency of Natural Resources – the Department of Fish & Wildlife, the Department of Forests, Parks, and Recreation, and the Department of Environmental Conservation. The current primary contacts for the Vermont Land Trust and the Vermont Housing and Conservation Board:

Tyler Miller, Conservation Field Assistant, Champlain Valley Office, Vermont Land Trust, PO Box 850, Richmond, VT 05477; tyler@vlt.org

Dan Kilborn, Stewardship Forester, Vermont Land Trust, Northeast Kingdom Office, P.O. Box 427, 1129 Main Street, St. Johnsbury, VT 05819; 802-748-6089; dan@vlt.org

Billy Coster, Vermont Housing & Conservation Board, 149 State Street, Montpelier, VT 05602; 802-828-5068; bcoster@vhcb.state.vt.us

Current primary contacts for other partners who are required to be involved in and consulted about future management issues and have signed off on this plan:

#### **Wetlands restoration and management:**

[unfilled position at the writing of this plan]

**River management:**

Gretchen Alexander, Fluvial Geomorphologist  
Vermont Department of Conservation River Management Program  
10 North Building, 103 South Main Street  
Waterbury, VT 05671-0408  
Phone: 802 241-3774  
FAX: 802 241-3287  
E-mail: [gretchen.alexander@state.vt.us](mailto:gretchen.alexander@state.vt.us)

**All Wildlife Issues and, in particular, Indiana bat habitat management:**

Scott R. Darling, Wildlife Biologist  
Vermont Fish and Wildlife Department  
271 North Main Street, Suite 215  
Rutland, VT 05701  
Tel: 802-786-3862  
Mobile: 802-777-1732  
E-mail: [scott.darling@state.vt.us](mailto:scott.darling@state.vt.us)

John Austin, Wildlife Biologist  
Vermont Fish and Wildlife Department  
5 Perry Street Suite 40  
Barre, VT 05641  
802-479-0197  
E-mail: [john.austin@state.vt.us](mailto:john.austin@state.vt.us)

Jane Lazorchak  
LIP Coordinator/Botanist  
Vermont Fish and Wildlife Department  
5 Perry Street Suite 40  
Barre, VT 05641  
[jane.lazorchak@state.vt.us](mailto:jane.lazorchak@state.vt.us)  
802) 479-4405

**Forest management:**

Michael Snyder  
Chittenden County Forester  
Department of Forests, Parks, & Recreation  
Essex Junction, VT 05452  
802-879-5694  
[michael.snyder@state.vt.us](mailto:michael.snyder@state.vt.us)

*APPENDIX B: CONSERVATION EASEMENT*

*APPENDIX C: BASELINE DOCUMENTATION REPORT, VERMONT LAND TRUST*

*APPENDIX D: INDIANA BAT MANAGEMENT GUIDELINES*

*APPENDIX E: LAPLATTE RIVER CORRIDOR AND WETLAND MANAGEMENT PLAN*

*APPENDIX F: AUDUBON VERMONT HABITAT ASSESSMENT*