COMMUNITY FOREST MANAGEMENT PLAN for the WEST WINDSOR TOWN FOREST

December 2017

Prepared by:
West Windsor Conservation Commission for the Town of West Windsor

PROPOSED COMMUNITY FOREST MANAGEMENT PLAN FOR WEST WINDSOR TOWN FOREST

DECEMBER 2017

SIGNATURE PAGE

This Community Forest Management Plan (CFMP) for the West Windsor Town Forest is submitted to the Vermont Housing and Conservation Board and the Upper Valley Land Trust as part of a Conservation Easement held by both parties and a condition of a grant provided to the project by the Vermont Housing and Conservation Board. It will remain in force until an updated Community Forest Management Plan for West Windsor Town Forest is prepared.

Authorized Signature for Town of West Windsor

Authorized Signature for Upper Valley Land Trust

Authorized Signature for Vermont Housing and Conservation Board

AKNOWLEDGEMENTS

This document is based in large part on an earlier Forest Management Plan prepared by Tii McLane for the Town of West Windsor, together with further work by John Roe at the Upper Valley Land Trust who prepared the Interim Plan that preceded this document.

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I. OWNERSHIP and CONTACT INFORMATION

Easement Name: West Windsor Town Forest Conservation Easement

Location: West Windsor Town, Windsor County, Vermont

Access Roads: Kimball Farm Road, Coaching Lane Ext., Ski Tow Road, Mountain's Edge Road, Route 44, Mount Ascutney State Park Road.

Landowner: Town of West Windsor
Mailing Address: P.O. Box 6, Brownsville, VT 05037
Physical Address: 22 Brownsville-Hartland Road
Contact: Martha Harrison (Town Administrator)
Phone: 802-484-3520,
Email: town.of.west.windsor@valley.net,

Easement Co-Holder: Upper Valley Land Trust
Address: 19 Buck Road, Hanover, NH 03755
Contact: John Roe or Jason Berard
Phone: (603) 643-6626
Email: John.Roe@uvlt.org or Jason.Berard@uvlt.org

Easement Co-Holder: Vermont Housing and Conservation Board
Address: 58 East State Street, Montpelier, VT 05602
Contact: Kris Hammer, Director of Stewardship
Phone: (802) 828-5068
Email: kris@vhcb.org

II. PROJECT BACKGROUND

Introduction

This Community Forest Management Plan (CFMP) for the West Windsor Town Forest is submitted to the Vermont Housing and Conservation Board and the Upper Valley Land Trust as a requirement of the Conservation Easement held by both parties and a condition of a grant provided to the project by the Vermont Housing and Conservation Board.

This version of the CFMP has been prepared by the West Windsor Conservation Commission which has been tasked with administering the Conservation Easement for the Town of West Windsor (Town). This CFMP is an edited version of the Interim CFMP that was prepared by the Upper Valley Land Trust (UVLT) and Tii McLane, who based her work largely from a detailed Management Plan for the original Town Forest when she was a consultant to the Town of West Windsor. The Interim CFMP was required to be submitted at the time of the grant of funds by the Vermont Housing and Conservation Board (VHCB)to acquire the ski area property. Simultaneously, the Town of West Windsor entered into a Conservation Easement with the VHCB and the UVLT covering the Town Forest and the newly acquired and abutting ski area property. This revised CFMP has been prepared for the purpose of complying with the granting of the Conservation Easement.

This CFMP will go into effect upon approval by the West Windsor Selectboard, the UVLT and the VHCB, and will remain in effect until it is up-dated or revised by the Town and approved by the UVLT and VHCB.

The Town of West Windsor has owned a Town Forest since 1979. The Trust for Public Land (TPL) has helped the Town of West Windsor obtain the majority of the former Ascutney Mountain Resort property to add to the Town Forest, protecting the threatened network of trails, significant natural communities, and public access. This addition to the Town Forest is a mix of forest land and open or regenerating ski-trails totaling 467.84 acres lying adjacent to, and to be combined with, the 1,112.32-acre existing Town Forest land. The town of West Windsor encompasses approximately 15,892 acres. The expanded Town Forest, after a proposed land swap encompass 1,582.5 acres; 10% of the town. Appendix B, Conservation Map shows the updated final acreages.

The decline of the Ascutney Mountain ski resort (bankruptcy in the 1990s and closure in 2010) has been a catalyst for transition for the town of West Windsor. Extreme stream bank, road, and bridge damage sustained during Hurricane Irene (2011) added further impetus for planning changes. Motivated by these events, the Town put together a new town plan in 2014. Public hearings and mailed surveys have provided the Town with insight into public values:

> *The residents of West Windsor have decided that the town's highly valued features are scenic beauty, natural resources, wildlife habitat and recreational trails. The Town is committed to protecting these features for future generations.*

Mount Ascutney is specifically listed as a Conservation Area in the Town Plan, defined as "lands that possess outstanding wildlife habitat, recreational or educational resources, fragile natural areas, economic assets (generating revenue from recreation or tourism) or scenic resources values". Other Conservation Areas include headwater streams, vegetated areas next to surface waters, locally and regionally significant historic sites, deer wintering habitat, vernal pools, and locally defined sensitive natural areas; all which exist on both the Ascutney Mountain Resort Property and the original Town Forest land. The original Town Forest land is referred to specifically in the Town Plan, calling for strong conservation measures:

> *Conservation lands represent relatively pristine areas or special resource areas of the town, such as the Town Forest, that residents wish to preserve in their natural state for future generations, and that should, therefore, receive the highest level of protection from development. Special care should be taken in any resource management or extraction plans to maintain the character and value of these areas.*

Specific measures have been taken during the last five years to further the conservation goals stated in the 2010 and 2014 Town Plans. An Act 250 permit was submitted to allow for public access to the trail system on the original 1,112-acre Town Forest property, license agreements were made with private landowners, including OLCC Vermont Management Company, improvements were made to the parking area and access road to provide year-round access to trails, and the Town Forest Management Plan was updated and improved with a Natural Communities Report that describes the forest in terms of its ecological and habitat values.

The purpose of this Community Forest Management Plan is to identify known information relative to the Property, present the goals of the Town of West Windsor, and put forth prescriptions for management and conservation activities for the next ten (10) years consistent with the Conservation Easement.

This CFMP may be updated at any point, but shall be updated at least every ten years.

Local and Regional Significance

The Town Forest is of great importance both locally and regionally. Comprising approximately 1/10th of the town, these parcels of land ensure that the Town of West Windsor will continue to provide one of the larger blocks of un-fragmented forest in the southern Connecticut Valley region. Combined with Ascutney State Park and privately-conserved acreages to the south and west, this area provides significant wildlife habitat connectivity north to south and east to west (Figure 1). Mount Ascutney as a whole, and these parcels, specifically, contain many State-significant and uncommon natural communities and wildlife habitats (see Natural Communities and Wildlife sections). Vermont Natural Heritage Program considers Mount Ascutney as the best example of elevation-dependent natural community variation in the State, and among the best in all of New England. Beyond its ecological importance, the property provides extensive recreational opportunities and spectacular scenic vistas. There is an extensive trail network in the area surrounding the Town Forest. On the Town Forest land,

itself, there are approximately 30 miles of single and double track trails, used for mountain biking, hiking, running and snowshoeing. Several regional running races and trail-riding events take place on the property: currently these include the Vermont-50, the Vermont Five and Dime, and the Vermont Mountain Bike Festival. These events individually draw 200-750 participants each year from various places around the country, but particularly from New England and New York. During the rest of the year, local residents from the town and from surrounding towns benefit from the trails and vistas that are found here. The local school is already using the Town Forest as an outdoor classroom for lessons on ecology and land management. Much of the area within the Ascutney Mountain Resort parcel lies within a Source Water Protection Area, to protect the drinking water source for 750 people. Tributary streams from the entire Town Forest feed water from the sides of Mount Ascutney into Mill Brook, which runs west to east through the Village of Brownsville, and flows into the Connecticut River, a National Blueway.

Southern Windsor County Forest (SWCRPC) Stewardship Planning: The SWCRPC recognizes the importance of conserving scenic areas, ecological systems, wildlife habitats, recreational opportunities, and Source Water Protection Areas, and recently finalized, with funding from Vermont's Department of Forest, Parks, and Recreation, a regional Community Forest Management Plan, which has a goal of "keeping forests as forests" on a landscape scale. This plan helps provide a regional context for the management of the West Windsor Town Forest. However, it is not a formal part of this management plan and thus does not directly bind the Town Forest management.

Vermont State Wildlife Action Plan: Conservation of the West Windsor Town Forest area will address many of the Vermont State Wildlife Action priorities by addressing threats to Species of Greatest Conservation Need, as outlined in the Vermont Wildlife Action Plan (2005).

- *Habitat Loss:* The 1,582.5 acres of this forest will never be developed and will remain as habitat for forest-dwelling species in perpetuity. As an important link in a chain of forest blocks that connect from New Hampshire to the spine of the Green Mountains, the West Windsor Town Forest provides habitat and travel corridors for species that range widely through Windsor County.
- *Impacts of Roads:* By conserving and consolidating ownership of these once-separately owned properties, further fragmentation and development of these parcels are prevented. Excluding temporary logging roads, no additional permanent roads will be created on the property.
- *Pollutants and Sedimentation*: The conservation easement and the Forestry Plan include buffers around streams and wetlands and will mandate best management practices, which will protect water quality and decrease sedimentation in streams. The Conservation Easement also defines a large area as a natural area, which will greatly enhance the quality of water flowing into the headwater portions of these streams.

Conservation of the Property supports the following Conservation Strategies outlined in the Vermont Wildlife Action Plan:

Strategies for conserving Vermont's Birds of Greatest Conservation Need

- Slow the rate of fragmentation and development and maintain blocks of contiguous forest, grasslands, and early and late-successional habitats.

- (Encouraging) forestry practices that can enhance habitat suitability such as maintaining or increasing the availability of coarse woody debris and snags.
- Identify, prioritize and maintain existing contiguous forest blocks and associated linkages that allow for upward and northward movement in response to climate change

Strategies for conserving Vermont's Mammals of Greatest Conservation Need

- Maintain large blocks of undeveloped forests linked together by habitat corridors in order to provide a network of interconnected habitats throughout northeastern New England
- Maintain riparian buffers along streams
- Maintain and restore habitat connectivity and minimize fragmentation of forest blocks.

Strategies for conserving Vermont's Reptiles and Amphibians of Greatest Conservation Need

- Maintain habitat through appropriate management, direct habitat disturbance and site roadways away from sensitive sites such as breeding pools
- Work cooperatively with landowners, habitat management agencies, towns and communities to protect habitat and maintain connectivity.

III. TOWN OBJECTIVES

The enlargement of the West Windsor Town Forest is an effort by the Town to protect this land from development, put it into open public ownership, and manage it for public recreation, ecological integrity, wildlife habitat, education, and timber. The Town of West Windsor values most highly the integration of recreational use with the maintenance of ecosystem integrity. Income from forest products is one goal of the Town, primarily to support implementation of this CFMP, but not high on the list of community values when compared to maintaining and improving wildlife habitat. Additional community values include water supply and water quality protection, carbon sequestration, open space protection, education, protection of sensitive natural communities and habitats, and a sense of community and increased civic pride.

Administration of the West Windsor Town Forest

Ultimately, the West Windsor Selectboard holds final management responsibility for all aspects of the West Windsor Town Forest and will make sure its management is within the parameters set out by the Conservation Easement. The Selectboard has authorized the West Windsor Conservation Commission to prepare the CFMP and to oversee the Town's responsibilities under the Conservation Easement.

This CFMP, and each further amendment, update, or other future iteration of the CFMP, must be signed by the West Windsor Selectboard, the Upper Valley Land Trust, and the Vermont Housing and Conservation Board to be effective. No changes in recreation use or harvesting of forest products are permitted without a signed, effective Community Forest Management Plan that is in conformance with the Conservation Easement in place.

The CFMP relies heavily on natural community and forest type mapping, and the reports that were generated from those inventories. It also draws upon many discussions that have shaped the Conservation Easement and thus defined the type of recreation the Town expects on the Town Forest. The main body of this CFMP is a narrative that gives the natural resource context, the recreational uses contemplated, and the management those will receive over the life of the management plan. The basis for much of the ecological and forest values analysis for the property uses natural community descriptions to detail the ecological features and processes significant to each community. Within the descriptive text is information about the biological importance of each community, fragility in the face of human uses, ecological uniqueness, potential wildlife habitat values, and recommendations related to management. These detailed natural community descriptions are very long; therefore, to improve the plan's readability, these descriptions are found in Appendix C and D. Specific forest management information, forest type maps, and harvesting recommendations are found in the Forestry Plan which is attached as Appendix E & F. Appendix T and U contain a summary of the recreational plan adopted by Ascutney Outdoors which has leased a portion of the Town Forest for recreational purposes. Appendices C through U all contain a great deal of information, including management actions and recommendations. All appendices are considered fully a part of this CFMP and should not be set aside simply because the information has been assembled as an Appendix.

General Objectives

- Preserve and conserve 1,582.5 acres as a Town owned community forest that will provide multiple benefits to the residents of West Windsor and the general public in perpetuity.
- Conserve and manage for a forest ecosystem of high ecological health and function in the context of a landscape that includes Mount Ascutney, a large forested block known for its high biodiversity value and which is largely in public ownership.
- Maintain and create high-quality outdoor recreation opportunities that are dispersed or on trails within that forested context.
- Create a location where West Windsor can host large-scale outdoor events in the Multi-Use Recreation Area with low long-term ecological impact, such as races, concerts, and fairs, and accommodate more intensive recreation that can reuse the existing open ski slopes, such as community skiing or downhill mountain bike races and trails.
- Provide for outdoor education programs for local schools and residents as well as for visitors to the Town, such as guests at the adjacent hotel.
- Develop sustainable outdoor recreation and programs that are an economic driver to help sustain local businesses, but while also not putting the land's ecological values at risk.

Natural Resource Goals

- Maintain, manage and create forest communities that are of high ecological integrity, including areas managed for maximum maturity and the best expression of the respective natural forest community
- Maintain and protect native biodiversity and ecological integrity.
- Conserve rare and exemplary natural communities and species.
- Protect the quality of ground water and surface water.

- Protect and enhance wetland habitats.
- Protect and enhance a variety of habitats for native species using a variety of tools, including timber management.
- Maintain the mix of natural communities that exist on the Property even as they adjust over time in response to climate change.
- Protect existing and potential wildlife habitats, including management to protect or enhance critical and/or limited habitat needs or to protect species sensitive to human disturbance.
- To the extent possible, prevent the introduction or spread of invasive plant and animal species.
- Manage each Natural Resources goal by following current best practices as defined by pertinent State, Federal, and private entities, as well as scientific research.

Recreation, Educational and Cultural Goals

- Promote and encourage low-impact non-motorized outdoor recreation for residents and visitors of all skill levels.
- Maintain and manage dispersed pedestrian recreation, including hunting and fishing. .
- Create, maintain, and manage the use of a trail system to provide access to the property for mountain bikers, hikers, horse-back riders, and other trail users permitted under the West Windsor Town Forest Conservation Restrictions.
- Maintain the hang-gliding launch sites.
- Create and maintain a remote, high-skill back-country ski zone within high integrity forests using narrow trails and natural openings.
- Maintain the open ski slopes of the former ski resort and develop a community-scale back-country and alpine ski area.
- Develop other more intensive recreation opportunities in the Multi-Use Recreation Area, including the accommodation of community events such as races, concerts and fairs.
- Protect the old quarry and other historic cultural resources found on the property.
- Create and promote educational and research use of the property that is in keeping with the Natural Resource goals.
- Develop and maintain parking facilities for access to the West Windsor Town Forest.
- Monitor recreation use and its effects on the property.
- Manage all recreational uses in accordance with the Natural Resource goals above and the Sustainable Recreational Carrying Capacity benchmarks developed by this Community Forest Plan.

Timber Management Goals

- Promote the development of a mature canopy..
- Promote mixed age classes and structural diversity associated with natural gap-disturbance forest regimes.
- Prevent, eliminate or minimize exotic or invasive species during timber management, and use timber management as a tool to correct species imbalances caused by past management or current management within the larger landscape.

- Enhance habitat for all species of wildlife appropriate to the property's natural communities by maintaining or creating large trees, cull trees, cavity trees, standing and downed coarse woody material, small openings, or promoting specific plants.
- Generate periodic income from timber production while maintaining Recreation and Natural Resource goals.
- Enhance biological diversity at both the local level and regional level.

IV. CONSERVATION EASEMENT

Summary of the DRAFT Conservation Easement

Please see appendix A for the full recorded copy of the Conservation Easement

This summary is not intended to serve as a guide to the specific uses allowed in the Conservation Easement for the West Windsor Town Forest. The actual Conservation Easement in Appendix A should be consulted for this purpose. Rather, this summary is to highlight the context of thought that created the easement specifics, to address aspects of the easement that are either unique or may significantly affect management, and to offer important background information for a field or monitoring visit.

The unique challenge for this easement is the integration of two properties with high quality ecological values and very high recreation values on a land base where these two values coincide. Adding to this challenge is that the two properties have widely differing characteristics. One property, the newly acquired Ascutney Mountain Resort, is partially comprised of cleared, alpine ski-slopes with intensive resort recreation history. The second property, the original West Windsor Town Forest, is a long standing conservation area with a much less fragmented forest some of which is of state ranked ecological quality. These differences are coupled with a strong desire by the community to re-establish West Windsor as a regional recreation destination that drives much of the local economy. In various forums the Town expressed a desire to both develop high quality recreation that will attract people and to preserve the high ecological values found on the mountain into the future. The easement uses various means to reach this desired goal.

Purposes: There are two primary purposes used to meet this property's unique challenge of integrating ecological protection with recreation. In this easement the two purposes are not ranked by priority but rather intentionally given equal importance for meeting the easement goals overall. However, the relative weight given to each may change dramatically at various locations on the property. In addition, it is explicitly acknowledged that how they are balanced in the future may change over time as a result of activity in the surrounding landscape and the advancement of land use management and ecological knowledge. The easement structure is modeled after other Vermont Housing and Conservation Board easements held on public land, particularly Town-owned community forests where recreation is a key component of a property's long term use.

Special Management Areas: Restrictions and allowed uses are key components of conservation easements. To accommodate the wide range of ecological and recreation values in different portions of the property, this easement uses Special Management Areas to protect the wide variety of conservation and recreation values. There are five different Special Management Areas: *Surface Water Buffer Zone, Multi-use Recreation Area, Recreation Infrastructure Area, Back Country Ski Slope Area,* and *Natural Area*. This is far more special management areas than typical in most conservation easements. They also cover a much wider range of conservation values than is typical. Recreation values are stronger in the Multi-use Area, and ecological values higher in the Natural Area, even though recreation is allowed in both.

The boundaries of the five areas are permanently delineated in the easement. There is a sixth area that functions similarly to a special management area (Back-Country Ski Zone) but it is a floating zone where boundaries may be changed over time Therefore, it is not designated as a special management area of the easement.

Back-country Skiing: Ascutney Mountain, and the original West Windsor Town Forest parcel in particular, has a long history of quality back-country skiing. This recreation use is among the hardest to incorporate into the easement because it extends across the majority of the property. If poorly managed, it has the potential for negative impact on forest habitat and regeneration. To address this concern, the easement sets up a system of management under three specific regimes related to the intensity of vegetation management:

- Dispersed skiing is allowed throughout the protected property provided no vegetation is cut, except that inadvertently cut by the ski. There is no management of skier use level or any vegetation management. However, if rogue cutting or level of skier use creates trails or openings then the Town will act to curtail use. The higher skiing skill level needed to meet these conditions on this steep mountain, and the long access distance to upper slopes, should keep this use relatively low.

- Back-country Ski Slope Area - The old alpine ski slopes may remain completely open without forest cover to accommodate many people of a wide variety of back-country skiing and boarding skills. Lifts will bring people to mid-slope so the shorter distance to “skin” uphill allows access for more people.

- Back-Country Ski Zone - Management planning for this zone, which extends into the Natural Area, acknowledges that the collective management knowledge around back-country skiing on this property (and in general) is at an early stage. The focus here is high-quality, remote back-country skiing, which usually requires some open understory. Thus, the easement creates a zone on the property where limited vegetation management is permitted provided a closed canopy is maintained. The goal is to create relatively narrow sight-lines to connect natural open understory areas, without negatively impacting forest regeneration or species mix. This area will use adaptive management to balance the competing purposes of the easement. The extent of this area may expand or contract over time.

Finally, the last means of balancing forest ecology with back-country skiing is to create a discrete separation between the users of the old open alpine slopes and the Back-Country Ski Zone. Experience on other public lands has shown the greatest detrimental effects on forest structure occur where people have easy back-country access, often by a lift. Therefore, there will not be an access trail between the Back-country Ski Slope Area and the other forested ski areas, particularly the Back-Country Ski Zone. By using access as a management tool, the property will hopefully provide opportunity for back country skiing, at all skill levels, with little or no detrimental effect on the forest values.

Public Ownership, Management, and Management Fees: Much of the acquisition money for this property comes from the Vermont Housing and Conservation Board. Consequently, the easement requires that the property remain in public ownership and is managed for public purposes. It cannot be managed for private profit, thus the ski area, mountain bike and XC ski trails, and any other developed recreational activities must have a community-based non-profit structure. Fees may be charged to fully cover all operating and capital costs but they must be the same for everyone. Neither residents nor property owners of West Windsor may have special rates. These conditions are standard for VHCB funded town-owned land. Somewhat unique to this easement is that the property must always be managed by an entity or entities (including the Town) with the capacity to manage the existing (extensive) mountain bike trails and planned recreation uses otherwise the use will be lost until such an entity is again in place..

Trails, Monitoring, and Invasive Species: Another tool that the easement uses to balance recreation and forest values is to limit trail expansion to the Multiple-Use Area. This keeps the portions of the property devoted to trails, versus natural forest, at its current balance. The mountain bike trails currently total over 30 miles, are well designed and constructed, and primarily are on the lower portions of the mountain. The Town has identified the upper elevations as the most sensitive. Therefore, the Natural Area, designed to be representative of all natural communities found on the property, will serve as the boundary between more intensive trail-based recreation and dispersed recreation. It will also serve as the place with the highest level of ecological protection.

The balance between trails and high value forest land is also met by an acknowledgement, within the easement, that trails are an avenue for invasive plants that can be detrimental to forest health. Therefore, this easement requires regular monitoring for invasive species and, if necessary, removal or control of new invasive species, as well as monitoring for erosion and erosion control. The baseline documentation report for the easement includes baseline mapping and geographic location of invasive species and erosion at the time of easement closing. This work will serve as a model for future monitoring of possible invasive plant introduction.

Sustainable Recreational Carrying Capacity: Ultimately, the expectation is to provide perpetual high ecological forest values and high quality recreation on a property where both are expressed so well. This requires determining the recreational carrying capacity of the mountain. Therefore, the easement requires that carrying capacity benchmarks for each of the recreation uses be created. Development of these benchmarks will require research beyond that available to Town volunteers, and therefore will require UVLT assistance. The goal is to determine what level and type of use is likely to be detrimental

to forest and/or recreation values and to then create measurable benchmarks. Benchmarks may be updated as knowledge about recreational impacts and ecological knowledge evolve.

Part of the monitoring effort will be to measure the level of recreation use against these benchmarks. As the level of use of a particular recreation activity approaches its benchmark, the management goal will be to find ways to prevent further impacts associated with the recreation activity, and, if necessary prevent further growth of that particular use if there are no alternatives ways to mitigate the impacts. The concept of defining a sustainable recreational carrying capacity is a unique, but critical, component of the easement. It will ensure that the values protected by the two easement purposes will be viable in the long term. Essentially, it is a formal statement of the concept of adaptive management built into the permanent aspects of the easement. It also interacts with other aspects of the easement terms to force both Grantors and Grantees to work together closely to actively balance potentially competing values. The input over various public forums has stressed that both goals are critically important to the Town; the Sustainable Recreation Carrying Capacity is the key concept to carry those goals forward into perpetuity.

Other Issues: Very few new permanent structures are allowed in this easement, but some existing ones may be repurposed or continue to be used. For example, a small warming hut has been moved to the base of the rope tow. Unique to this property is the infrastructure for a large public water supply developed for the surrounding housing development by the former ski resort. It is important to note, while not a formal feature of the easement, much of the former ski slope is part of the state defined Source Water Protection Area for the public well. All recreation management must align with state laws related to such well source areas.

V. INFRASTRUCTURE/BASELINE

(see also Baseline Documentation Report Appendix N)

General Topographic Description

The overall project area consists of hilly to mountainous terrain with many areas of ledge, steep to extremely steep slopes, and several ravines. Elevation ranges from 750 to 3,050 feet. Depending upon the location being considered, the enlarged West Windsor Town Forest has been moderately to greatly impacted by the human history of use on the site; some quarry activity has occurred, as well as development and maintenance of a commercial ski resort on a portion of the property for the last 50+ years. Past quarry operations were small. The remaining mine ruins are picturesque, and are located at a spot with spectacular views. There are seven S3 (uncommon) natural communities on the property, many of which rank high for State importance. One rare plant (S1: very rare) was found, as well as several S3 (uncommon) plant species. There are several headwater streams, and several vernal pools on the Property.

Scenic Values

West Windsor, Windsor, and the surrounding Upper Valley of Vermont and New Hampshire draw their character from the visual presence of Mount Ascutney and the beauty of the river valley. In Windsor County, the Connecticut River National Scenic Byway follows U.S. Route 5, with spurs on VT Route 44 and 44A to Brownsville, leading to the foot of the property. Mt. Ascutney can also be seen from interstate highway 91 and many parts of the Upper Valley in NH and VT. Mt. Ascutney was the inspiration for the Cornish colony of artists settling nearby in NH, which is now Saint-Gaudens National Historic Site.

The West Windsor Town Forest has numerous lookouts which provide terrific views of the surrounding countryside. There are also a number of scenic waterfalls on the property.

The easement provides for the potential to create openings in the forest to provide scenic views from trails. These shall be small and not complete clear-cuts. An occasional mature tree should be retained to reduced ecological impact while still providing views. For this management plan the only planned opening to be maintained would be at the site of the collapsed log cabin for use as a picnic spot. The scenic view from the quarries on/near the east end of the property will also be maintained if necessary. Other potential future openings will be detailed in succeeding approved management plans.

Roads and Parking Areas

Access to the property is provided by several public roads:

- Kimball Farm Road: Small amount of road frontage allowing for pedestrian traffic;
- Coaching Lane Ext.: Access road to parking lot to access forest biking and hiking trails;
- Ski Tow Road: Parking lot near the former Ascutney Mountain Resort base lodge site;
- Mountain's Edge Road: Some road frontage allowing pedestrian access;
- Route 44: Very minimal access here. Potential access across adjacent private land if timber management is a goal on this north and east side of the property;
- Mount Ascutney State Park Road: State maintained access road to the Ascutney Mountain Summit.

Two access points/parking areas exist; one from the Coaching Lane access road, and the other on Ski Tow Road below the former base lodge of the former Ascutney Mountain Resort.

Road maintenance objectives for interior forest roads include:

- ensuring safe conditions for a variety of uses, including logging and passive recreation;
- minimizing erosion and runoff;
- preventing illegal trespass by unauthorized motor vehicles;
- preventing the spread of invasive plants along trails and roads;
- minimizing increased avian predation and nest parasitism by minimizing the width, number, and extent of new access and skid roads;

- minimizing disruption of wildlife habitat and recreation trails.

At the present time all roads and the two parking areas are gravel. These will be maintained as they are. No changes in management or size are contemplated at this time but will be re-visited if use of the area warrants a change..

The "Connectivity Trail" (Appendix B map) will be maintained as the emergency access route into the property for any emergency. It connects the interior trail network to the access roads at both ends of the property and so provides excellent access for emergency ATVs and snowmobiles. The bridge at the western end and lack of a developed road at the eastern end would prevent vehicular access. However, vehicular access would be possible from adjacent property in an emergency.

Several other old forest roads serve as trails. For more information pertaining to trails, please see the Recreation Section of this Community Forest Management Plan.

Water Infrastructure and Resources

This section is included in the management plan to remind people that the property has many water components, including an entire public water system for the resort are (Appendix P), beyond the Surface Water Buffer Zones that are defined on the conservation map (Appendix B). Management of all the uses of the property, from forestry to a concert, need to remember that protecting the water on the property, including the groundwater, is very important.

The Surface Water Buffer Zones provide 50-foot buffers to streams and wetlands and 100 foot buffers to vernal pools where natural processes are to prevail. Existing trails may continue to cross these, but the goal, with possible exceptions in a few areas, is to keep trails out of these sensitive areas to the extent possible. Around vernal pools there is a secondary zone of an additional 500 feet where forest management or trails are permitted uses, but the forest management shall maximize shade and large downed woody debris to support salamander populations. Management activity will largely be focused on any invasive species removal that is necessary to maintain both the stream and forest health.

The property also contains 216 acres within the Source Groundwater for the public water supply that serves the many residences and commercial businesses found in the Ascutney Mountain Resort area (Appendix Q). Most of this lies within the Back-country Ski Slope Area and the Multi-use Recreation Area, but unfortunately also includes all of the Recreation Infrastructure Area. This latter Area is located in one of the most sensitive parts of the Source Groundwater area because of its proximity to the wellhead. Every event and intensive recreation activity, with its associated machinery and waste disposal, is occurring within an area where it is critical to prevent contamination. This should be carefully considered when planning the type, scale and design of any use within either the Multi-use Recreation or Recreation Infrastructure Areas.

It should be noted that there are third party spring rights located on the property, but their exact location is unknown. As far as we know, these rights are no longer used and for the most part are lost to time.

Most are located uphill of the existing burnt-out old ski lodge, but title work shows at least one also present on the original West Windsor Town Forest land.

Buildings

There are seven buildings on the property. Four of them are associated with the former ski resort, one is an integral part of the water system associated with Reservoir 1, one is a small hunting camp, and the other is a derelict, fallen down cabin. These are located on the attached Appendix B map. One old ski lift remains which will be left as is until it decided whether it will be reused.

The four buildings associated with the ski operations will be gradually repurposed. They will not be significantly enlarged. The one at mid-slope, near the top of the Multi-use Recreation Area, may be repurposed into a warming hut associated with the community ski area use. . Uses for the other three have not been planned yet so they will be stabilized so that they do not deteriorate. When those uses have been identified this plan will be updated to incorporate those and their plans. Approval has been given to locate a small warming hut at the base of the existing lift.

A small hunting camp is located on the original town forest parcel and is known as the Davey Davis Camp (shown on the Appendix B map). The Town has allowed the owner to continue to use the camp for his lifetime even though he has no ownership of the camp. This understanding is being memorialized in writing. Mr. Davis acknowledges the use shall cease, the camp contents remove, and the cabin dismantled (much of it is stone so can be left on site) upon his death.

The derelict log camp (also located on the Appendix B map) is largely a pile of unusable rubble. The Town may leave it in place, remove the debris, or burn it in place, at some point. The site has nice views and may become a picnic area.

Details about all the existing buildings are found in Appendix N, the Baseline Documentation Report.

Boundary Lines

Boundary Lines for the entire property have been recently surveyed, blazed and painted. Lines will be re-blazed and painted every 10-15 years. See the detailed assessment of the boundary lines and the accompanying photos in the Baseline Documentation Report attached as Appendix N.

One small parcel of 2.34 acres of the Ascutney Mountain Resort property was exchanged, for an equal 2.34 acres from the Mountainside Condo Association. This exchange is shown in Appendix M. The area received has become part of the Multi-use Recreation Area portion of the property and subject to those aspects of the easement. The area transferred to the Mountainside Condo Association is restricted by deed against any new structures, and will largely be used for improved access and creation of a turn-around area at the top of the parking lot.

VI. MANAGEMENT PLANNING AND LANDSCAPE CONTEXT

The following report covers the combined area encompassing the 1,112-acre Town Forest land that was deeded to the town in 1979 and the 469-acre Ascutney Mountain Resort Area; purchased in 2015. For ease of management and reporting, these areas will be referred to as Compartment 1 and Compartment 2, respectively. The report is taken from the original Natural Communities Report for the previously existing 1,112 acre Town Forest and has been updated to include the Ascutney Mountain Resort Area.

Compartment 1: This portion of the West Windsor Town Forest is approximately 1,112 acres in size and lies on the west facing flank of Mount Ascutney, in West Windsor, VT. A Town Forest Committee was formed shortly after the property was deeded to the town and the first forest and wildlife habitat plans were written in 1986. Much of this report, as it pertains to Compartment 1, was written in 2011 for the Natural Communities Report that was completed at that time. Decisions relative to this parcel were handled through the Town Forest Committee. That responsibility now rests with the West Windsor Conservation Commission, which makes recommendations to the Selectboard.

Compartment 2: The Ascutney Mountain Resort Area was purchased in December, 2015, by the Town of West Windsor, with the assistance of the Trust for Public Land (TPL), Upper Valley Land Trust (UVLT), and Vermont Housing and Conservation Board (VHCB), from MFW Associates. Funding for the purchase was provided by state VHCB funds, the Town of West Windsor, Open Space Institute's Community Forest Fund, as well as grant from philanthropic foundations and private donations. This area has been added to the original town forest and will be similarly governed by the West Windsor Selectboard.

The Town and Ascutney Outdoors are developing procedures to assure that requests from Ascutney Outdoors that may impact the Conservation Easement are brought in a timely manner to the Selectboard, or to the Conservation Commission for consideration and recommendation to the Selectboard, and ultimately UVLT.

A Conservation Easement restricting both Compartments was conveyed as part of the transaction that expanded the Town Forest in December 2015. The easement covers the entire town-owned parcel, and is co-held by the UVLT and VCHB, with ongoing monitoring provided by UVLT. Input into the terms of this easement was provided by Town Forest Committee, the West Windsor Conservation Commission, and the West Windsor Selectboard, and four public hearings to incorporate citizen comments.

Note that the Town of West Windsor also acquired an adjacent 3.38-acre parcel from MFW Associates, on Ski Tow Road, shown as the Mt. Ascutney Water Co. parcel on the survey. This will be owned and managed by the Town, but is not officially part of the West Windsor Town Forest, nor is restricted by the Conservation Easement. This parcel contains a number of buildings that will be used to store ski area equipment and other town equipment and will be managed under different purposes than the Town Forest. It is also not subject to this management plan.

Finally, Ascutney Outdoors has also acquired the site of the burned out base lodge. This parcel is not subject to the Conservation Easement and is expected to be the site for a new Ascutney Outdoors Center from which management of the Mount Ascutney Resort Area (Compartment 2) will be conducted, together with the 3.38 acre parcel listed above.

An ecological assessment with natural community mapping was completed on the original 1,112 acre Town Forest in 2011. The project stemmed from the West Windsor Town Forest Committee's desire to more fully understand the ecology of the Town Forest property and to address the implications of human use within the parcel. With the purchase of Compartment 2, a similar methodology was used to evaluate this portion of the property. Initial steps included a forest inventory, a bird habitat assessment, and preliminary rapid ecological assessment and natural community mapping. Additional natural community mapping work took place in the summer of 2015 to fine tune the mapping and add additional detail such as species lists and rare plant observations. Recommendations for management address town goals and objectives in light of the ecological realities of the property.

Compartment 1: A forest management plan was last completed in 2011 to update the previous 1986 plan (Batchelder). Since, at that point in time, the Town Forest Committee decided, on recommendation from the forest ecologist working on the project, to use an elevational cut-off of 1,700 feet for future harvesting activity, inventory data was only collected below that elevation. Since there is some terrain above that elevation that has been harvested in the past, and could be reasonably considered for harvesting activity in the future, notes were taken to describe those areas and are included in the forest management summary at the end of this report. The easement further designates areas for management, and removes these upper slopes (some lower than 1,700 feet) from management activities as part of the Special Management Area designated as the Natural Area (Appendix B Map) The forestry plan and map are found in Appendices E and F.

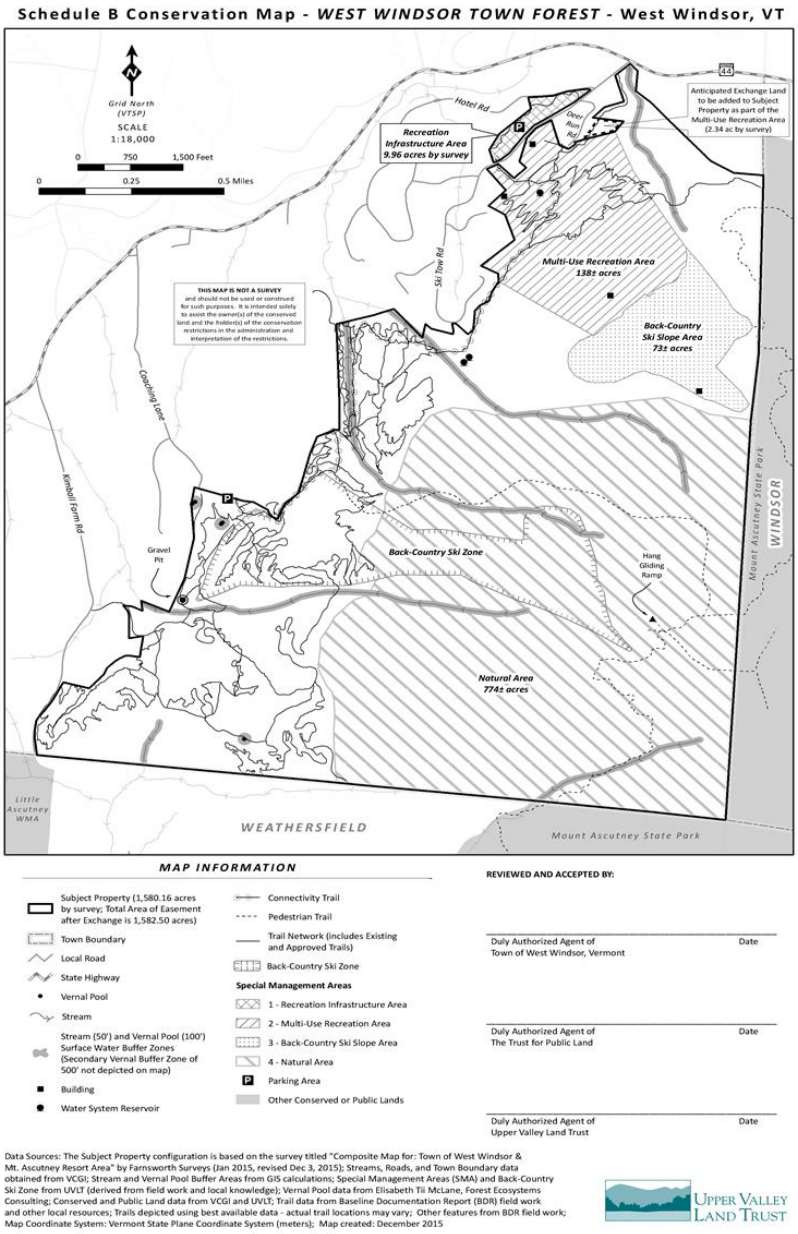

Figure 1: Special Management Area Map. Forest Management activity is an allowed designation for areas outside of the Natural Area depicted here. Vernal pool and stream buffer areas will also be protected during forest management activities.

Compartment 2: A forest inventory was carried out in 2014 to provide information towards a timber appraisal. Forest stands were delineated at this time. These forest stands have been added to the original 2011 forest stand map and can be found in Appendix F: 2015 Forest Stand Map. Additional field work in the summer of 2015 was used to fine-tune the inventory of natural resources and create a forest

management plan for Compartment 2, supplementing the original Forest Management plan (Appendix E). Wildlife management considerations are most fully addressed within this Forest Management plan.

The basis for defining the natural communities within this property is found in the publication "Wetland, Woodland, Wildland: A guide to the Natural Communities of Vermont", by Elizabeth Thompson and Eric Sorenson (2000). As defined within this book, a natural community is "an interacting assemblage of organisms, their physical environment, and the natural processes that affect them." Using this mapping approach allows us to use natural communities as a surrogate for biodiversity; since a complete inventory of living organisms on a landscape is not practical or feasible.

Landscape Setting

The West Windsor Town Forest is found in the southeast corner of the town of West Windsor, Vermont. It lies on the west and northwest-facing sides of Mount Ascutney. Mt Ascutney, 3,144 feet high, stands isolated among a broader landscape of gentle hills and valleys. Small villages with a mosaic of farm and forest land surround the mountain. Standing proud, the mountain is easily visible along the Connecticut Valley from Bellows Falls to Thetford, and can be seen from as far away as White Mountains in NH; 70 miles distant (Figure 2)

A simple web-search revealed a few different takes on the meaning of the name "Ascutney". One suggests that the name "Ascutney" comes from the Abenaki word Ascutegnik, which was the name of a settlement near where the Sugar River meets the Connecticut. This same source suggests that the Abenaki name for the mountain is Cas-Cad-Nac, which means "mountain of the rocky summit" (Wikipedia, 2011). Another source suggests that the name derives from several Abenaki words meaning "mountain of the rocky summit". (http://www.dartmouth.edu/~doc/hiking/mountascutney/), and still another suggests that "Ascutney" is Algonquin/Abenaki for "meeting of the waters" (http://www.slideshare.net/nlpropst/internship-mt-ascutney-state-park).

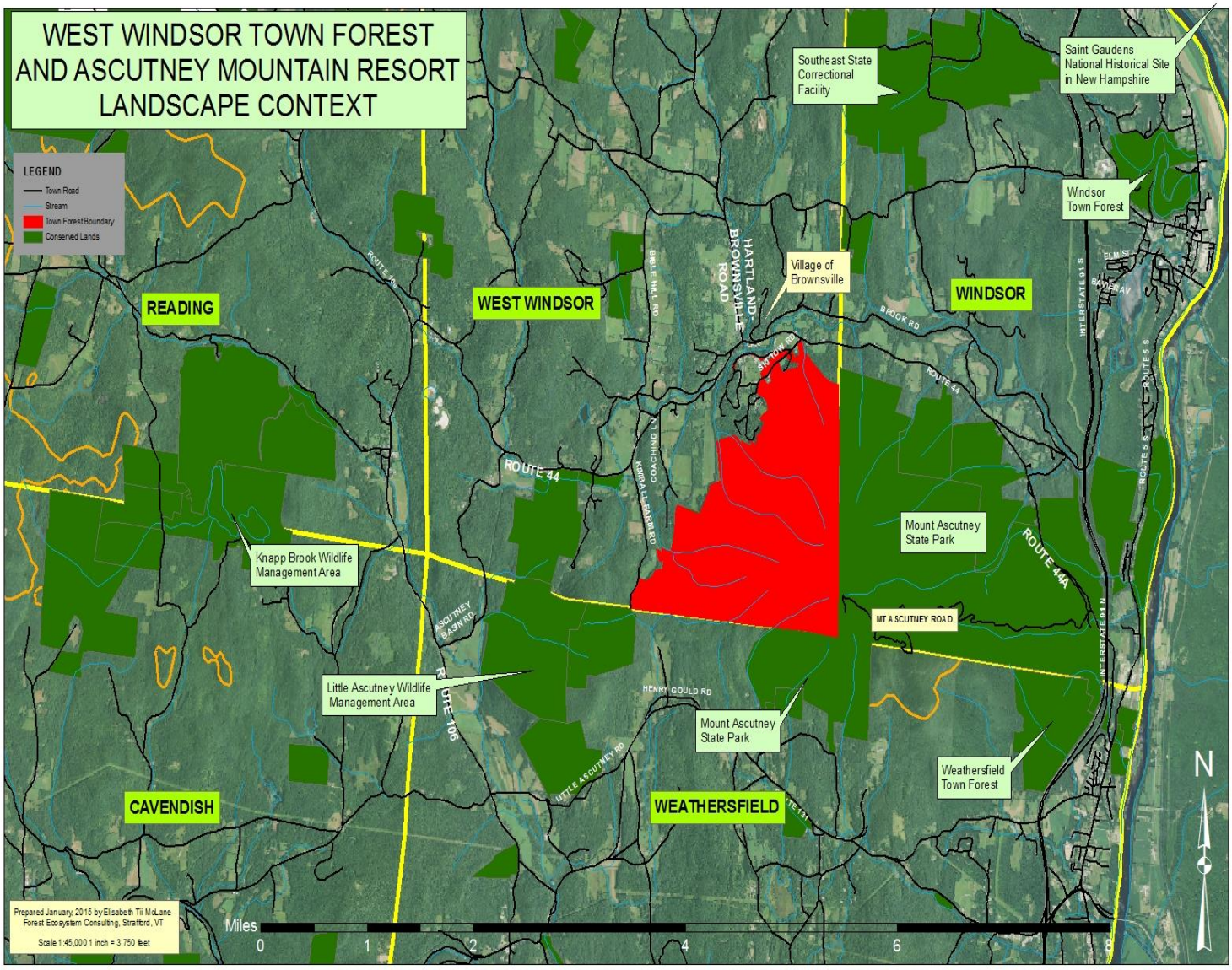

Figure 2: West Windsor Town Forest lies on the west and north side of Ascutney Mountain (enlarged versions of maps can be found in APPENDIX J).

Geology

Mount Ascutney is what is known as a "monadnock." *Monadnock* is an originally Native American term for an isolated hill or a lone mountain that has risen above the surrounding area, typically by surviving erosion. This monadnock was carved from an isolated White Mountain series pluton (VanDiver, 1987). A *pluton* in geology is a body of intrusive igneous rock (called plutonic rock) that crystallized from magma slowly cooling below the surface of the Earth. Practically all the other members of this particular rock series are found in the White Mountains of New Hampshire. The rocks of this pluton are of variable composition, from dark gabbros to pale granites. Surrounding the mountain are rock formations that include the phyllites and mica schists of the Devonian Gile Mountain formation.

Approximately 14,000 years ago the Connecticut River valley was dammed in the vicinity of Middletown, Connecticut and Lake Hitchcock filled the valley as far north as Burke, Vermont. In the region of this project area, the lake elevation was roughly 600 feet above sea level. This rims the mountain on the east side but does not quite touch the West Windsor Town boundary. The Town Forest falls on the boundary of three watersheds. Two small portions of the property along the south boundary drains southwest into the North Branch of the Black River and southeast into the Connecticut River Watershed: Sugar River to Bellows Falls. The majority of the parcel drains to the northwest, into Mill Brook, a part of the Connecticut River Watershed: White River to Sugar River.

A very simplistic summary, the geology of West Windsor's Town Forest is as follows: Approximately 400 million years ago, the landscape surrounding and incorporating the current West Windsor Town Forest was a shallow inland sea. Approximately 300 million years ago three continents collided in this region, closing the inland sea and forming the supercontinent of Pangaea. The heating of rock deep in the earth's surface, during this event, created the "pluton" that we know now as Mount Ascutney. Approximately 200 million years ago, the continent of Pangaea broke up, allowing the Atlantic sea to form, but leaving part of the African continent to the east of Mount Ascutney (New Hampshire). Between 110,000 and 10,000 years ago, the most recent glaciation (Wisconsin Glacial Episode) covered this area with ice. At the peak of this period, approximately 21,000 years ago, the ice in this area was approximately 1 mile thick. The advance and retreat of that most recent glacier scoured, shaped, eroded, and finally exposed the Mount Ascutney that we know today (Daly, 1903).

Compartment 1: The top of the mountain is made up of a very durable syenite rock (Walsh et al, 1996). Below 1,600 ft a mix of rock types can be found. Dominating the southwest section of the parcel is an undifferentiated, coarse-grained, hornblende-biotite gabbro and medium- to coarse-grained, locally porphyritic, biotite-hornblende diorite. These rocks show some signs of enrichment evident in the plant life there. Diorites are more susceptible to breakdown, and field evidence showed a great deal of dark colored minerals in the rock, likely to contain hornblend, a rock type that tends to be rich in calcium. To the northwest, is found cordierite hornfels. Hornfels are fine-grained metamorphosed igneous rocks that are very hard and resistant to alteration. Also

found in the northwest part of the parcel are small areas of Gneiss and schist rock. These rocks have some potential for providing soil enrichment, but are relatively minor portions of the parcel.

Compartment 2: Similar to Compartment 1, the upper slopes of this area are dominated by syenite rocks with hornblende granite occurring as small intrusive masses. Lower slopes are made up primarily of metamorphosed sedimentary rocks that make up the Waits River Formation. These rocks are carbonaceous schists with interbedded limestone and calcareous to non-calcareous quartz. These soils have pockets of available calcium that provide soil enrichment.

Soils

Soils on the West Windsor Town Forest property are derived from glacial till (Figure 3). Rock outcroppings are abundant, particularly on upper steep slopes. Upper slopes tend towards shallow to bedrock soils which are well to excessively-well drained. Further downslope, soils are deeper to bedrock, and stream valleys tend to be deeply cut. Soil has accumulated on benches and in valleys, providing for richer, moister growing conditions in those areas. Some primary soil features that impact plant growth are: nutrient availability, depth, and hydrology. Nutrient availability depends on soil particle types. Finer particles, such as clay and silt, both bind readily with nutrients (related to electron charges) and hold on to soil water, making them available to plants over time. Sandy soils have less capacity to bind with nutrients and tend to drain rapidly, allowing nutrients to be leached out of the system as soon as they are released during the breakdown of soil and plant materials. Loam soils are a balanced mix of equal parts sand, silt, and clay. Site class is a measure of productive potential, with Site Class I being the most productive. Site Class IV is considered “non-productive”. On this mountain, site class is frequently related to soil depth and drainage, since a limiting factor for plants growing on shallow soils is water.

Soils found on the West Windsor Town Forest are described below, beginning on lower slopes and progressing up the mountain:

Cabot loam: Cabot very stony silt loam is a deep soil of high natural fertility, but it forms over a fragipan, is poorly drained, and thus not very productive. These Site II soils are generally found in lowlands, basins, and stream valleys.

Shelburne fine sandy loam: Shelburne series consists of very deep, well drained soils formed in loamy glacial till. It is a fairly productive soil. They are found on gently sloping to very steep soils on glaciated uplands. The till is derived principally from micaceous schist and some siliceous limestone. These soils are quite productive (Site I).

Dummerston fine sandy loam: these soils are very deep to bedrock, well drained, and productive (Site I).

Vershire soils: These soils formed in loamy glacial till on bedrock controlled uplands. They are moderately deep to bedrock, well drained, and quite productive (Site I).

Buckland loam: Buckland is formed in loamy, compact glacial till on uplands. It is a deep, moderately well drained and productive, Site I, soil that holds moisture well. They are very deep to bedrock, but shallow to moderately deep to dense basal till and only moderately well drained. These soils have a perched water table at depths of 1.0 to 2.0 feet below the surface from Mid-Winter through late Spring.

The Berkshire-Tunbridge soils complex is made up of about 55% very deep, well drained Berkshire soils, 30% Tunbridge soils, and 15% other soils. Both are fairly productive, Site I soils.

Tunbridge-Lyman is a soil complex made up of about 60% moderately deep, well drained Tunbridge soils, 25% shallow, somewhat excessively drained Lyman soils, and 15% other soils. Tunbridge soils are fairly productive, but Lyman soils are generally droughty and are considered to be Site IV soils.

Hogback-Rawsonville complex: These soils formed in loamy glacial till on uplands. They consist of a mix of shallow to bedrock, well drained Hogback soils and moderately deep, well drained Rawsonville soils. Although these soils are potentially fairly productive, they are found on steep, rocky slopes that can be droughty and prone to tip-up damage.

Hogback-Rock Outcrop-Rawsonville complex: Similar to above, but exhibiting abundant rock outcroppings that do not support plant growth.

Glebe-Stratton complex: These soils formed in loamy glacial till on mountains. Glebe soils are moderately deep to bedrock, well drained, and fairly productive. Stratton soils are less productive (Site III), and are shallow to bedrock, well drained and high in rock fragments.

Ricker-Londonderry-Stratton complex: This map unit consists of very steep soils on mountain tops. The very shallow to moderately deep, well drained Ricker soils are on summits; the very shallow, well drained Londonderry soils are on summits and shoulders; and the shallow, well drained Stratton soils are on shoulders and backslopes. This map unit consists of 40 percent Ricker soils, 25 percent Londonderry soils, 15 percent Stratton soils and 20 percent other soils and areas of rock outcrop. These soils tend to be droughty and wind-prone, making them less productive for tree growth.

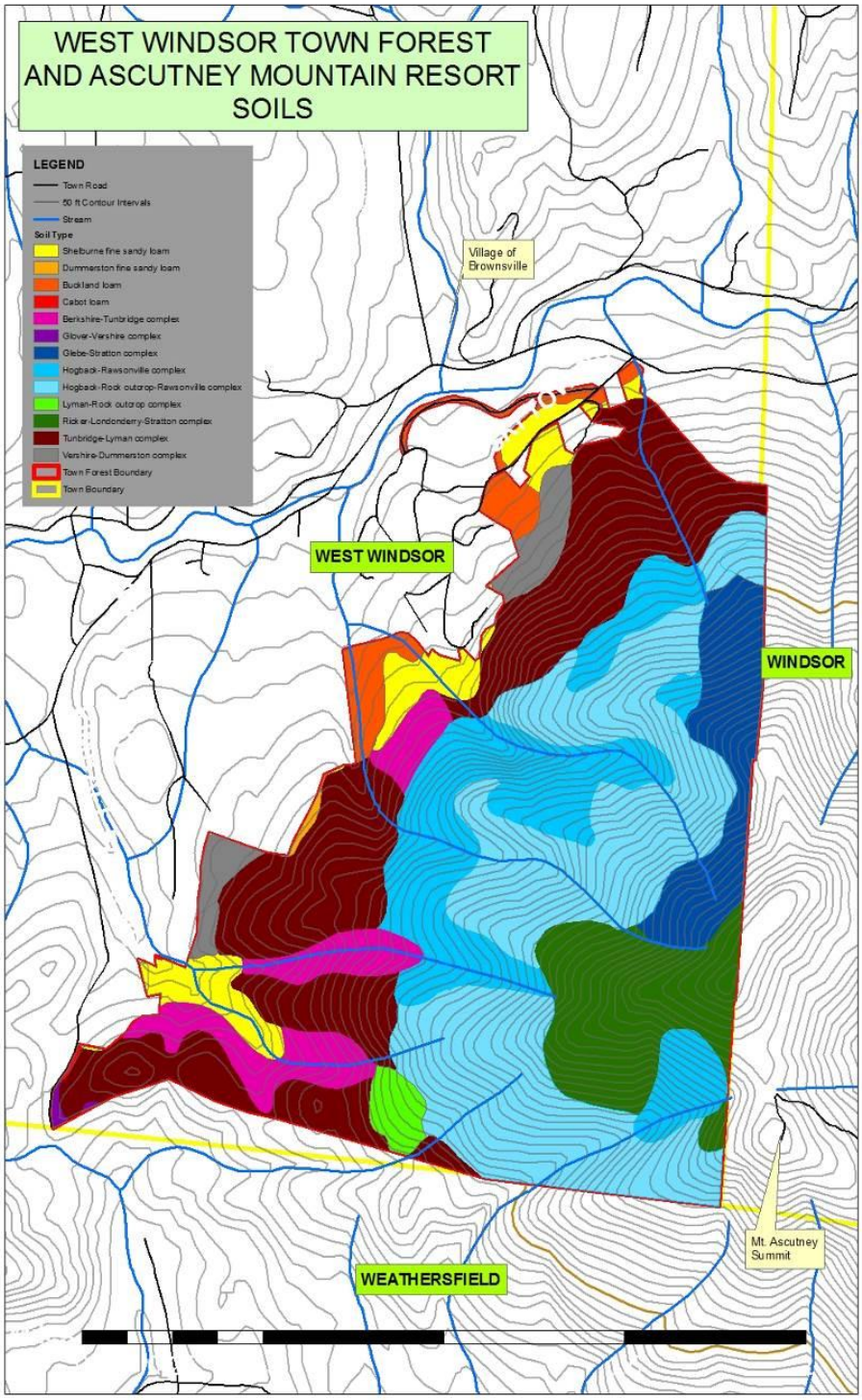

Figure 3: Soils map for the West Windsor Town Forest properties.

Natural Disturbance & Fire History

The major natural disturbance regimes that create the natural communities found on Mt. Ascutney are wind and fire. Wind will usually create small gap openings, particularly on the north side where the parcel is located as it is sheltered from any stand destroying wind from powerful, rare hurricanes such as in 1938.

Fire has definitely been a part of the history shaping the ecology of this parcel. Within Compartment 1, twenty seven data point were taken where signs of fire were either definitive or indicative (Figure 12). Compartment 2 also has indications of fire history. There is a 15-acre stand of mixed red pine and white pine that almost surely relates back to fire events, since without fire, red pine stands are only found naturally on very sandy soils. Charcoal was found in the upper soil layers within this stand. Historic reports indicate a major fire in 1883 that burned the "top of the mountain" above 2,200 feet in elevation (Whitney, 2011). Much of Vermont burned in the early 1900s (1903 and 1908) due to a buildup of tinder during previous years droughts. The flood winds of 1927 and the hurricane of 1938 are other potential events that may have fueled fires on the mountain. Although it seems that fire must have taken place on the mountain since 1883, no mentions of Ascutney burning at those, or any other, times have been discovered.

Of the many indications of possible past fire events, five of these were definitive (four on Compartment 1; one on Compartment 2). Four were in the form of charcoal and the other was a burned stump (Compartment 1: Figure 13). Given that charcoal generally would be hidden under leaves and other debris, perhaps this is an extraordinary amount of evidence. Since it was found in very scattered locations, it certainly supports the evidence of an extensive fire history on the Town Forest. Other indications included the presence of red pine, the presence of white pine and red oak in certain areas, the dominance of paper birch in the overstory, and the presence of dead pin cherry (Figure 14).

One would expect that ice storms may have also been part of the disturbance regime at the very highest elevations. The ice storm of 1998 is evidenced throughout the higher elevations of the Town Forest. It is unknown how this type of disturbance will change as climate change continues on its current trend.

Figure 4:Charcoal and a burned stump are definitive indications of past fire events

Figure 5:The presence of fire-resistant trees may be indicative of past fire events. Left: red pine, scarce on the landscape is most commonly and indication of historic fire. Right: This large white pine has a lightning scar. Many trees in certain areas had lightning scars

VII. LAND USE HISTORY

Recreational Use

Mount Ascutney has likely been used recreationally throughout time. The first organized effort to create recreational trails on the mountain occurred in 1825, in an effort to bring General LaFayette up the mountain (Whitney, 2011). By 1903 there were roads reaching the summit from both the Weathersfield and Brownsville sides of the mountain (Figure 6). In 1947, the first ski trails were created. Between then and 2010, when the ski resort closed, the initial ski trail system was expanded gradually to its present state (Figure 7). Currently there are only three official trails up the mountain that cross over West Windsor Town Forest land. Two cross over Compartment 1: the Bi-centennial trail that uses, for the most part, the old road that was constructed in the early 1900s, and the Weathersfield trail. The third crosses briefly into Compartment 2, in the vicinity of the old stone quarry along the northeastern boundary. The road shown in the photo in Figure6is not near the location of the current Weathersfield trail, but is found on the Weathersfield side of the mountain and could have been used in the past for horse and buggy.

Figure 6: Signs of past human use may have been work related, but just as likely were for sight-seeing purposes. Left: Old car just off the Bi-centennial trail at about 1,550 ft in elevation. Right: a carefully constructed old road near the boundary of the Cross and Glebe lots, in the southern part of the parcel, at 1,900 ft in elevation.

In recent years, some informal, "bootleg" hiking trails have been created on the mountain by a local citizen(s). It is difficult to tell how much use these trails get currently, but if recreational activity on the mountain increases, it is likely that these trails will see more use. As part of the restrictions in the conservation easement on the property, these "bootleg" trails will need to be closed and monitored.

Figure 7: Although trails are beginning to regenerate to young forest in many areas, this view represents the extent of the trail network for the Ascutney Mountain Resort. An aerial view today would look very similar to this.

On the lower slopes of the entire Town Forest ownership, recreational use has recently increased with the creation of an extensive mountain biking trail system. Compartment 1 trails have been completed and mapped and are shown in Appendix B conservation map and in the Baseline Report in Appendix N. These trails have been designed by a resident of West Windsor: Jim Lyall, who has had extensive training with the Vermont Mountain Biking Association, and follows all trail building recommendations from the International Mountain Biking Association.

Compartment 1: An evaluation was made of the mountain bike trails during the summer of 2011, and the report rests with the Town Selectboard. Other than some minor fixes and a few general design comments, these trails were found to have been very well designed and, for the most part, in excellent condition (Figure 8). As part of the baseline documentation, this work has been updated to locate invasive plants as well as erosion. This confirmed that for the most part the trails are in excellent condition. Literature reviewed (Sprung, 2007, Marion and Wimpey, 2011) indicates that erosion issues associated with mountain bikes is similar to that for foot traffic. Since bike trails meander a lot, to account for slope, it is possible that mountain bike traffic would be a bigger disturbance to wildlife than foot traffic, as they may stay in a given area for a longer period of time and since they move faster than foot traffic, they disturb more habitat in a given unit of time. A review of scientific data concerning this subject is inconclusive (Taylor, 2003; Marion and Wimpey, 2011). Specific information addressing impacts to the wildlife species occurring on the Town Forest is not available. Best management practices can be found on the International Mountain Biking Associations web site. Field observations found that dogs accompanying bike-riders are perhaps less likely to run wildlife, as they are busy keeping up with their owners. Jim Lyall agreed, suggesting that a dog that runs after wildlife and doesn't stay with the bikes is unlikely to be brought a second time. Another potential issue with mountain bikes, occurring on other public lands (Karen Douville, Hartford Conservation

Commission, pers.comm. Sept, 2011), is the tendency for bikers to independently create "rogue" trails. This issue is minimized in the setting of Mount Ascutney where the terrain is rough enough that mountain bikers are less tempted to wander off established trails. With increases in bike use, the West Windsor Town Forest trails

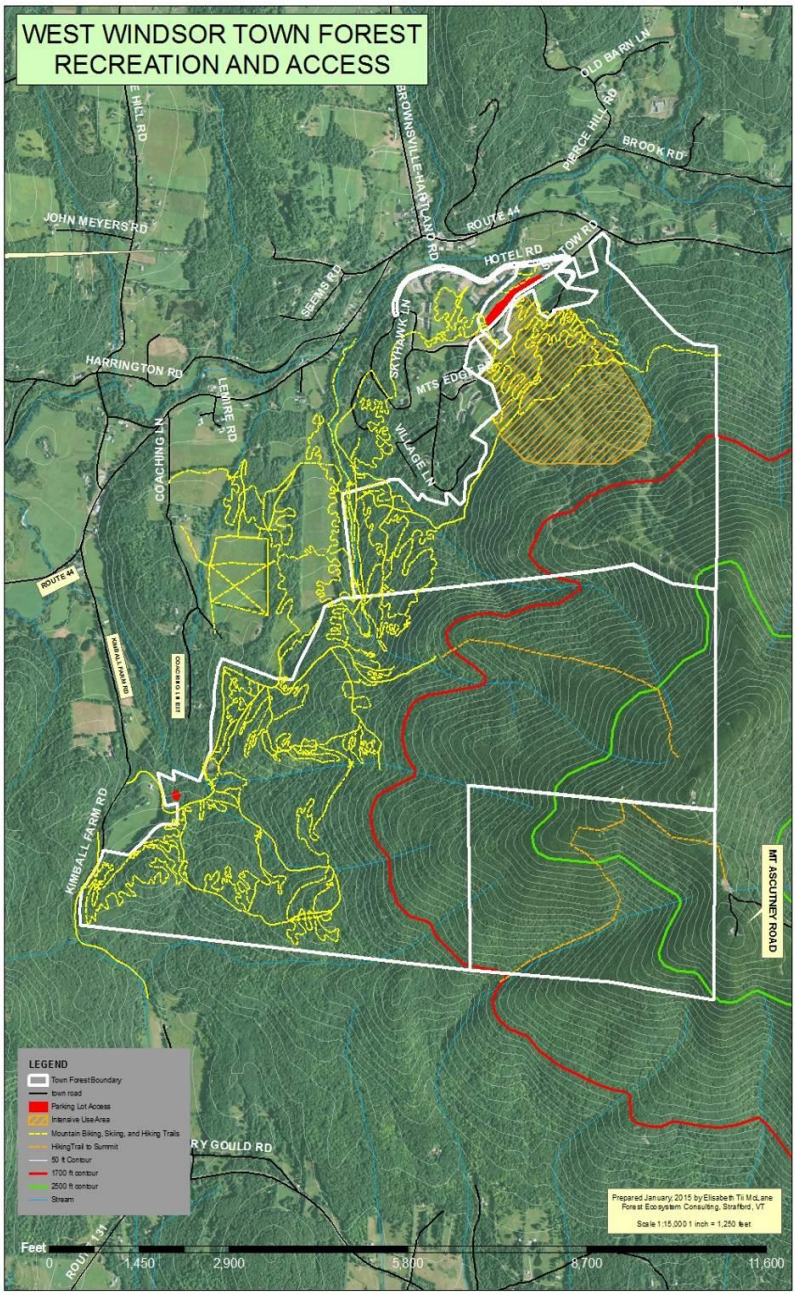

Figure 8: Recreational Trails are generally confined to below the 1700 ft elevation contour, with the exception of summit hiking trails, and the upper part of the former Ascutney Mountain Resort. The Multi-Use Recreation Area is restricted to the lower ski slopes and forested islands. Appendix B contains a more up to date map.

will have to be closely monitored to determine the extent to which increased use creates erosion damage issues. The Sustainable Recreation Carrying Capacity work to create benchmarks for intensity of mountain bike use will look at these issues and literature in more detail.

Compartment 2: Mountain bike trails are abundant on the lower slopes here as well (see Figure 8), but no formal evaluation of the ecological impacts for these trails has been made. Considering they were created by the same trail builder as the trails on Compartment 1, using the same care, they are expected to be in similar condition. From approximately 1947 to 2010 there were ski lifts operating on a portion of Compartment 2. Various owners tried their hand at making the ski area profitable, but the Ski Resort closed, finally, in 2010. The former ski slopes are beginning to regenerate to early-successional forest but most will be cleared again as part of the Town's non-profit community ski area.

Figure 9: Mountain bike trail stream crossing.

Besides hiking and mountain biking, other recreational activities that occur on both compartments include cross-country/backcountry skiing, snowmobiling, and horseback-riding. A single trail (the Connectivity Trail) is currently designated for use by horses, to allow them to cross from the Recreation Infrastructure Area through the Town Forest to the parking lot off of Coaching Lane. This management plan designates a trail that goes from the Coaching Lane Parking Lot to the trailhead/parking lot on Kimball Farm Road for use by horses so that they can connect to trails off of the West Windsor Town Forest to the north and west. Part of this trail is the road to the old gravel pit, but see Appendix V for all of the details. The Connectivity Trail and this extension to Kimball Farm Road, could allow for similar snow machine connection, but only if approved by the Town. This "extension" of the Connectivity Trail is a part of the existing trail network and thus will be open to all the other uses permitted on the protected property's trails.

There are some conflicts between the various trail users. Horses and bikes are not necessarily a positive combination and even pose some degree of threat for riders whose horses are spooked by bikes if bikers are not aware of the proper protocol for encountering horseback riders. Recently winter biking on mountain bike trails has become more popular. Winter biking may conflict with cross country skiers using the same trails. Over time trail management discussions may find ways to separate conflicts in time and space if they become severe enough.

Two small cabin sites exist on the parcel. There is a small stone hut located in the central part of Compartment 1, that gets occasional use from a family that has used this hut historically and a collapsed cabin on the southwest of the upper ski slope area, on a rocky knoll at the edge of the slope-break down to the stream valley to the south (Figure 10). Use of the former will be discontinued when the current "user" is deceased. The latter may be cleaned up, to be left as a view point but without a structure.

Figure 10: A small cabin found within the red pine woodland has collapsed in recent years. There are still signs of activity (fire pit) at the site. Spectacular views are still available here.

Agricultural Use

Compartment 1: The presence of small openings dominated by graminoid plants, specifically the sedge *Carex swanii*, and the grass *Poa saltuensis*, indicate that parts of this compartment may have been used historically for pasture land.

Compartment 2: In the southwestern part of the area, pioneer species with a high concentration of white pine are an indication of former agricultural use. Figure 11 shows the youngest forest in this area; approximately 50-60 years of age.

Figure 11: Mixed pioneer species on gentle slope indicate agricultural use approximately 60 years ago.

Timber Harvesting

Compartment 1: Signs of past forest harvesting are present in most areas. In many places stumps are still visible, setting a harvesting date sometime earlier than 30 years ago (Figure 12). These are all softwood stumps that tend to rot more slowly than hardwood stumps. A previous study lists a harvest date of between 1969 and 1979 (Batchelder, 1986). Batchelder suggests the harvest was heavy handed; "The Cross Brothers…..cut timber off almost all accessible areas. Some areas were cut quite heavy which resulted in undesirable regeneration and residual stands of poor quality stems". In 2011, old cut-stump evidence was not always present (particularly in hardwood dominated areas). In these areas, evidence of old skid trails is the only clear sign of historic harvesting activities. An organization formed by local mountain bike enthusiasts, Sport Trails of Ascutney Basin (S.T.A.B.) has taken the time to map existing trails, including the old skid trails that have been used for cross-country skiing in more recent years. These trails reach elevations of 1700 ft. The Bi-centennial trail is an old logging road for much of the way up the mountain and in that northeast part of the Town Forest, roads were found at elevations of 2,000 ft. Written sources indicate that harvesting took place as high as 2,500 (Mount Ascutney Guide, 2009) feet on the mountain, which would have included almost the entire Town Forest parcel.


Figure 12: Left: harvesting evidence on lower slopes in the Hemlock-Hardwood forests. Right: harvesting evidence in upper elevation Spruce-Fir zone.

Compartment 2: Similarly, there is evidence of past timber harvesting throughout much of this area. The presence of softwood stumps suggests a most-recent harvesting date of 25-30 years, possibly in conjunction with ski trail expansions. There are inoperable areas that have probably never been cut, but fire may have impacted these areas. One stand of mixed red pine and white pine likely speaks of past fire impacts. This is supported by the discovery of charcoal in the upper soil layers in that area. Construction of the first ski trails date back to 1947 with expansion of trails continuing over the following years.

Resource Extraction

Compartment 1: There a small stone quarry centrally located in the original 1,112-acre Town Forest parcel. There is a good road leading to the site and fantastic views of the stream waterfall and the surrounding landscape from this point. A small stone structure that may have been a hut is still recognizable. Work here took place between 1906 and 1907 (Figure 13).

Figure 13: View from the ledges near the old quarry.

Compartment 2: The Norcross Quarry, began its operations in 1808 and closed in 1923 (although it was not continuously operated). The quarry itself is located just to the east of the property boundary, on State-owned land, but the tailing pile is located within the Town Forest land. The tailing piles are easily seen on aerial photographs. On the ground, this area is also extremely picturesque and historically interesting.

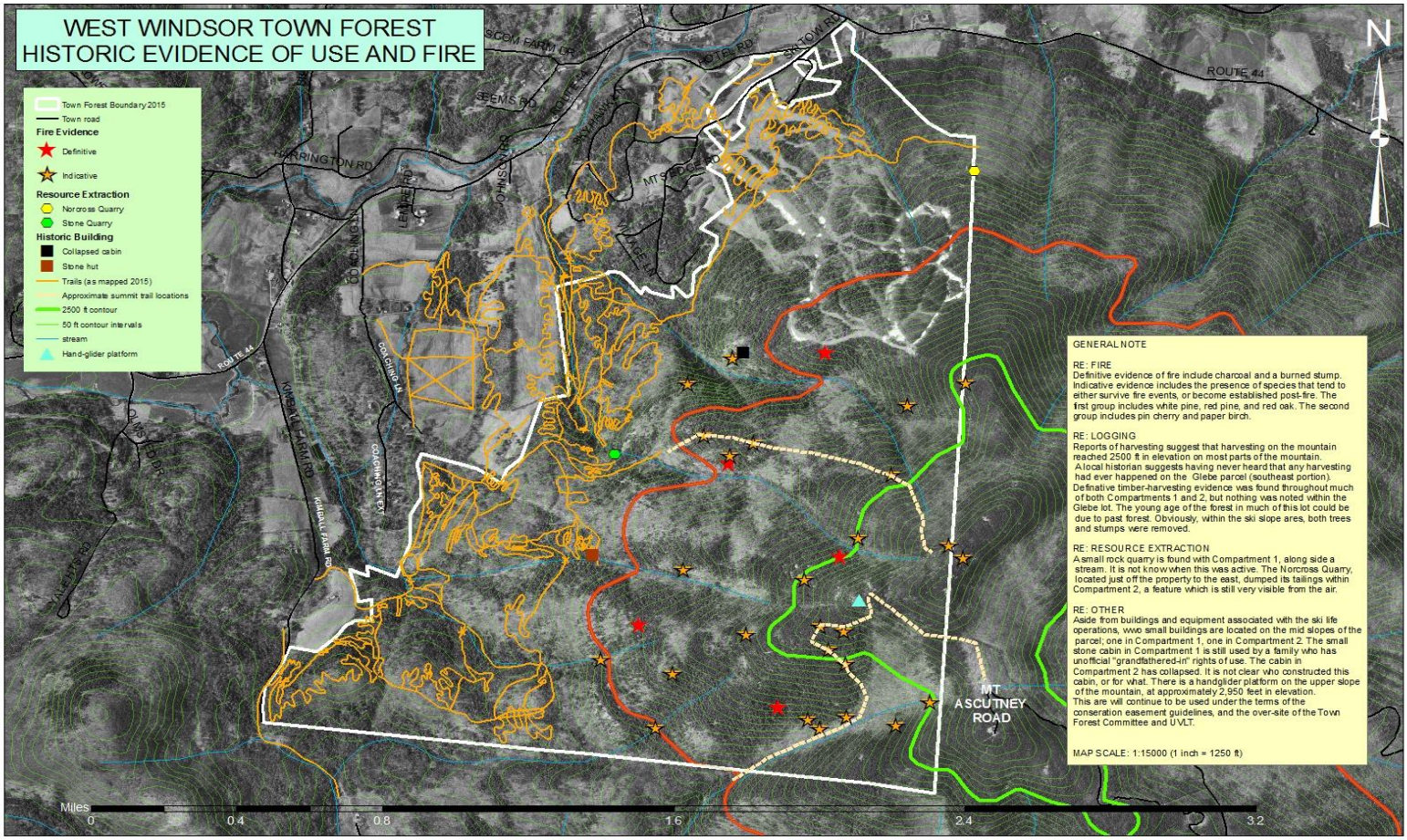

Figure 14: Historic signs of human activity and fire events within Compartment 1.

VIII. NATURAL RESOURCES

Introduction

Ascutney Mountain generally, and the West Windsor Town Forest particularly, has had more ecological assessment completed than is typical for most areas of comparable size. Many factors contribute to this. It is a regionally known "hot-spot" of natural community diversity because the mountain is a tall dominant feature essentially adjacent to the Connecticut River, which is a regionally major, relatively low-elevation river valley. This occurs just at the boundary where northern forest communities start to transition to southern forest communities. The result is an elevational and aspect based biodiversity that has attracted botanists and ecologists for many decades. In addition, it is the location of a large Vermont state park and a wildlife management area. The WWTF is also much larger than most community forests, and much loved and used recreationally by residents; therefore, it has received more attention paid to all its natural resources. Finally, the project to add the old resort land to the existing WWTF has resulted in field work to quantify its natural resources in order to compete for grants.

This management plan, particularly in this section on natural resources, borrows from all of these various reports. Many times sections of writing are simply copied, so the references to a particular compartment or other particular may be a bit out of context. All of these studies are incorporated into this management plan in their full form, with maps, as the following Appendixes: C, D, E, F, G, H, I, J and L. No attempt should be to understand the natural resources of the WWTF without consultation to the one or more of the studies. The Forest Management Plan (Appendix E and F), and the Ecological Assessment and Natural Communities Mapping Study (Appendix C and D) were completed by Elisabeth Tii McLane using intensive walking over WWTF (Appendix J).

Wildlife Habitat

Wildlife habitat values on West Windsor Town Forest are considerable. Many habitat types are represented, and the overall diversity of forest types and tree species is good. Mast (nuts and acorns) production is abundant throughout the lower slopes. Many species rely on mast for survival. Bear need this type of food to fatten up for the winter. Turkey, deer, and squirrels all rely on this food source over the winter. These animals will frequent south-facing slopes, in particular, where the sun melts the snow off the slope to expose this nutrient-rich food source. The upper slopes of the parcel are dominated by red spruce; providing a very specific habitat not found everywhere in the State. Several bird species specifically require this habitat. In areas where low softwood cover is abundant, snowshoe hare find habitat that provides important cover

for them. Rocky talus slopes and cliff areas also provide a unique habitat type, particularly useful for porcupine and bobcat. Although many habitat types are found on the Town Forest, there is very little early successional forest habitat represented, and water is not abundant. Several headwater streams exist, but many do not carry water throughout the year, and are not big enough to support populations of fish. Wetland areas are very scarce and consist of small wooded seep and vernal pool areas. In Compartment 1, two of the vernal pool-areas located had signs of breeding amphibians (mid-summer, 2011).

A habitat-mapping for the State of Vermont shows the Town Forest Parcel to be part of a very large block of undisturbed habitat 8,969 acres in size (Figure 15). In the rating of habitat blocks, size is a primary criteria since; bigger habitat blocks are more likely to have greater species diversity (if all things were equal), and also provide habitat for wide-ranging animals. Habitat acreage needs have been determined for many wildlife species. Home ranges, using data from *New England Wildlife: Habitat, Natural History, and Distribution* (DeGraaf, R.M. and M. Yamasaki 2001) are shown below. These ranges are averages of both males and females.

- Moose 30,147
- Black Bear 23,897
- Bobcat 11,456
- Fisher 7,574
- Gray Fox 1,920

Roughly 4.5 miles to the northwest of the Town Forest lies a habitat block that is approximately 27,000 acres in size. The Town Forest is an important part of an east-west wildlife corridor that can provide a link between New Hampshire and Vermont habitat areas. Since no one block provides sufficient habitat for all wildlife species, the connections between these blocks are a critical component to sustaining healthy wildlife populations.

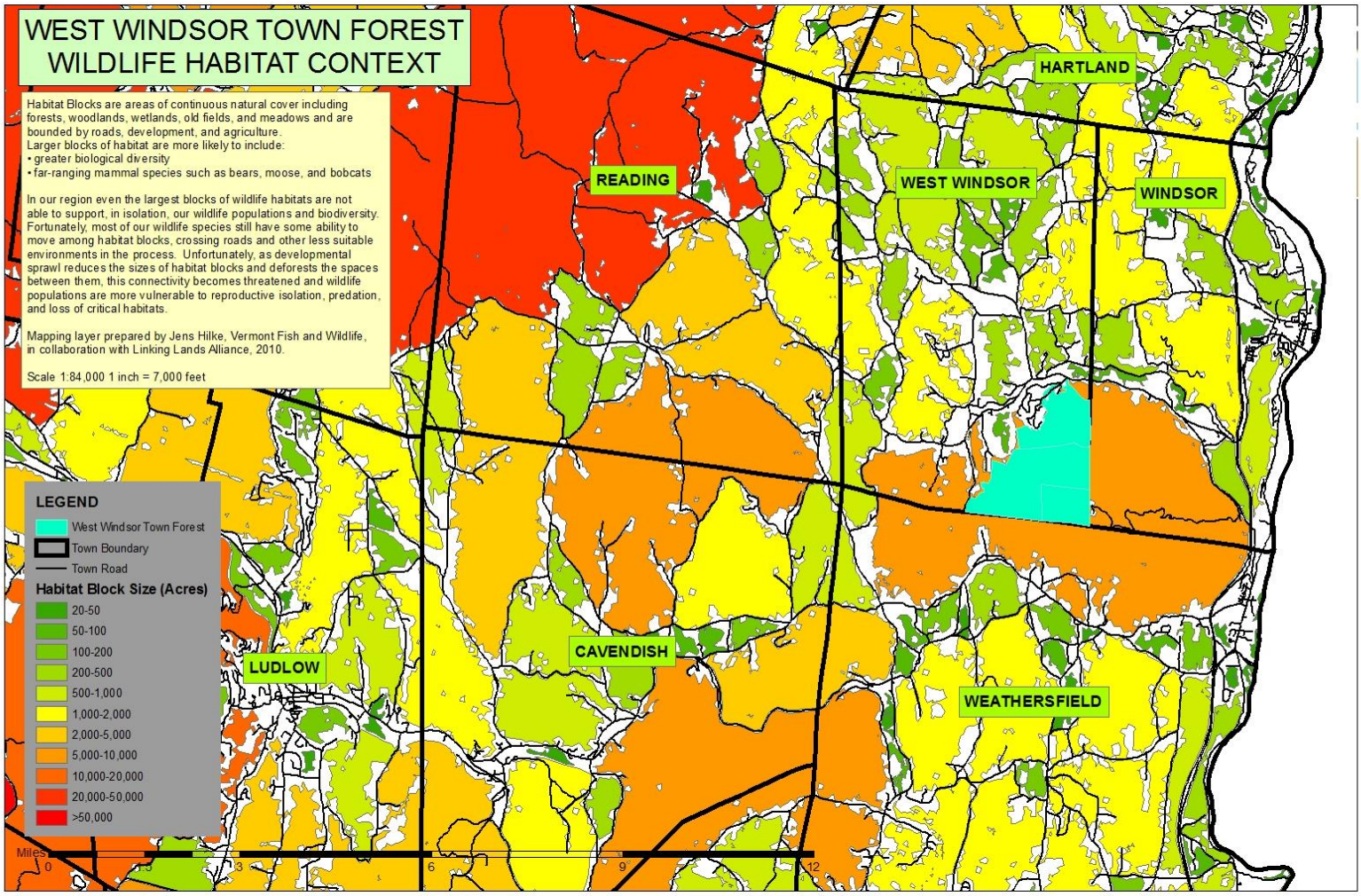

Figure 15: A State-wide habitat map shows areas of undeveloped land. The WW Town Forest lies within a block that is between 5,000 and 10,000 acres in size

Wildlife Sign and Habitat Features

During the various inventory processes for both compartments, wildlife sign and habitat features that are important to wildlife were noted. Figure 16 shows some details of this inventory data and identifies areas of specific habitat types using forest and community type designations. Natural Community and Forest Stand types can be used to identify certain features that are important to wildlife, such as red oak mast, softwood cover, and enriched soils (See Figure 16 and APPENDIX D and F).

Wildlife Sign

Compartment 1 was somewhat more thoroughly inventoried for wildlife sign. Most of the wildlife sign mapped was in the form of scat. Deer sign was only mapped where it was particularly noticeable (winter scraping on hemlock, significant trails, and abundant scat). Porcupine sign was abundant on the parcel (found 11 times), generally being found near rock piles. Amphibians were noted in quite a few locations as well. Wood frogs were generally found on the lower slopes, within ½ mile of a vernal pool. American toads were found much higher on the mountain; at 2,450 and 2,850 feet in elevation. Birds heard or seen during the spring 2015 inventory of Compartment 2 included: black-throated green, black throated blue, mourning, black and white, and chestnut-sided warblers, hermit thrush, scarlet tanager, red eyed vireo, indigo bunting, common yellow throat, yellow bellied sapsucker, and oven bird. More extensive information about birds within Compartment 2 can be found in the 2014 Audubon Bird Habitat Assessment (Appendix I).

Structural Diversity

Areas where structural diversity was moderate to good were noted in both Compartment 1 (Forest Stands 2 and 5) and Compartment 2 (Forest Stands 9, 10, 13, and in some of the forested islands in the ski slope on upper slopes). Structurally diverse forests have particular value to nesting forest birds since they provide nesting and foraging habitat at all height levels within the stand. Breeding bird surveys have shown that the forests of Vermont and Northern New England have some of the highest breeding bird diversities in the country and are a globally important resource for birds throughout the hemisphere (VT Audubon, 2011). The West Windsor Town Forest is located in the Atlantic Northern Forest Bird Conservation Region (BCR 14) as delineated by the North American Bird Conservation Initiative. The Atlantic Northern Forest encompasses a geographic area stretching southwest to northeast from the Taconic hills of eastern New York/western Massachusetts and the Adirondack Mountains up into the eastern portion of Canada. This area encompasses essentially all of Vermont. Other wildlife species also benefit from structural diversity. Hardwood, hemlock, and fir seedlings and saplings provide important winter browse material for deer, moose, and snowshoe hare. Low cover, particularly softwood cover, provides excellent cover for both predator and prey.

Thermal Cover

Softwood species provide important thermal cover during cold and snowy winters. During hard winters, temperatures stay higher and snow loads remain lower in these areas. Hemlock is particularly good cover and hemlock forests are frequently mapped by the State as critical deer wintering habitat. Deer, in particular, need this type of cover, but other animals use it as well. A section of the Town Forest, along the south boundary, has been mapped by the State as critical deer wintering habitat. This area extends to the south and east towards New Hampshire. Spruce and fir also provide the dense cover that is needed for good thermal protection. Deer are less likely to winter over at higher elevations, but snowshoe hare and ruffed grouse benefit from the cover provided there. Within Compartment 1, Forest Stands that display significant softwood cover include: Stands 4, 5, and 7; within Compartment 2: Stands 4, 7, and 10.

Beech and Oak Mast

Nuts and acorns are an important food resource for many wildlife species (bear, turkey, grouse, deer, and squirrels). Beech had a somewhat patchy distribution on the Town Forest. Since it is a component of the northern hardwood forest, but not always a dominant in that setting, areas that had a high proportion of large mast-producing beech were mapped separately. Red oak also provides an important source of mast. Since red oak is specifically listed in many natural community titles, the natural community type map can serve to indicate areas that have significant red oak component.

According to Forrest Hammond of Vermont Fish and Wildlife (Mary Beth Alder, pers. comm. September, 2011), this area is not known specifically to be an important bear corridor. The inventory of Compartment 1 picked up bear-sign on two occasions. The mast source is here though, and bear may find it important in future years. Meanwhile, deer, turkey, grouse, and squirrels all find it critical to their diet.

Wet soils

Wet soils are fairly uncommon on the entire Town Forest. These areas can be important to many wildlife species through the winter into early spring, since they tend to be the last to freeze and the first to thaw, providing potential foraging opportunities to hungry wildlife species. They provide the first green shoots in the spring. These areas may not be substantial enough for bears emerging from hibernation to be drawn to them, but a wandering bear may well benefit from their existence. Wet soil areas are shown Figure 16.

Soil enrichment

In areas of soils enrichment, herbaceous plant diversity increases, providing a greater variety of food for foraging wildlife. Bear, in particular, are very fond of the corm (root) of Jack in the Pulpit; a plant that is more abundant in areas of some soil enrichment. Soil enrichment is shown in Figure 16. The natural community type *Rich Northern Hardwood Forest* indicates where these enriched soils can be found for both Compartments.

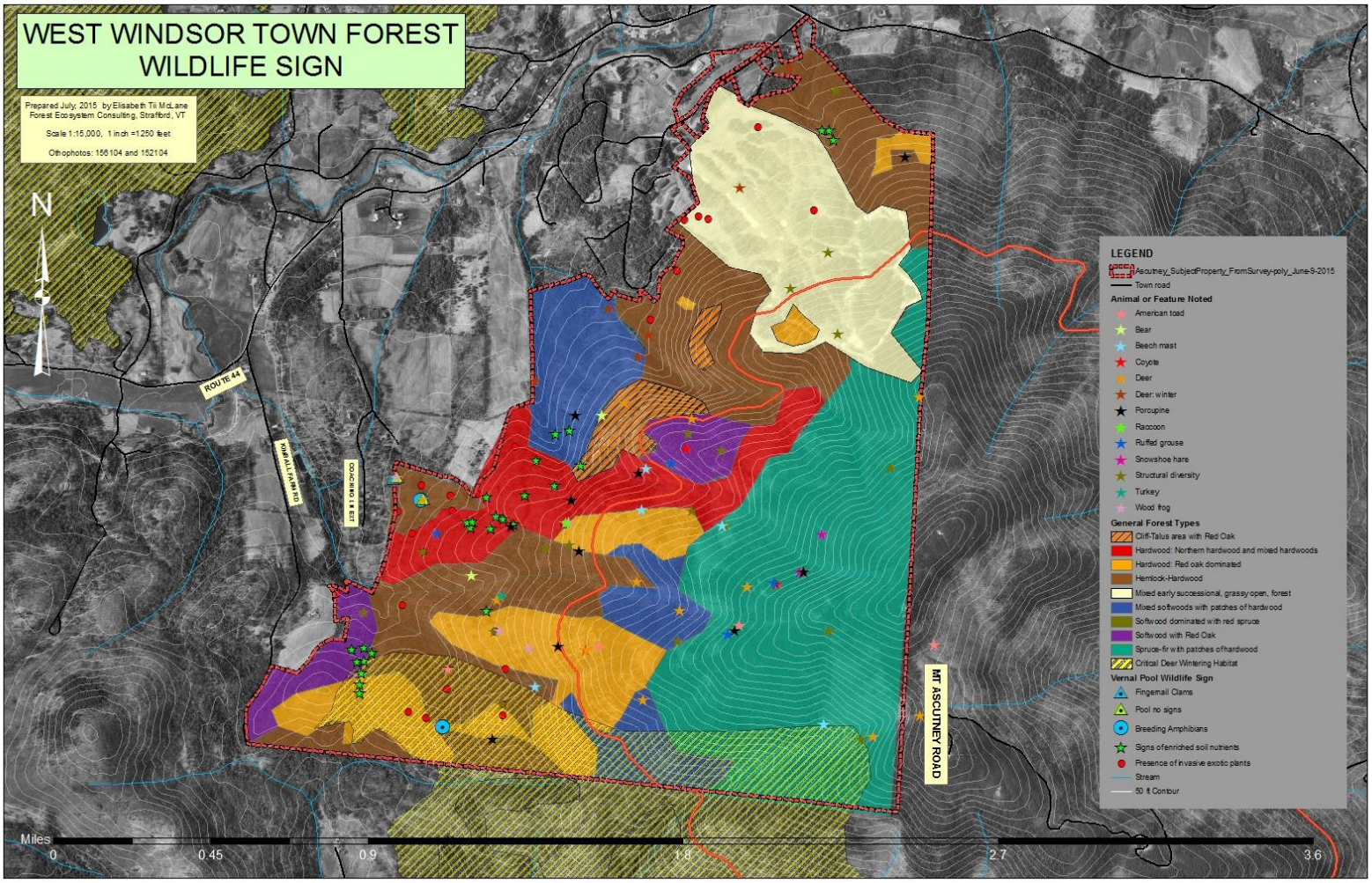

Figure 16: Wildlife sign, general forest habitat, and other important features.

Other Features of Importance

Numerous other features important to wildlife exist on this property. Some features of note include an abundance of large trees, cull trees, and cavity trees. Large trees often have dead limbs or rotten knots that can be made into cavities by woodpeckers. These trees then provide housing opportunities for numerous birds and mammal species. Cull trees are often hollow and can provide denning habitat for larger mammals like porcupine, fisher, and even bear. Large and cull trees, when they fall to the ground create coarse woody material that will take a long time to decompose, providing habitat for macro and micro-invertebrates, amphibians, fungi, and microbes. Climate change predictions suggest air temperature increases that are likely to lead to soil temperature increases, particularly if summer droughts become the norm. Abundant coarse woody material will help insulate the soil from increased temperatures, holding moisture close to the ground. Currently woody material is not abundant throughout the property. Many tree species provide important values to wildlife. Cherries provide soft mast that provides important food for migrating song birds. Aspen and paper birch are favored tree species for cavity construction by the yellow bellied sapsucker. Yellow birch has one of the highest ratings for providing gleaning/foraging opportunities for forest song birds. Cliff and talus areas provide critical habitat for bobcat; where they can den in cavities in the rocks, and use the cliffs to rest and rear their young, safe from predators. Porcupine similarly use the talus areas for denning.

Presence of invasive species

Invasive plant species provide a negative impact on habitat, generally speaking. Where they become abundant they can out-compete native plants and create a less diverse forest. Within Compartment 1, there are only a few areas where invasives are abundant. One is along the edge of the field along the western border in the south part of the parcel. Multiflora rose has become established here and dominates the forest edge. A couple of other areas are found on the hill tops within the Dry Oak-Hickory-Hophornbeam forests, particularly those areas along the southern boundary. Morrow's honeysuckle is the dominant invasive in these areas, along with occasional barberry. Within Compartment 2: invasive plants were mostly found in Stands 5, 6, and 7, as well as in the regenerating ski trail areas and the forested islands associated with them. Species encountered there include: barberry, bush honeysuckle, and common buckthorn. These shrubs can provide some low cover that may benefit wildlife, but other native shrubby species are also present and could fill that niche. It would benefit both wildlife and natural communities to do some invasive control work in these areas.

NATURAL COMMUNITIES

Methods

ArcMap 9.3 was a primary tool in both project preparatory work and in final map preparation. Preliminary mapping used existing Vermont Center of Geographic Information (VCGI) layers for soils, geology, aerial photography, and topography. These layers were used to explore the

landscape context and to design a field protocol that would most efficiently provide inventory data to be used in delineating and describing natural communities. Extensive field survey work was then carried out with an effort made to reach each unique landform and forest type (Appendix J shows field routes). A garmin gps handheld unit was used to track routes and to mark features in the field. Additional field equipment included a soil auger, clinometer, forestry prism, forestry data collection forms, field notebooks, and camera. Ecologist/botanist Brett Engstrom was contracted for a day to help with problem areas and to look for rare and uncommon plants. Final natural community polygon mapping was done in ArcMap 9.3, using gps track lines, gps feature points, and extensive field notes. Additional resources used in this process included: Wetland, Woodland, Wildland (Thompson and Sorenson 2000), Gleason and Cronquist, Newcomb's Wildflowers, The geology of Vermont, Natural Communities of New Hampshire, and Vermont State Rare and Uncommon Plant List and Ranking Guidelines.

Natural community names used for this project are primarily those described in Wetland, Woodland, Wildland (Thompson and Sorenson 2000). Occasionally natural communities differed from existing descriptions significantly enough to warrant additional naming and description. These areas are described within this report.

Vermont State Natural Heritage Program has done some additional mapping work in the area since the mapping for Compartment 1 was completed. Field work was done by State biologists, initially, on the neighboring State Forest land. The State generally relies heavily on remote aerial photo interpretation, interpolating from site visits to nearby areas. Their map units are made to match the primary community type and do not include variants of those types or additionally described communities that do not fit within the existing natural community designations. In addition, they do not allow for the combining of two communities that are found frequently together and difficult to map separately. The mapping for this project differed somewhat from State procedures, and the resulting mapping work also has some differences. The State natural community mapping work for the area can be found at Vermont Center for Geographic Information (http://vcgi.vermont.gov/). It is based on the original mapping for this report done in 2011 and photo-interpretation work done in 2014-15. A collaborative field day took place in 2015 in an effort to match communities across the property boundary, and to discuss various problematic community types. For this West Windsor Town Forest mapping project, almost every unit was specifically visited in the field, and variants and new community descriptions are used as needed, to best describe on-the-ground conditions. In several cases, cliff communities were combined with outcrop or talus communities for ease of mapping. In many instances the differences are slight; the percentage of yellow birch in a Montane Red Spruce-Balsam Fir Forest, for example. There is one community mapped by the State that was not mapped or described during the original mapping of the Town Forest. This is described towards the end of the Natural Communities section. State natural community mapping layers can be found at Vermont Center for Geographic Information (http://vcgi.vermont.gov/).

Ranking

The process of ranking provides a system for evaluating natural communities for their ecological/biological health and significance both locally and regionally. The State Agency of Natural Resources Natural Heritage program has ranked community types on the State level, and written up ranking guidelines (for most but not all communities) to be used to evaluate local significance (Sorenson et al, 2014). Appendix K provides an example of guidelines used in this process. These guidelines were used to evaluate the natural communities on the West Windsor Town Forest. State ranks describe the frequency of occurrence of a given community within the State and range from S1 (extremely rare and vulnerable) to S5 (common, widespread).

A specific natural community occurrence on the landscape is known as an "element occurrence", or EO, by the Vermont Department of Fish and Wildlife's Nongame and Natural Heritage Program. These polygons are ranked based on criteria relating to "condition", "landscape context", and "size". EO ranks range from A (excellent) to D (poor). A combination of the State and EO ranks is used to determine State significance of a given EO, based on the following: For S1 and S2 natural community types, all EOs with A, B, or C element occurrence ranks are considered of State significance. For S3 and S4 natural community types, all EOs with A or B element occurrence ranks are significant on the State level. For S5 natural communities, the presence of EO with a rank of A is considered State significant.

Mapping polygons for a single community can be combined into a single EO if there is not barrier to the transfer of ecological "information" from polygon to polygon. Guidelines provide by Vermont States Natural Heritage program are as follows:

Element Occurrence Separation

- Separation Barriers: Barriers that would separate one occurrence from another include urban development, agricultural land, and highways that create significant canopy breaks. Judgment on what constitutes a separation barrier should be based on whether the barrier interrupts natural processes between two areas or restricts the movement of animals that are functionally significant to the community.

- Separation Distance – Different Natural/Semi-Natural Communities: 0.5 mile

- Separation Distance – Cultural Vegetation: 0.25 mile. (for example: plantations)

- Separation Justification: A larger separation distance may be appropriate for areas where the intervening natural communities are similar in many characteristics and do not limit interaction between the patches, such as Northern Hardwood Forest, Mesic Maple-Ash-Hickory-Oak Forest, or Dry Oak-Hickory-Hophornbeam Forest. A smaller separation distance may be justified in there are intervening natural areas that include large wetlands or aquatic systems that limit interaction of species and processes between the forest patches.

Within Compartment 1, 63 polygon units representing 25 distinct natural communities were delineated. Within Compartment 2, 51 polygons representing 10 distinct natural communities

were delineated (Figure 17). Highly disturbed areas (ski slopes, parking lots, gravel pit, and tailing pile) were not assigned a specific natural community. They are quite likely to resemble adjacent mapped natural community areas, eventually. Ski trails were examined in the field and categorized as described in Appendix H: Garton Ascutney Field Final. They were given a bit more field attention in the early summer of 2015, to add to the previous work. At present, variations in vegetation found on the ski trails appear to be dependent on levels of past and continuing disturbance, depth of soil to bedrock, and hydrology. Detailed descriptions of each natural community, as well as the respective management concerns and recommendations are attached as Appendix C. These contain critical information on the management of this property and should be considered an integral part of this management plan; they have only been moved to an appendix to make the overall management plan more readable because of the length of the descriptions. Users should use the natural communities map below, Figure 17, to determine what detailed descriptions should be consulted when involved in management questions on any particular locality on the parcel.

Small areas were sometimes combined into one polygon unit that contained two distinct community types too small and intertwined to reasonably map separately. Examples of this are found with the cliff, outcrop, and talus communities, and with islands of forest within the ski trail area. Within each of the Compartments, natural community polygons were sometimes separated by some distance, but were never distant enough to divide into separate "element occurrence" listings. Between Compartments, there was enough distance to, at times, cause a same community type to have a separate "element occurrence" listing.

As part of evaluating the health and ecological importance of a given natural community, the State has developed a system for ranking communities based on several criteria. Generally these criteria are: condition, landscape context, and size. Depending on the community involved, the Natural Heritage program has allocated proportions to these criteria that vary with community type (Sorenson et al, 2014). Factors that contribute to the ranking of condition are generally related to human disturbance and disruption (timber harvesting, hydrological alterations, invasive plant introductions, stand maturity, etc). Factors that contribute to the ranking of landscape context have to do with potential barriers to community-to-community interaction and biological exchange. Barriers are generally human-created (development, road building etc), but are sometimes also created by adjacent natural communities that are different enough to pose a biological barrier (wetlands). The ranking of size depends on how abundant a given community is on the landscape. For example, for northern hardwoods, which are termed a "matrix" community because it often dominates the cover over extensive areas, a size ranking of A would need to be >1,500 acres. In contrast, the dry oak-hickory-hophornbeam forest would only need to be >100 acres to achieve that ranking.

West Windsor Town Forest Natural Community Ranking:
Communities were ranked for this project using the above criteria to determine an "EO" rank. State significance was determined based on these ranks. The State has guidelines for developing "Local" ranks, to describe how a natural community might rank within a town or county. Due to the relatively small size of this project area, it did not seem useful to rank communities on that

scale. If, at some point, the entire town of West Windsor is mapped, it would make sense to determine local ranks, and determine the significance of each natural community type within this context. Although rankings are somewhat rough and subjective, they are an attempt to assign biodiversity value to specific natural communities, so that areas most valuable for conservation and/or protection can be identified.

State Rankings are described as follows.

- S1: Very rare in the State, generally with fewer than five high quality occurrences.
- S2: Rare in the State, occurring at a small number of sites or occupying a small total area in the State.
- S3: High quality examples are uncommon in the State, but not rare; the community is restricted in distribution for reasons of geology, soils, or other physical factors, or many examples have been severely altered.
- S4: Widespread in the State, but the number of high quality examples is low or the total acreage occupied by the community is relatively small.
- S5: Common and widespread in the State, with high quality examples easily found.

Terrestrial Communities

Terrestrial Natural Communities found in the project area, along with their size, number of polygon units, and State and EO rankings are found in Table 2. Detailed descriptions of the terrestrial communities with photos are found in the ecological assessment detailing natural communities (Appendix C, D and J) as well as the three other ecological assessments focusing on the ski slope area and birds, more generally (Appendix G, H, and I).

Wetland Communities

Vernal pools were the only wetland community types mapped on the Town Forest. Vernal pools are ranked using the additional criteria of the abundance of amphibian breeding evidence and are evaluated below. There were 5 locations found where pooling of water was noted (Figure 17). Only two of these had signs of breeding amphibians and are listed in Table 1. Two small pools had no signs of life. One other small pool had abundant fingernail clams.

Table 1: Vernal Pools

Natural Community	Size (sq.ft.)	State Rank	Project Rank: Condition	Project Rank: Amphibian sign	Project Rank: Landscape Context	Project Rank: Size	Project Rank	State Significance
Vernal Pool 1: near south boundary	1400	S3	A	A	A	C	A	YES

Vernal Pool 2: near northwest corner	400	S3	A	C	B	D	B	YES

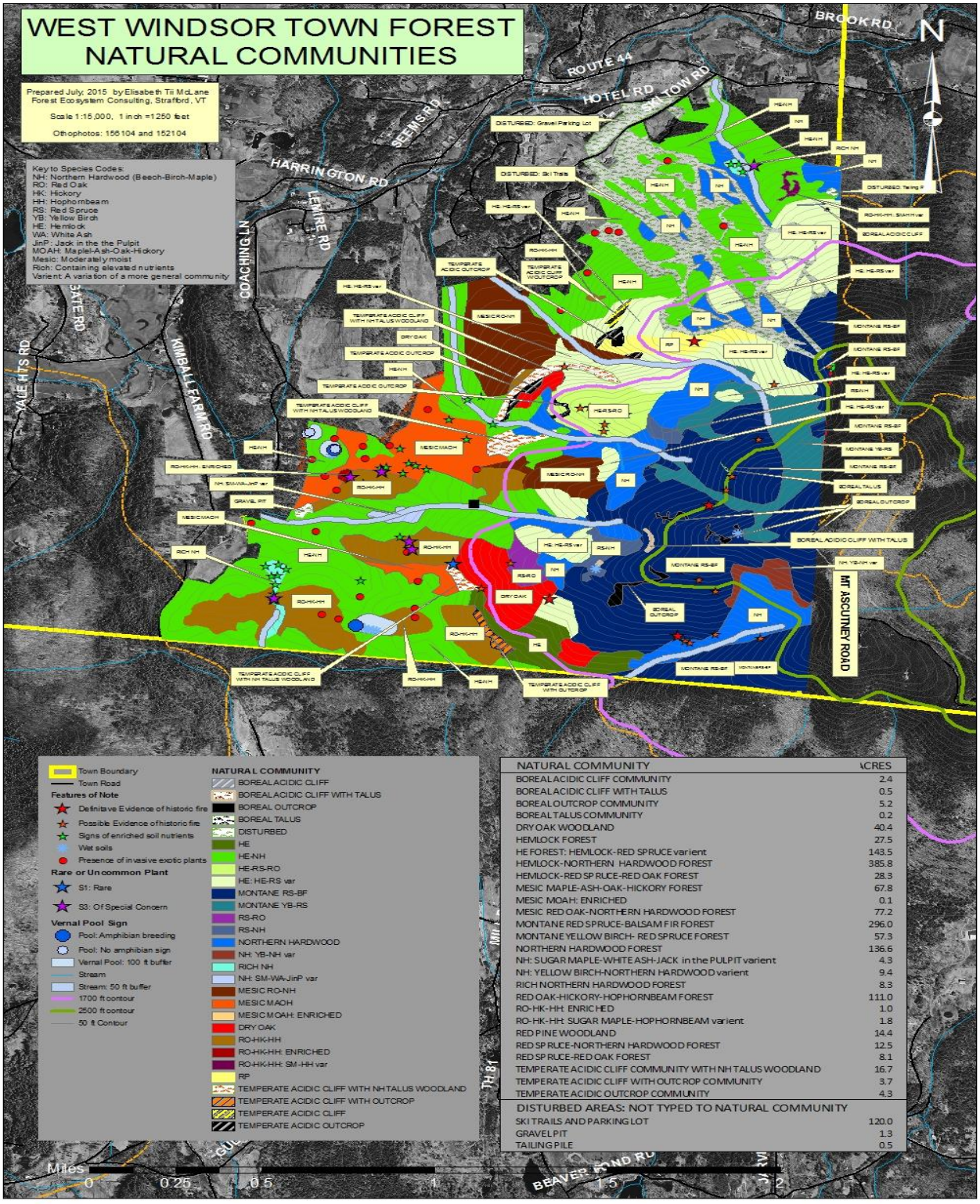

Figure 17: Natural Communities and unique natural community features.

Natural Community	Acres	No. of Polygons	State Rank	Project Rank: Condition	Project Rank: Landscape Context	Project Rank: Size	Overall Project Rank	State Sign
Boreal Outcrop*	5.6	4	S4	A*	A-B	A-B	B	UNK
Boreal Acidic Cliff with Talus*	0.5	2	S4	A	A	A-B	A	UNK
Open Boreal Talus**	0.2	1	N/A	A	A	C	B	UNK
Temperate Acidic Outcrop*	4.3	5	S4	A	A	A-B	B	UNK
Temperate Acidic Cliff with Outcrop*	3.5	1	S4	A	A	A	A	UNK
Temperate Acidic Cliff with Northern Hardwood Talus Woodland*	16.7	3	S4	A	A	A	A	UNK
Temperate Acidic Cliff*	2.0	2	S4	A	A	A	A	UNK
Dry Oak Forest	40.4	3	S3	A-B	A	A	A	YES
Dry Oak-Hickory-Hophornbeam	111.0	9	S3	B	A	A	A	YES
Dry Oak-Hickory-Hophornbeam: enriched**	1.0	1	S3	A-B	A	D	B	YES
Mesic Red Oak-Northern Hardwood	77.2	2	S4	B	A	B	B	UNK
Montane Red Spruce-Balsam Fir: RS variant***	296	5	S3	B	A-B	B	B	YES
Montane Yellow Birch-Red Spruce	57.3	1	S3	A-B	A	C	B	YES
Red Spruce-Northern Hardwood	12.6	2	S4	A-B	A	C	B	YES
Red Spruce-Red Oak**	8.1	1	N/A	A-B	A	D	B	UNK
Red Pine Woodland	14.4	1	S2	A	A	B	A	YES
Hemlock	27.5	1	S4	A-B	A	C	B	YES
Hemlock: Hemlock-Red Spruce variant***	143.5	15	S4	A-B	A	B	B	YES
Hemlock-Red Spruce-Red Oak**	28.3	1	N/A	B	A	B	B	UNK

Hemlock-Northern Hardwood	385.8	27	S4	B	A-B	A	B	YES
Northern Hardwood	136.6	18	S5	B	A	C	B	NO
Northern Hardwood: Yellow Birch-Northern Hardwood variant***	9.4	1	S5	A-B	A	D	B	NO
Northern Hardwood: Sugar Maple-White Ash-Jack in the Pulpit variant***	4.3	1	S4	B	A	D	B	NO
Mesic Maple-Ash-Oak-Hickory	67.8	2	S3	B	A-B	B	B	YES
Mesic Maple-Ash-Oak-Hickory: enriched**	0.1	2	S3	A-B	A	D	B	YES
Rich Northern Hardwood	8.3	2	S4	B	A	C	B	YES

Table 2: Natural Communities for Compartment 1:

* The Vermont State Natural Heritage Program has not written up ranking guidelines for this community. The rankings found here are based on a general understanding of the factors used in ranking. They give a very general idea of the potential rank of these communities.
** A few communities did not adequately match any of the communities listed in the State Natural Communities list. These were named as they appear to be and are described thoroughly in the following text. A couple of these that are variants of other communities (Dry Oak-HH-HK and Mesic MAOH enriched variants) used the same ranking guidelines as their "parent" community.
*** Natural Community "variants" have not yet been given ranking guidelines. For the purposes of this project, the community ranking guideline for the general, or "parent", community type was use to rank these communities.

Forest Management

As detailed above, the property that makes up the current West Windsor Town Forest, Compartments 1 and 2, has a long history of forest management. For many years though the Town has also managed the upper elevations from a natural area perspective to maintain high ecological value and to minimize the potential negative effect of timbering at higher, steeper elevations. The recent history of the property is a mix of recreation use and natural area with no timber harvests for 30 years.

The easement provides for future harvest of portions of the property, and a detailed forest management plan is attached to this document as Appendices E & F. Before any harvesting is done the forest management plan will be updated to reflect the proposed harvest. The easement also permanently creates a 774 acre Natural Area where timber harvest will be prohibited, and eventually this area will develop old-growth characteristics representing most of the natural communities on the Town Forest. The forest management plan is based on a detailed analysis of the property's natural communities, many of which are state ranked examples, which were described in a separate report to the Town in 2011. The descriptions of these natural communities are incorporated into this Community Forest Management Plan as Appendix C. The uniqueness of Mt. Ascutney is that it is a mosaic of forests representative of both northerly and southerly Vermont forests within a large unfragmented setting with great elevational range. VT Nongame & Natural Heritage Program considers it one of the premier examples of elevationally based biodiversity in the state and probably New England.

During the life of this management plan, the forest management focus will continue to be on allowing the forest to mature and to provide high quality outdoor trail recreation with limited timber harvesting to generate some revenue for the Town to use primarily in managing the Town Forest, and to improve wildlife habitat. .

IX. RECREATION USES

Hiking & Snowshoeing

Mount Ascutney has a long history of people hiking or snowshoeing to the top of the mountain; the first trail to the summit was built in 1825. There are two trails that cross the West Windsor Town Forest that have been part of that tradition: the Weathersfield Trail and the Brownsville Trail. More recently the Bicentennial Trail has been created as another summit trail entirely within the West Windsor Town Forest. The creation of a system of mountain bike trails, starting in 2006, has greatly expanded the area open to users who want shorter or less strenuous hikes, or probably more importantly, loop trails. This has greatly expanded the number and different recreational interests of people using trails on the mountain. In addition to trail use, there are a more limited number of people who enjoy off-trail hiking, snowshoeing and backcountry skiing, sometimes in conjunction with wildlife observation or hunting. Hiking, snowshoeing and backcountry skiing off-trail on the summit trails of the West Windsor Town Forest are open to the general public without any fees or limitations.

Over the next 10 years, the life of this management plan, and even beyond, if properly managed, it is not anticipated that this type of recreation use will increase to levels that require much active management beyond basic hiking trail maintenance; most likely that management would center on erosion or wet spots to prevent a

gradual widening of the trails. Camping is not permitted in the Town Forest unless associated with a larger event so much of the use tends to be day use.

The one exception to trail maintenance being the management focus will be continued work on the Bicentennial Trail to make it more sustainable and less steep in a few locations. This trail is part of the mapped network of trails that is detailed in the baseline documentation for the easement. Rerouting of the Bicentennial Trail has been a discussion for the past few years and may occur over the course of the next 10 years. For purposes of the easement this work is considered a "grand-fathered" relocation that does not need to be documented in a new CFMP plan. The new location will simply be spatially documented and that change memorialized as an appendix to this plan if a location change is made. However, that new location must be approved in writing by UVLT before any work commences.

The one general exception to not expecting much active management may be some management of invasive species, addressed in detail in the Mountain Biking section, particularly if the pervasiveness of some species continues to increase in the surrounding landscape.

The hiking trails are occasionally used by organized large groups. Probably the most extreme is the annual spring picnic that can attract 75 or more people. At the moment, crowds are rare enough that they do not seem to affect the mountain trails or summit detrimentally. However, experience in other parts of New England at higher elevations, such as areas of the Adirondacks, Vermont summits like Mt. Mansfield, the Presidentials in the White Mountains, and Katahdin in Maine, has shown that heavy use can be detrimental to alpine plants. Mt. Ascutney is not high enough to form a high quality alpine zone as it is below treeline, but some attention should be paid to how large groups affect the more fragile rock outcrop habitats near the summit, particularly if use becomes more intensive. As Sustainable Recreation Carrying Capacity standards are developed, the summit impact may be one aspect of defining when hiking use gets too heavy. Carrying capacity should also address conflicts with other trail network users, For example, the speed difference between bikes and pedestrians means that a bike nearly always will claim the right-of-way and, unless all parties are vigilant, accidents could occur. At high densities of bike use, the pedestrian experience will be diminished.

Management Activity Summary: Over the current plan's cycle there will be little active management except for the possible relocation of the Bicentennial Trail and the regular trail maintenance of the other hiking trails. Obtaining measurements of the intensity of hiking/snowshoeing trail use will also be pursued, particularly on those trails shared with mountain bikes.

Hunting & Fishing

The area of Mount Ascutney covered by the West Windsor Town Forest has always been open to hunting and fishing, though the intensity of use is low. The streams are small and highly vegetated and thus not conducive to much fishing. The hardwood forests on the mountainside would support hunting and people do hunt the area for a variety of game. However, the lack of edge habitat, which probably keeps deer density low, the steepness of the land, and the walk-in distances to most of the property keeps the number of hunters relatively low. There is an old hunting camp that is still used by one family that attests to the fact that game are present in sufficient numbers for success.

The entire property will be open to the public for hunting and fishing, subject to state regulations or limitations placed on those uses to protect specific critical habitats (like denning areas) or populations (such as native brook trout). At the moment the management plan does not anticipate any such limitations. Since the land subject to this Management Plan is adjacent to Ascutney State Park, the expectations are that hunting and fishing use will be in accordance with the regulations placed on State land. The Town does not currently envision creating any rules or regulations around hunting and fishing that differ from the rules or regulations for the Park, but the Town reserves the right to impose those by amendment to this management plan if use, experience or new data show that it would improve the forest health and ecology, or enhance the wildlife population and the overall natural diversity found on the mountain.

The Sustainable Recreation Carrying Capacity for hunting and fishing will be determined by the effect of the activity on populations that are harvested. At the point this management plan is being written there is little quantified information available at the property or mountain scale, but we don't expect that the use exceeds a sustainable carrying capacity. Given the small streams on the property it would be likely that trout fishing would probably be the first, and maybe only, hunting or fishing activity that would increase to the point of exceeding its carrying capacity.

Management Activity Summary: No active management is foreseen over the life of this plan.

Trapping

At the present time there is no trapping occurring on the Town Forest and there is no expectation of any Sustainable Recreation Carrying Capacity issues for any species except potentially for bobcats. The property includes known habitat and den site(s) for bobcats. The management of the property should include monitoring of bobcat presence (game cameras would be a possibility), and ideally some type of quantitative measure of population or intensity of presence indicators should be developed.

Management Activity Summary: For this management plan no trapping will be allowed.

Hang Gliding

The West Windsor Town Forest includes one of the foremost hang gliding launch site and platform in New England. This use is managed by the Vermont Hang Gliding Association (VHGA). VHGA has a formal relationship with the Ascutney State Park so that access is possible outside of normal park operation schedule. The Conservation Commission has not been able to document any written agreement between the Vermont Hang Gliding Association and the Town although there have been reports that one exists. It is recommended that a formal written agreement be implemented if the existing one is not found.

Access to the site is through State Park land and there are formal agreements of how members access the site. The Town of West Windsor will continue to support this recreation on its land and should enter into a written agreement with the Hang Gliding Association to make sure all parties are aware of the intensity of use, needs of the users of the launch site, and who is responsible for any future repair and maintenance, including keeping trees trimmed if necessary. While the easement allows for improvements, this management plan does not contemplate any improvements over the next ten years.

Sustainable Recreation Carrying Capacity is most likely to be reached based on quality of the experience long before there might be any excessive use that would cross an ecological impact limit. The one exception might be if users spread out over open rock outcrops to the extent of affecting vegetation, or if another launch site were proposed. There are two existing launch sites on the mountain, only one of which is located on the land that makes up the Town Forest.

Management Activity Summary: Beyond the signing of a management agreement, management of this recreation use will be to collect use data from sign-in information that is already collected by the State and VHGA. Clearing around the ramp area to maintain safety for launches is permitted under this management plan provided it is conducted in a way that minimizes any detrimental impact to the summit outcrop communities. All site management work by VHGA, clearing or otherwise, must first consult with the Vt. Nongame and Natural Heritage about how to minimize the work's impact on the state ranked natural communities and species found in the summit area.

Mountain Biking

This recreational use is well established on Mount Ascutney, and approximately 30 miles of trails can be found on both the original West Windsor Town Forest parcel and the new addition of the former Ascutney Mountain Resort land. The current trail network was started in approximately 2006 and is subject to an Act 250 permit. Some improvements and additions, including connections to trails that may eventually extend around the entire base of Mount Ascutney, continue to this day. The easement prevents future trail development in any area other than the Multiple-Use Recreation Area. The current extent of the trail network was mapped by GPS (with some proposed new segments sketched onto the map) as part of the baseline documentation and is specifically defined for purposes of this management plan and easement monitoring as shown on the attached Appendix B Map. A more detailed map of the trails will be created as part of the management plan, using the data used to create the Appendix B Map.

This mountain bike trail network, currently managed by Sport Trails of Ascutney Basin (STAB), is well known regionally and maintained by a dedicated group of volunteers. The success of these trails in attracting people is at the heart of West Windsor's efforts to build the Town Forest into a year-round attraction for outdoor recreation. The trails accommodate a variety of skill levels, but in general their steepness attracts people with above average skills. The trails have been well located and maintenance has been able to keep up with their level of use to date. The baseline documentation found a few places of erosion from trail use that will be repaired.

Based on experience with trails in general, the mountain bike trails in particular may be a potential source of invasive plant introductions or expansions on the mountain. They provide a bare soil or disturbed groundcover habitat that some invasive species need for establishment. In addition, the bikes that use the trails are numerous and originate in places where invasive species may be common, and thus serve as a repeated avenue for seeds to be introduced by mud on tires. Part of the trail management will be annual surveys along the entire trail network to identify the locations of invasive plants. Regular removal or control of any establishing populations will be part of the trail management and will be a requirement for on-going use of the trails by mountain bikes.

The baseline documentation work showed a low level of invasive populations along trails in general, with only a few locations where infestation could be considered heavy. There is no way of knowing how much of this has

arisen out of general invasive spread in the agricultural/rural landscape surrounding Mt. Ascutney and how much is directly a result of trail use over the past decade. Over the next few years, management of invasives will focus on removing or controlling these populations so that regular monitoring will be able to document any new populations from trail use. Initially, monitoring of the trail network and active removal of plants is expected to be an annual event. However, over time we may learn that high level of monitoring is not warranted. Management of the trails in relationship to erosion and invasive species will be one of adaptive management to match the level of maintenance with the level of threat as the trails get more use. However, because this trail network sits within a large unfragmented forest block of very high ecological value this type of management must be considered a regular part of maintaining mountain bike use on the mountain, and not something that can be ignored until the threats to forest health get to the point where it will be hard to correct. This work will need to be built into the economics of maintaining this recreational use.

Mountain biking is expected to be the first and most important interaction with the concept of a Sustainable Recreation Carrying Capacity. While challenge is an important component of why mountain bikers use trails such as these, bikers also seek some sense of solitude as they enjoy their sport. They do not want to have to repeatedly stop to allow others to pass, nor slow up for other users. While social interaction is a desired part of the sport, most of that occurs off the trail; while riding it becomes a more solitary sport. This balance between creating high quality trails to attract users and still allowing a high quality experience is expected to be the limiting factor in how many people can sustainably use the trails. However, given the sensitive nature of the surrounding forest community it is possible that the ecological carrying capacity may be reached before the social carrying capacity. This will be determined over time as erosion[1]and invasive species changes are monitored. Defining the Sustainable Recreation Carrying Capacity of the mountain bike use will be one of the first benchmarks created under this management plan.

Management Activity Summary: This use will require a great deal of active management over the life of this plan. Annual trail maintenance, including erosion control, will be a major focus. All trails within the existing forest cover will be closed canopy. There will be annual invasive species monitoring and control for at least 5 years, and probably every 2 years after that point. At the current time, management of the invasive species will be by hand removal. If this does not prove adequate, other means may be used after getting prior written permission from UVLT. Any alternative method must have the most minimal effect possible on the ecological values of the forests, including unintended effects on species that are not the target of the control. Educating users to stay on trails will be critical to keeping these maintenance activities at a manageable level. Accurate measurements of the numbers of users will be critical to determine and maintain over time so that maintenance activity can be correlated with levels of use. A detailed study was done during the summer of 2017 by UVLT to create an accurate baseline of current use. Over time less intensive methods will be used to quantify use; this will probably require the installation of trail counters or development of other low cost methodologies to determine trends of use of the life of the management plan.

Over the course of this management plan there may be active winter trail grooming to facilitate winter trail use for skiers as well as winter mountain bike riding on fat tires. All such grooming will be narrow in extent using equipment that allows the maintenance of a closed canopy, probably pulled by a snow mobile or tracked ATV.

[1]Erosion; the wearing away of the earth's surface materials (especially soil, rocks, roots, and sediment) by man-made traffic, natural actions, and alterations of drainage patterns.

Snow cats are prohibited for this grooming and only natural snow that has fallen in place will be groomed, except potentially within the Multi-use Recreation Area.

Additional cross-country mountain bike trails will be created in the Multi-use Recreation Area over the course of this management plan.

Management of all this activity will be primarily a responsibility of STAB, but in close coordination with Ascutney Outdoors, Inc. (AO), the entity to which the West Windsor Selectboard is leasing the recreational areas of the West Windsor Town Forest.

Downhill Mountain Biking

This recreation use does not currently occur on the Protected Property but is an allowed use within the Multi-use Recreation Area. Currently there are plans to place downhill flow trails in the multi-use area, with machine built soil jumps from on-site sources. To reasonably incorporate this activity will require the construction of a ski lift to a mid-slope terminus so that the heavy bikes can be carried uphill. If the plans for that lift are undertaken within the 10 years of this initial management plan then this management plan will be formally updated to include the details of both the lift and the associated trails and structures needed to incorporate downhill mountain biking.

Management Activity Summary: A downhill flow trail is planned and before construction begins a plan for the trail will be incorporated into this management plan and approved by UVLT and the Town.

Back-country skiing & boarding

This recreational use has a long history on the mountain within the Town forest, the Ski Resort, and State lands, but has had no current management oversight. Individuals have undertaken vegetation management, usually with just clippers and small saws, to create ski trails through the Ascutney's forests without any prior permission from the landowners. In addition trails were cut approximately 20 years ago with permission of the Town of West Windsor for use by the Ascutney Mountain Resort as back country and cross country ski runs. These trails on the Town Forest are shown on the attached Appendix R Map. Unmanaged back-country skiing, particularly if use is increased by publicity, has more potential than many other recreational use to detrimentally effect the quality of the state-ranked natural communities on Mt. Ascutney. Luckily, to date the rogue vegetation cutting has been relatively light compared to some activity on other public lands around the state, but this is a growing sport with more people entering forests thinking the clipping of trails is benign. Unfortunately, such activity has long-term effects by creating changes that change normal forest regeneration and the forest structure needed by many forest bird species. The easement and this management plan set up a management structure that should allow high quality recreation activity and forest integrity to coexist. All of the rogue trails, defined as trails that have been cut or created outside the sanctions of the easement and this management plan, will be allowed to naturally grow back over time, if they are outside of the Back-country Ski Zone.

The back-country skiing use will be split into three distinctly different management regimes, aimed at distinctly different skill levels, and for the most part three different areas of the Protected Property. For this to be successful it will require public education as well as management of users by the managing entity. The hope is

that providing a high quality experience to users will decrease the desire for people to create their own trails and so they will diminish and disappear over time. In addition, as the forest of each natural community mature over time the understory will naturally open up and make skiing easier (with the possible exception of the high elevation spruce/fir forests). Fortunately, the forest community where much of the back-country skiing now occurs, as well as being one of the more important state ranked communities, is an oak/hickory community that naturally also has a more glade-like understory so that less trimming is needed.

Back-country Ski Slope Area: The most intensive back-country skiing is designed to occur in the Back-country Ski Slope Area. This is the upper portion of the old alpine ski trails. These are wide trails with no canopy where there is room for many people to carve new runs after a snowfall. Initially, probably over most of the time of this management plan, skiers will have to skin up from the mountain's base to take a run down. Once a lift is created to serve the mid-slope area more skiers will be able to access these upper slopes because the time and effort to reach them will be decreased. This is the back-country use that will be most widely publicized and it is aimed at a wide range of skill levels. Some slopes will not be maintained as skiable slopes (See Appendix O for a map of those that will be closed), but the ones providing the highest quality experience will be maintained in their open condition and full width by periodic mowing. Grazing may be tried as an alternative method after experience is gained within the Multi-use Recreation Area and after plans are approved by UVLT.

There will be no cut trails or signs linking the Back-country Ski Slope Area with either of the other two management regimes. While it is impossible to prevent all people from going off the open slopes, active oversight will attempt to minimize this possibility since the other back-country ski management regimes are aimed at the most highly skilled skiers who are willing to skin up to the highest elevations. Too many people using the Back-country Ski Zone will increase the ecological impacts on the state ranked forests. The ski lift is not intended to be a way to get more people further into the forest for skiing.

The Back-country Ski Slope Area is a permanently defined area with open delineated trails so it's only future new ecological effects will be if users start to create rogue trails into the surrounding forest. Management effort will be expended to make sure that does not become a problem. Therefore, the Sustainable Recreation Carrying Capacity for this use to is expected to be based on the quality of the recreation experience, which for the most part will be defined by how good a snow year the area is experiencing.

Dispersed Back-country Skiing: The second management structure for back-country skiing is defined as Dispersed Back-country Skiing in the easement. This type of skiing is allowed anywhere on the property as part of the dispersed pedestrian uses, but will be managed, and possibly limited, solely from its ecological impact on the property, particularly on the state ranked natural communities. This use is likely to be the most challenging recreational use on the property to manage. Rogue trails often develop from the segment of these users who feel their impact is small and thus they often ignore who actually owns and manages a forest.

The management of this recreation use will require a campaign to educate users about the consequences of creating rogue trails – which could include the loss of this use of the property according to the terms of the Conservation Easement. For the most part MAO volunteers hope, because most of the back country skiers who are comfortable in skiing the mountain without trails are known to each other, that simple social cohesion will be sufficient. Regular monitoring of skiing use should also allow direct one-on-one education since the numbers of users should be small.

Sustainable Recreation Carrying Capacity for this use should not be an issue as long as rogue trails are not cut, because the present level of activity is minimal. The quality of the experience is likely to be self-determined by the users far before it is measurable quantitatively. Unfortunately, the ecological effects of rogue trails can potentially be significant and usually long lasting even if only one or two people are involved. Measuring the ecological effect of Dispersed Back-country Skiing will largely be monitoring to determine whether rogue trails are being newly created each year.

The exception to the summary above about Dispersed Back-country Skiing are those skiers specifically using the trail network primarily designed for mountain bikes. Here they will have little or no ecological impact provided grooming is kept narrow and not designed to accommodate ski skating in a race setting. If the winter use of these bike trails by fat-tire bikes increases significantly then the interactions between the two user groups might lead to declining quality of the recreation experience for both groups. However, it seems unlikely that use levels by either skiers or fat-tire bikers will increase to this level of potential conflict over the life of this management plan. Interactions between the two uses can be minimized by designating certain trails for fat-tire bikes, while restricting their use on the remaining trails.

Back-country Ski Zone: The third management structure for back-country skiing and boarding is the creation of an area based on the concept of adaptive management. This is an area where active management will be used to create a very high quality back-country ski experience for skilled users in a way that will minimize its effect on the ecology of the various natural communities within that area. Depending upon what is learned and what the measured effects on the ecology are, the boundaries of the zone may change over time. In effect the zone is an attempt to recreate what rogue trail creators set out to do, but with more careful thought as to the effects on forest integrity.

Within this zone narrow corridors of vegetation thinning will be allowed to connect areas that naturally have less understory to create a challenging, but not punishing, ski trail. These will be narrow, so called “sight-line” trails that allow easy passage but do not remove large areas of understory structure. Thinning will be carefully done so as not to focus on one species too much, particularly those tree species that make up the forest canopy. In all cases, a fully canopied over-story will be kept over the trails so there is no increased sunlight that could create faster understory regrowth or the dominance of the site by hay-scented ferns. These glade trails will not be opened to the extent glades are in alpine skiing. In the high elevation spruce/fir community it will not be possible to maintain forest canopy so the “drop-in” to the glades will be by a single trail.

The placement of these glade trails will be done with careful thought as to the specific natural community a trail is passing through. It will be a progression of the single “drop-in” trail at highest elevation gradually expanding into more trails as one decreases in elevation. Monitoring the effect of this thinning will be done by sampling three transects at three different elevational gradients. Each transect will have undisturbed forest to compare with the thinned areas in roughly equal proportions and representing the same natural communities. The results of this data collection will inform whether the zone boundaries should expand or contract, whether the thinning methodology should be modified and whether the thinned trail areas should be static or should migrate over time. In the Back-country Ski Zone effects on forest values and recreation values shall be balanced so that one does not dominant to the point of significantly harming the other.

Vegetation thinning cannot commence until such time as the Conservation Commission and UVLT have developed and implemented a mutually agreed upon monitoring plan and the required transects or other monitoring activities have been put in place.

Management Activity Summary: Back-country skiing and boarding will be one of the recreation uses which requires the most intensive education efforts to help assure that rogue trails are not cut in the Conservation Easement area. Effort will also go into quantifying the use levels of each of the three management structures, most likely using different techniques.

Downhill Snow Sports (alpine skiing, boarding, sledding and similar activity)

These are the recreational uses that the Town is most interested in reestablishing on the mountain as part of a community ski area. Once lift capacity is reinstalled, all downhill snow sports will be established within the Multi-use Recreation Area using the old alpine ski trails. The Town has leased the management and oversight of the community ski area activities to Ascutney Outdoors. Ascutney Outdoors has prepared a management plan for approval by the Town. The Plan is incorporated as an appendix to this Plan. will be located within the Recreation Infrastructure Area, but no permanent buildings will be placed there because the acquisition of the base lodge parcel by Ascutney Outdoors will ultimately be the permanent lodge location.

The management of the downhill snow sports will most likely include the many ancillary uses associated with such ski areas. These will include snow grooming, snowmaking, construction of "terrain park" structures that are of snow or semi-permanent materials such as iron pipe, ski racks, and creating a warming shed from one of the existing buildings.

Given the level of ski use at Mt. Ascutney in the past, it is unlikely that there will be any Sustainable Recreation Carrying Capacity issues associated with downhill snow sports during the life of this initial management plan. There is ample slope room and parking for the capacity of the rope tow and any potential newlifts. Within the Multi-use Recreation Use Area the SRCC is largely focused on the quality of the recreation, not on the ecological impacts.

Management Activity Summary: The focus for this initial management plan will be to start a small community ski area. The management activities will include the installation of a rope tow as shown on the map attached as Appendix S, mowing or otherwise keeping slopes open and vegetated with grass, installation of signs and information kiosks, grooming trails, and the development of a warming hut in the vicinity of the rope tow to provide temporary shelter facilities for winter activities. Potentially this will include restarting the snow making capacity on a limited capacity. Planning will start for the design of the second lift. The primary product during the life of this initial management plan will be the creation of a master plan for the Multi-use Recreation Area and the Recreation Infrastructure Area to detail how all the desired uses will intersect so that the goal to create a community ski area does not in some way limit other desired uses of the property. This Plan is incorporated in Appendix T & U, and will be the controlling document, and is considered part of this management plan.

Trail-running & dog-walking on the Trail Network

Local residents make use of the mountain bike and hiking trails for running and dog-walking on a daily basis. The intensity of use is relatively low, but particularly on narrow and steep portions of the trail, may be in direct conflict with use by mountain bikes and skiers.

Unless use levels get much higher than currently, and provided that dogs are under control by their human companions, the ecological effects of trail running and dog-walking are minimal. In other high use areas, one finds extreme soil compaction and trail widening that leads to erosion problems, but that is not expected here. Heavy use on conserved parcels with trails in other parts of the Upper Valley have had problems with dog waste so this should be monitored over time.

Management Activity Summary: This management plan will include no specific management activity centered around this recreation use beyond trying to quantify the intensity of use, in preparation for defining Sustainable Recreation Carrying Capacity benchmarks.

Horseback Riding

This use of the Mt. Ascutney trails has been ongoing over recent years and by most people's feelings has been managed well by STAB. Specific trails are open to horses, usually those that were wide enough to be considered two-track trails, but mountain bikes can also use them. This shared use is valued by the Town. Compatibility between these two users, however, will require education for both user groups in the event they meet on the trails. Although it is true that horses are reactive and their reactions can result in them unseating their riders, it is also true that most horses that are regularly trail ridden are exposed regularly to bikers and other "disturbances." Education and good signage on trails, noting where sudden face-to-face meetings are possible, are critical.

STAB will continue to manage the trails for bikers, and work with the Vermont Horse Council in determining which trails are suitable for horse use. Horses will be specifically allowed on the Connectivity Trail between the two parking lots on the protected property. They will also be specifically allowed on the trail connecting the Coaching Lane parking lot with Kimball Farm Road via the route detailed in Appendix V to provide connections to trails off the protected property to the north and west. Finally, if connection to horse trails to the east is possible in the future horses will also be specifically allowed on the trail that extends from the Multi-use Recreation Area northeast to the property boundary with the Mount Ascutney State Park.

There may be special events when the trail network may be closed to other users. Most of the event-based horse use will occur on the Connectivity Trail and within the Multi-use Recreation Area; a lower flat portion of that area will also specifically be used for horse trailer parking.

In theory, horses, like bikes, could have significant ecological impact on a forest because they travel from agricultural environments and their hooves and wheels have the potential to carry invasive seeds from those environments. However, at the current level of horse use on the Town Forest they are not expected to have any ecological effect. This is largely because the protocol for monitoring and correcting erosion and invasive species along trails because of bike use will also serve to cover horse use. Over the life of this management plan, horse use is not expected to be affected from an ecological carrying capacity perspective.

Management Activity Summary: General monitoring and maintenance of the trail network will take care of any management needed because of horse use. STAB, with the cooperation of VHC, will continue to define which trails horses are restricted to in order to maximize safety and minimize trail impact. The only other management activity envisioned will be to quantify horse use, with a focus to determine when it is concentrated.

Proposed New Recreational Activities

In addition to uses detailed above, in the initial years of the management plan AO proposes to potentially develop three new activities in the Multi-use Recreation Area, with their associated construction impacts on vegetation and soil. One would be an interpretive nature trail, to be associated with the educational space that is planned within the new base lodge. Another would be a Frisbee golf course. Both of these activities are expected to have minimal to no ecological impact on the protected property. A third, the development of amphitheaters for concerts may have more impact as they may require the movement of soil. The lower slopes of the old ski area in front of the base lodge area would be one for larger concerts. Plans are not yet developed, but impact there should be small, and most likely related to the creation of appropriate slopes on paths or the location of supporting facilities such as portable toilets. Terracing is not anticipated, but might be required once detailed plans are created. Potentially, a much smaller outdoor amphitheater would be created for small intimate concerts or outdoor theater. The location of this is unknown, and it might require the movement of soil to create a flat "stage" area and to create terraces for benches or on ground seating.

Management Activity Summary: Plans for these uses are included in the Ascutney Outdoors Management Plan included in Appendix T & U to this document.

Disabilities Access

Most of the property's hiking/biking trails and overall terrain are extremely steep and remote, and thus not conducive to disability access trails. The "Connectivity Trail" (Appendix B map) has the most potential for disability trail access directly on the property. Much of the trail is an old forest road and thus wide and a moderate gradient in most places. This trail could be hardened (but not paved) to provide suitable disability access at some point in the future. For the life of this plan there are no specific plans to modify the Connectivity Trail in this way so that it provides disability access, but if that changes this management plan would be updated with the specifics.

Ascutney Ski Resort was the original home of adaptive skiing and it is likely that use will return on a more limited scale as the community ski area become fully developed. Thus, disability access is most likely to first occur in the use of the slopes for adaptive snow sports. This would most likely require a chair lift so the details would be provided in a management plan update that proposes the chair lift in the future.

Other Recreation Activities

The easement has a placeholder for other recreation activities that might be proposed for the Multi-use Recreation Area, but they must first be part of the Community Forest Management Plan. During the life of this management plan no other recreation activities are planned other than those outlined above.

IX. EVENTS

The West Windsor Town Forest is public land that is open to a wide range of uses, particularly when it comes to events. It is also public land that is generally open for public access, but there may be times when the scale or type of an event will necessitate the short term closure of parts of the property. This management plan is not designed to anticipate every type of event, but rather class them into four types of events exemplified by Races, Large Concerts, Community Events, and Small-scale Events. The Sustainable Recreation Carrying Capacity benchmarks will be developed for each of these four scales of events, not for every possible event. While there may be some ecological issues to be addressed, most of the sustainability concerns will center on parking capacity, noise impact on adjacent and nearby residents, and frequency. Large scale events are defined as any activity requiring a Public Gathering License from the Town.

Races: Ascutney Ski Resort and the Town Forest is associated with a long history of racing of all types, but is particularly known for the Vermont 50. Horses, bikers, and runners of all ages and abilities compete. However, these are not the only organized racing events on the site. To a large extent this is because the resort has always served as a focal point for the community. It has the location, space, buildings, and parking to accommodate large numbers of participants without an inordinate amount of work.

Now that the northern face of the mountain is completely owned by the Town of West Windsor, whose intent is to develop four-season outdoor recreation, it is reasonable to expect that the number of races will increase. This management plan is not to define the activities associated with each specific event, but to provide an overview of what type of management will be needed to make race types of events a sustainable recreation going forward. Races often use the trail network as well as other resort property not owned by the Town, and even surrounding parts of the Town for some large races. This landscape use, and number of participants, are the defining aspect of this type of event.

The most important sustainable management concern will be to carefully consider the location of any new structures, whether temporary or permanent, in the Recreation Infrastructure Area and the lowest part of the Multi-use Recreation Area. Parking is already a limiting resource for the largest events like the Vermont 50. All of the developed parking in the Recreation Infrastructure Area is used, as is some overflow into the Multi-use Recreation Area.

Other management activity for this type of event will be centered on creating information kiosks, temporary sanitary facilities, and temporary shelter for race participants. For some races, the trail network will be closed to competing trail users to ensure a high-quality experience for participants, and in some cases to make sure there are not safety issues. Cooperative relations with abutting property owners will be key to the success of racing events. Overnight camping for some participants is likely to be an aspect of any race that draws people from long distances.

Concerts: Outdoor concerts have little history associated with the protected property. However, now that the property is a public resource it is expected that these will gradually increase over time. These events, when large, share many management aspects of races – temporary sanitary facilities, information kiosks, and large amounts of parking.

Concerts (and a fireworks display would be similar) differ from most races in two significant ways. First, they can be held just using the Town's land, being centered on the Multi-use Recreation Area with the stage at the base and the slope serving as an amphitheater. Parking would be across the street, with its capacity defining the size of the event unless off-site parking were found and transportation to the Town property provided. Second, large concerts require infrastructure, equipment and power. Parking for large trucks may be needed, and setting up a portable stage will be a significant undertaking in this setting. However, the acquisition of the old base lodge by Ascutney Outdoors makes this type of event significantly easier and allows grading that makes staging and access by large trucks possible. Locating portable toilets where they are both easily serviceable and near attendees can be accomplished.

Small scale concerts or theater is also being planned as a potential use of the property. Depending upon size these can fall in Concert, Community Events, or Small-scale Events in terms of their impact on the property and surrounding community.

Community Events (such as fairs, circuses, horse performances, farmer's markets, dances, and "old home days"): These represent the smaller scale events where flat land is a necessary component. The type of event is hard to predict, but they all will draw smaller numbers of participants that are less concentrated in time than either races or concerts. Parking will be critical but must be in balance with the event's size and required flat land; some parking may be provided in the Multi-use side of the road. Some of the events could be held in the grass areas of the Recreation Infrastructure Area. Depending upon the event, power and equipment might be on par with a concert, while for a dance the use needs will be more similar to a race.

This scale event does not raise any unique management issues beyond those presented for races and concerts. They are very much a mix of the needs created by the two larger events, just on a smaller scale. The only substantive difference outside of scale is that some events such as these may extend over multiple days (fairs for example).. Sustainable Recreation Carrying Capacity benchmarks are likely to be centered on parking, noise and frequency. The latter will be more important as a benchmark than for other events because they are so varied and organized by a wide variety of organization so they could become quite frequent.

Small-scale Events: This type of event encompasses outdoor classes, summer day camps, a Frisbee golf tournament, a small theater event, or a social event in the base lodge. These will raise no particular unique management issue and will most likely have no ecological or quality of recreational use effects on the Multi-use Recreation Area. There will be no Sustainable Recreation Carrying Capacity developed for this type of event unless a unique situation arises that is not anticipated at this point.

Camping: The easement does not allow the development of any campgrounds on the property. Short term camping associated with some other event on the property may be allowed with prior approval of the Selectboard. That type of camping will be limited to one or two nights for participants, will be managed by Ascutney Outdoors, and will be managed to prevent large numbers of campers since there is little infrastructure to support them. For the life of this initial management plan, camping will largely occur on the grass areas of the Recreation Infrastructure Area, with a possibility that in a special situation it might be placed on the Multi-use Recreation Area in the flat grassed area that is also a potential parking area. In the long run, a portion of the wooded lower eastern end of the Multi-use Recreation Area might be developed for this short-term camping associated with events but that would be fully planned out as part of a future update to this management plan.

If camping is allowed at an event there will be sanitary facilities nearby and no campfires will be permitted. Camping may also be allowed in a horse trailer or small camper in the parking areas associated with either the Multi-use Recreation Area or the Recreation Infrastructure Area.

Management Activity Summary: The management of the events will be on an ad hoc basis for the life of this initial management plan. This may include the placement of a temporary structure on the Recreation Infrastructure Area to serve as a warm base-of-operations and changing room for winter recreation. It may also include the creation of information kiosks, and structures associated with providing electrical power to events. This Management Plan assumes that Ascutney Outdoors will construct the Ascutney Outdoors Center on private property adjacent to the Multi-use area and that this Center will be the focus for the activities outlined in this Plan, and further described in Appendix T & U.

The focus of management activity for events on the WWTF land will be to define in the next two years specific Sustainable Recreation Carrying Capacity benchmarks for the three larger classes of uses detailed in this section.

XI. TRAIL MONITORING/MAINTENANCE

For the foreseeable future it is expected that formal trail monitoring will be done through the use of volunteers in cooperation with UVLT; and trail maintenance work will be done by primarily by paid MAO and STAB staff. Outside contractors will be hired to perform brush-clearing work needed to keep the old alpine ski trails open without shrubby vegetation.

Hiking and Biking Trail Network: Each year the entire length of this trail network will be monitored for condition, integrity of any structures, and the presence of invasive plants. In addition, using either sampling or total counts, the recreational use of these trails will be documented on a regular basis. The most intensive, baseline work is planned for the summer of 2017, which will be designed to allow less intensive sampling methodology to be used in future years, while still providing valid quantified measures of trail use. All recreation use will be monitored quantitatively and saved, so that over time changes to the trail can be analyzed in relationship to their type and intensity of use. With experience, it may be found that annual monitoring is too often for the labor involved; therefore, changes in frequency may be proposed in the future if the data supports that change.

The maintenance of the trails throughout the property will be prioritized annually based on the monitoring data. It is expected that volunteers and paid AO or STAB staff will undertake regular corrective maintenance of any problems throughout the period from spring through fall when work can easily be done. Maintenance shall be done to keep treadway clear, reduce erosion, and maintain or improve the quality of travel. This may involve rock/root removal, addition of borrowed mineral soil, reshaping of tread to maintain water shedding, and reshaping or berming of turns to maintain flow and reduce braking erosion. Correction of trail degradation/erosion or trail closure somewhere in the trail system may require minor rerouting or addition of switchbacks to reduce grade or bypass rocks/roots/features that disrupt flow and cause riders to widen trails. None of this work shall increase the trail length (except for the addition of switchbacks to cure erosion problems) or deviate from the present corridor any more than necessary to correct the situation. No reroute shall

deviate from the existing path by more than 15' without prior approval of the Conservation Commission and UVLT. Volunteers will be recruited to undertake invasive species control work. In the early years of this plan these work parties will be led by UVLT staff, but over time the goal is for AO to incorporate it into their work plan as part of the ongoing bike trail management.

Back-country Skiing: For the next few years there is no vegetation management within the Back-country Ski Zone. If in the future trails are cut to allow easier passage formal, long-term, vegetation monitoring transects will be created prior to the creation of any back-country ski trails. These will be used to document changes in vegetation related to the creation and use of back-country ski trails (glades) through the forest communities and be used to help assess the ecological effects of back-country skiing. The transects will be set up at three different elevations (assuming that ski trails are cut in the three elevations) and placed to sample effects on the major forest communities that the cleared sight-line trails run through (spruce-fir, northern hardwoods, oak-hickory-hornbeam, and potentially the hemlock hardwoods forest). The sampling methodology chosen will be developed in consultation with UVLT and others to ensure scientifically valid conclusions can be made from the data. These transects will be sampled before the ski trails are created, in the year after they are cut, and then at least bi- annually thereafter for at least 10 years. Analysis of results will be made periodically within that time frame. The boundaries of the Back-country Ski Zone will not change over that 10-year period, but may after that based on the conclusions reached from the vegetation sampling.

Old Alpine Ski Trails: The management of these trails will focus far less on regular monitoring and more on large-scale vegetation management in order to keep them in early succession or grassland habitat. This will support different wildlife species in the summer than on the rest of the property, and provide high quality snow sport recreation in the winter. The management work will most likely be contracted out to private parties and will be done by mowing, grazing or some mix of the two.

If grazing is used it will be limited to the trails and slopes within the Multi-use Recreation Area until the methodologies are worked out. UVLT will be consulted in the development of the methodology to be used, and prior written approval must be obtained from UVLT before grazing is expanded into the higher elevation Back-country Ski Slope Area. Grazing methodology must: result in no detrimental effect on the recreational purposes of the property; must not result in animals directly drinking from streams; have no long term detrimental effect on soil erosion; and must decrease not increase any invasive species presence.

The lower parts of the old alpine ski trails within the Multi-use Recreation Area are expected to be developed into other trail uses over the next few years. This will include a Frisbee course, a mountain bike flow trail, and addition cross-country mountain bike trails. These will be incorporated into the annual monitoring and maintenance schedules for the existing trails on the rest of the WWTF.

A rope tow has been built on a lower slope, but it is not expected to have any monitoring or maintenance needs related to ecological impact.

Management Activity Summary: Methodologies for all monitoring of trails and measuring use will be jointly created by UVLT, AO and the Town in the first two years of this management plan. Monitoring and maintenance will initially occur annually using volunteers and some paid staff of the cooperating entities. Maintaining the open ski trails on the former Resort slope may be contracted out. Initially this will be by mowing, but grazing may also be investigated. Management of the WWTF is coordinated by AO under

contract with the Town, but includes other organizations such as STAB and UVLT presently, and may include others in the future. The success of this management plan will dependent on strong partnerships and good communication between entities.

XII. SUSTAINABLE RECREATION CARRYING CAPACITY

Sustainable high quality recreation that does not harm the high ecological values found in the West Windsor Community Forest is a key principle shaping this management plan, as well as being an articulation of town values. Modern land management often uses an approach called adaptive management to balance two or more desired values. A key component of that management approach is to set measurable management goals or benchmarks, and then use a regular program of monitoring to document whether the management is having the desired result of supporting both values. Regular monitoring allows managers to see trends and thus anticipate potential problems. This, in turn, allows time to change management direction, or marshal resources to correct a problem, long before it becomes a crisis endangering the management goals. This regular assessment of conditions also more easily allows adjustment to unexpected events, new technology or new knowledge about ecological systems or recreational side-effects on those systems; thus, the term adaptive management. The conservation easement, and thus this management plan, uses the creation of specific benchmarks for each recreational use as a way to define the carrying capacity of that particular use; in other words the management goal for that use.

In the ideal, rarely met, one would set these benchmarks with some precision on the basis of substantial quantified data. In this situation, there are many uses proposed, most with little management history, and a group of project partners that are largely run by volunteers. All involved have limited time and budgets. However, there is deep experience and knowledge among those volunteers that allows informed judgments, or educated guesses, as to what level of use might reasonably be expected over the life of this plan and how that use affects the landscape. Rather than focusing time and energy on creating well-researched benchmarks, the emphasis for this management plan cycle will be the development of regular monitoring of the recreational uses that will inform and refine the benchmarks in the future. Initial benchmarks and what to monitor will be based on the collective knowledge of the partners involved and community stakeholders.

The following benchmarks cover the uses expected over the next ten years, based on Ascutney Outdoors planning, existing uses, and the community discussion during the development of the project and easement. These will provide a basis for monitoring the use and observing trends and any unexpected impacts. The Partners (Town of West Windsor, Upper Valley Land Trust and Vermont Housing and Conservation Board) shall openly share both experience and new knowledge that might affect the benchmarks chosen, and make adjustments to a benchmark based on that if warranted. All of the benchmarks will be reviewed in the next management planning cycle on the basis of 10 years of monitoring and experience, and appropriate adjustments made to both the benchmark and management to ensure the recreational uses do not exceed their sustainable recreation carrying capacity.

Sustainable Recreation Carrying Capacity Benchmarks

The following is the initial list of benchmarks for helping define what level of use is sustainable. Each specific type of use has a measurable benchmark, which is the current best estimate where one might want to specifically assess whether the use is exceeding its carrying capacity. The expected most important ecological

and recreational quality that each use might effect is identified. The expected monitoring process is provided in abbreviated fashion. The Summary is a brief narrative providing an overview of the issues around a particular use. Any of these could change because of increased general knowledge about the topic, because data from monitoring shows unexpected trends, or simply because of experience managing the recreational use on the mountain.

Summer Mountain Biking:

- Benchmark – to be completed in the future
- Primary Ecological Issue – *Introduction of invasive species and erosion in a fairly concentrated fashion to interior forest habitat because of the convoluted nature of bike trails. Density may also remove viable habitat for some wildlife.*
- Primary Recreational Quality Issue – *Over time, potential conflict between users, or a sense that the quality of experience has declined because of the number of users – loss of the feel that it is a ride in a wild woods yet still very challenging.*
- Monitoring - *Annual/biennial trail monitoring for erosion, invasives, and trail condition (hereinafter summer trail monitoring). Periodic user surveys.*
- Summary – *This is a preexisting use within much of the forested parts of the property so the focus is managing its effects on the forest ecology. The easement does not allow the system to expand except in the Multi-Use Recreation Area. Research and experience has shown that over time trails can be a vector for invasive species into forestland. To prevent spread of species with tiny seeds that travel in dirt on shoes and equipment, like garlic mustard, vigilant monitoring and regular removal or control is necessary. The baseline inventory of erosion and invasives showed that the starting point of management is good, so it should be possible to match control with the growth of use. To date, experience has also shown that the multiple types of use these trails get has not created any user conflicts, but user surveys and keeping a record of any complaints should be used to tract this over time as increased numbers of users, who may feel by the nature of the trail construction that they are supposed to be the primary users, are attracted to these very high quality trails.*

Events

- Benchmark – *No more than 24 events annually that require a West Windsor Assembly Permit*
- Primary Ecological Issue – *None for events not using trails. For races, trail damage (most likely erosion or trail widening) because use intensity (number of users in a short period and/or frequency) exceeds design limits.*
- Primary Recreational Quality Issue – *Frequency of large events exceeds social carrying capacity of community and/or Act 250 permit, or noise levels exceed the Act 250 permit limit of 55 decibels at the closest residents.*
- Monitoring –*Normal summer trail monitoring. Number of complaints received by Selectboard about events, particularly from the hotel or residences within the resort area on the mountain. Sporadic noise monitoring of largest concerts.*
- Summary – *This is entirely a local issue (normal trail monitoring and Selectboard oversight) without need to track academic literature, and nearly all events will have no impact on either issue since, for the most part, they are occurring on the area of the WWCF that is designated for most intensive use. Unless the demand for the largest events exceeds the current expectations this use is likely to have little detrimental use on the mountain and will provide the positive community environment and economic conditions that West Windsor hopes to achieve.*

Winter Trail Use – fat tire, snowshoeing, Nordic skiing

- Benchmark – *No more than 25 users (each pass is a user) on any trail segment per day except on the connectivity trail, which could be double that.*
- Primary Ecological Issue – *None if there is appropriate snow cover and the users stay on trails. Fat tire bikes would have very high impact on thawing soils that could cause erosion. Attempts to use skate skiing could widen the trails and affect trails designed for mountain bikes.*
- Primary Recreational Quality Issue – *Formation of ice from heavy use could affect both the quality of user experience and safety on steep trails. The three uses may prove incompatible on the same trail.*
- Monitoring – *Periodic user surveys. Normal summer trail monitoring. Occasional trail counters.*
- Summary – *There is no foreseeable reason to expect the benchmark will be approached in the near or medium term (5-10 years) unless the popularity of fat tire bikes starts approaching that of mountain bikes. Fat tire bikes are a new technology so land managers are only just learning best management practices; therefore, peers and the literature should be monitored for best practices. The most likely management issue may be designating specific trails for each use, though all would need to use the connectivity trail. If the availability of small scale grooming technology decreases it may become difficult to maintain some of the trails for these uses.*

Pedestrian Trail Use – Hiking, Trail Running, Exercise walking, Dog walking

- Benchmark – *For the use levels anticipated for this use at this site, there is probably no need for a quantified benchmark since most trails will be able to absorb high levels of use, provided good trail etiquette is the dominant culture. The benchmark for educational outreach to users about cleaning up dog feces is finding more than two bags on the trail or in the parking lot per month.*
- Primary Ecological Issue – *Spring use may cause erosion on some trails. In theory, off-leash dogs could disturb ground nesting birds, but no work has been done to determine if those bird species are found in the areas where trails are located. Trail widening could be an issue in lower areas as people try to walk or run abreast to be able to talk with each other.*
- Primary Recreational Quality Issue – *People not picking up their dog's defecations. Off-leash dogs barking or otherwise interacting with bikers.*
- Monitoring – *Normal summer trail monitoring and periodic user surveys. Complaints about dog feces. Occasional trail counters.*
- Summary – *The only expected significant impact from these uses is likely to be from dogs and how they interact with other uses. Complaints about people not cleaning up after their dogs has already become an issue in the Upper Valley where trail users run and walk with their dogs. At the first sign that users are not maintaining appropriate dog etiquette, educational outreach should begin so that a culture of cleaning up and removing feces is firmly established. The threshold for responding to complaints of dogs interacting poorly with other users as measured by periodic users' surveys should similarly be very low. A planned interpretive trail is a different type of pedestrian trail because it will include areas where small structures are created, but no significant impact is expected by this difference from other trails.*

Back-country skiing – wild

- Benchmark – *No creation of rogue trails.*
- Primary Ecological Issue – *The creation of openings in the forest and the removal of understory, in high ranked natural communities on a mountain known for its natural diversity, could change forest*

regeneration, particularly during a time of climate change, and introduce invasive plants because of the enhanced light. Disturbance of moose or deer during times of energy limitations.

- Primary Recreational Quality Issue – *Back-country skiers who don't know the terrain well, or don't have a high enough skill level, become frustrated by being constantly hit by understory vegetation, and thus create rogue trails.*
- Monitoring – *Self-policing by the back-country ski community develops a culture of respect for the different management approaches in different areas of the property. Periodic user surveys. Reports by local people who know area well and explore off-trail in winter and summer. UVLT volunteer easement monitoring of the WWCF.*
- Summary – *The denser vegetation in the hardwood components of the forests will decrease as the forest matures and takes on a more open understory feel for wide areas. In the very long term, much of this forest will develop a mosaic of dense areas where trees have fallen within a mature open forest with relatively little understory. At that point the skiing for most people will be very high quality, unless climate change removes too much snow) –the freedom to roam in the open understory, but with no current or former canopy openings (gaps) big enough to create conditions that impede downward advancement.*

Back-country skiing – vegetation management, site-line trails

- Benchmark – *No creation of rogue trails in forested areas. No new species or expanding populations of existing invasive species in the Back-Country Ski Slope Area.*
- Primary Ecological Issue – *Introduction of invasive species. Disturbance of moose or deer during times of energy limitations.*
- Primary Recreational Quality Issue – *Channels skiers into narrow chutes and thus feels like much less access to fresh, untracked snow.*
- Monitoring – *Monitoring for rogue trails would be the same as for the unmanaged wild areas. In addition, vegetation transects will be installed in forested areas before the cutting of site-line trails and monitored before, after and long term to determine whether the cutting to enhance recreation values is significant enough to harm ecological values. This monitoring methodology is detailed elsewhere in the WWCF Management Plan. Monitoring protocol for invasive species still needs to be created for the Back-Country Ski Slope Area.*
- Summary – *The current best practices for back country skiing is the creation of narrow site line trails, but no Vermont studies of their impact on vegetation and wildlife has been completed (one is in progress for moose on Green Mountain National Forest). There are no immediate plans for creating these ski trails on the property, but if created they will be monitored for impact over time so management can adopt to those findings. Periodic contact with the Green Mountain National Forest and Vermont Forests, Parks and Recreation will help keep abreast of changes in their management policies and as well as the research results on how to make back-country skiing fully sustainable in our forests. To minimize the introduction or spread of invasive species on the Back-Country Ski Slope Area, all mowing machinery should be thoroughly washed before use, and the mowing should start at the top of the mountain and proceed downslope to minimize the spread of invasive seeds, as populations of invasive plants are usually more numerous on lower slopes. The timing of mowing will also be critical to prevent the spread of invasives – roadside mowing when seeds are ripe has been a primary cause in the spread of some very noxious weeds such as poison parsnip and chervil.*

Horseback riding

- Benchmark – *Except during competitions,, the average use by horses does not exceed 10 per week. If monitoring shows no detrimental impact, then this number should be adjusted upward.*
- Primary Ecological Issue – *Introduction of invasive species along trails via soil disturbance, hooves and feces. Erosion of soil because of the cutting action of the hooves, particularly on steep slopes.*
- Primary Recreational Quality Issue – *Poor trail etiquette or interactions between horseback riding and other trail uses.*
- Monitoring – *Normal summer trail monitoring and periodic user surveys.*
- Summary – *Any expansion of horse trail use will be in the open slopes in the Multi-Use recreation Area so the risk of invasive introduction decreases. In addition, trails should be designed so erosion is minimized. Provided the periodic monitoring of all trails for invasives, erosion, and user opinion surveys continues in the future and show no significant problems that cannot be controlled or corrected, and users don't have quality or safety complaints, then use of trails by horses is really no different than any other trail use.*

Downhill sports (summer and winter) in Multi-Use Recreation Area

- Benchmark – *No invasives where soil was disturbed to create a temporary structure to support downhill recreation. Grassland birds increase in the largest old downhill ski trails.*
- Primary Ecological Issue – *Many invasive plants love disturbed soil habitat, so vigilant control will be needed around recreation structures (such as the flow trail) to make sure they don't spread into the grassy, former ski trails. The type and timing of vegetation mowing within the former ski trails can help or hinder birds that use grassland habitat.*
- Primary Recreational Quality Issue – *There is no recreation quality issue at any foreseeable use levels.*
- Monitoring – *Periodic checks of all areas where structures have been built for recreational use of the mountain. Citizen science reports of species sighted on the slopes.*
- Summary – *Encouraging downhill sports was one of the primary driving forces behind creating a Multi-Use Recreation Area, as well as the overall project itself. Resurrecting winter recreation on Mt. Ascutney was a rallying cry for the acquisition of the old ski area. There are few recreation uses that could be envisioned for these slopes, as long as it was not within the forested islands, that would harm long term sustainability provided managers are attentive to invasive species control at the sites of any construction or soil disturbance, and attentive to using very high trail design standards to prevent erosion on the steep slopes.*

Disc Golf

- Benchmark – *No formation of invasive species population on the course. Soil compaction is limited to the areas immediately around tees and baskets.*
- Primary Ecological Issue – *Intense soil compaction results in erosion or establishment of invasive species populations. Slow degradation of the understory and herbaceous layers from players looking for errant shots, as well as disturbance of nesting or feeding birds, could significantly affect bird nesting success in these relatively small islands of forest where edge effects are already large. This could become an issue with an 18-hole course simply because of the increased scale of the lost habitat.*
- Primary Recreational Quality Issue – *If the course is well thought out, wait times would be about the only recreation quality issue.*
- Monitoring – *Annual summer monitoring should include the disc course area, but enhanced at this site to track the extent of severely compacted soil. User surveys should be done to determine if there is a seasonality to the use of the course, since little use during spring bird nesting season will greatly decrease this use's effects on birds.*

- Summary – *Disc golf is a recreational activity that is growing in popularity, but which is also available in the area at other Upper Valley sites. There are currently 22 in the state of VT but only 8 in NH, though all of those are in the Upper Valley, (based on the disc golf course review website). The current WWCF Management Plan is for a 9-hole course on 5-6 acres in the Multi-Use Recreation Use area, probably relatively near the new lodge site. Expansion to multi-basket holes or a full 18-hole course as in the Ascutney Outdoors Master Plan could significantly increase the ecological impact. Creating multiple courses, or building the full 18 holes, would require a new assessment at what constitutes a sustainable recreation carrying capacity and probably mean a benchmark related to loss of understory bird habitat. The preferred course locations within and along the forested islands in the old ski slope in order to create challenges, also means many islands might no longer support anything approaching the natural diversity now found within those islands. Ideally a small course constructed first and low on the mountain would allow the collection of field data quantifying the impact on wildlife; then, the later design of a larger course could be adjusted if needed to potentially have reduced impact. Given this is a relatively new sport, the literature on the courses ecological impacts should also be periodically tracked.*

Small concert venue using natural amphitheater

- Benchmark – *one venue holding no more than 50 people.*
- Primary Ecological Issue – *Conversion of a forested area to another use that does little to support forest species, except for little change to the canopy habitat.*
- Primary Recreational Quality Issue – *None, unless the demand far exceeds 50 and doesn't fit the venue.*
- Monitoring – *None needed once it is established that the construction did not introduce any invasive species. Any trails developed to it would be treated like any other pedestrian trail.*
- Summary – *This use is essentially about defining how much lost forest habitat is too much in an area of the community forest where forest habitat may be a limited resource, and one called out in the easement to be protected for natural values, even if weighted less in the area where this would be permitted – the Multi-Use Recreation Area. The cumulative impact of many different uses within these habitats, (for example disc golf and concert venue) must be considered in determining that impact. The easement requires that the venue be non-permanent construction – so either graded bench seating areas, seating on the ground, or wooden benches that are easily removed. Similarly for the stage area.*

Hunting

- Benchmark – *Mt. Ascutney, and the WWCF, are not areas with high levels of hunter use, nor is there any indication that would change in the future, so no quantitative benchmark is necessary.*
- Primary Ecological Issue - *There are no detrimental ecological aspects to hunting this land, in fact it helps limit deer populations so that the herbaceous, seedlings, and shrub layers are not over browsed. Heavy browse can change forest composition and be detrimental to bird diversity and the diversity of natural communities, particularly in the natural area. Hunting's effect on other species is probably neutral given the low use.*
- Primary Recreational Quality Issue – *No negative issue. Hunting on a relatively remote landscape such as this provides outdoor recreation, exercise, and inexpensive meat.*
- Monitoring – *The state both owns extensive land on Mt. Ascutney and monitors the deer population of the region. This should be adequate for the WWCF.*
- Summary – *The management of deer on the Town's land should be unified and complimentary with the state's management of the adjacent Wildlife Management Areas and the State park. Unless there is some unforeseen change, the Town and Ascutney Outdoors should not spend time on managing and*

monitoring deer or hunting, except potentially to know who is hunting the land. Bobcat are a sensitive predator species, but given current laws and regulations they are not taken on this property.

Hang-gliding

- Benchmark – *No quantitative benchmark is needed as this use is limited to one area and it has no impact except to the vegetation that is cleared in the area where people wait to take-off.*
- Primary Ecological Issue – *Increased trampling damage to sensitive high elevation plant and lichen communities that have limited ability to recover.*
- Primary Recreational Quality Issue – *Long wait times*
- Monitoring – *Periodic interviews with the Vermont Hang Gliding Association to make sure their self-policing of behavior continues to be successful and to monitor trends in the sport.*
- Summary – *This is a long standing use which as little impact of any kind. It is one of the premier gliding sites in the Northeast. If it is not already the case, the Town of West Windsor should be added to the liability waiver that each hang glider must sign when entering the Mt. Ascutney State Park.*

Skills Park and Pump Track

- Benchmark – *One facility of two acres. No other quantitative benchmark is needed as this use is a complete conversion from any natural habitat.*
- Primary Ecological Issue – *Loss of natural habitat.*
- Primary Recreational Quality Issue – *Use levels high enough to result in long wait times.*
- Monitoring – *None needed unless for some reason use levels result in safety issues.*
- Summary – *There really is no issue other than dedicating an area to this constructed facility, and most likely this space will be an open grassy area near lodge and thus already an area with few ecological values.*

Future Benchmark Focus

The one exception to creating initial benchmarks in the list above is one for mountain bike use. At present, mountain bikes are the most intensive use of the trails, attracting more bike use is a major focus of the property's recreational development, and mountain bike use of formally developed and maintained trails is a sport undergoing very rapid growth. Unfortunately, it is also a recreational use that land managers have already seen exceed their initial expectations to management well (Kingdom Trail is an example in Vermont) and so best practices are rapidly evolving. In addition, land managers of bike trails in less intensively managed areas (including the Upper Valley Land Trust and the State) are having troubles preventing the development of rogue trails. The Town of West Windsor, Ascutney Outdoors, STAB, and the Upper Valley Land Trust will work together over the next year to create a benchmark for mountain bike use. The first step is a baseline study of current mountain bike use on the mountain that UVLT is leading during the summer of 2017. This data, the experience of STAB on the mountain and further group discussions among stakeholders and the Partners will be the basis on which to set an initial benchmark for carrying capacity to guide future monitoring and management.

Most effort to quantify the effects of the management of intensive recreation uses on the management of natural resources occurs on federal lands. To the Partners' knowledge, this will be the first in New England that attempts to do that work at a much smaller local-scale site controlled and managed by a local town and several non-profit entities. Recreation is an important part of the Vermont economy. Traditionally that has been based on alpine ski resorts, camping and hiking. The mix of outdoor recreation, as exemplified by the West Windsor Community Forest, is changing. The Partners involved in this management plan will share their learning about sustainable recreation at a small scale with other recreation sites around the State and region, particularly with

other towns that are managing community forests with a substantial recreational component. The Partners also will work with state, federal and other towns and non-profits, to learn from experiences at other sites that are balancing recreation and ecological values.

XIII. SUMMARY

The West Windsor Town Forest contains a fascinating variety of physical and biological diversity, and offers opportunities for a diverse array of management activities (and non-activities). Below are listed some, but probably not all, of the natural resource management possibilities that stem from the information in this plan and its appendices. See also the individual management summaries after each recreation use detailed above.

- Protection of fragile ecosystems: This would primarily involve examining the location of trails in relation to these fragile areas. Some fragile areas would require buffers, other just need activities (i.e. trails) located specifically to avoid damage to plants and soils. Discouraging the development of "rogue" trails is very important to this objective. Trails may also need to have designated uses which may include what type of traffic and when these users can or cannot use specific trails.
- Education is a key component in the protection of fragile ecosystems. The town can consider various methods of educating the public, such as: a Town Forest educational pamphlet, educational workshops, and trail signage.
- Wildlife habitat improvements: Opportunities for this are fairly diverse and depend on species targeted, and Town-objectives for habitat.
    - Maintain certain communities as they are. This is a passive management technique, and in certain circumstances on this property, is the best management strategy. For example, the Dry Oak and Dry Oak-Hickory-Hophornbeam Forests provide extensive food production potential (although in some instances in the Dry Oak Forest, the oak may not be extremely productive due to nutrient poor soils). Many species can benefit from this. The open canopy, particularly in the Dry Oak Forest provides the perfect habitat for turkey. Another example may be in portions of the Hemlock forests. Hemlock provides winter shelter for deer and other animals. Maintaining this shelter is an important management objective.
    - Release food-producing trees from competition. This is a minimal-disturbance activity that would be particularly beneficial where these trees are less common. Oak, hickory, butternut, cherry, and apple are good trees for hard and soft mast production. Yellow birch and aspen provide good foraging habitat for bird species. This can be done either as part of a harvest, or as a non-commercial crop-tree-release project where competing trees (for crown space) are cut down and left to lie on the ground. This allows the targeted crop-tree to receive more sunlight and at the same time increases the amount of coarse woody material on the ground. If tops are left un-lopped, or are concentrated in piles, it provides additional valuable bird habitat. Squirrels and other rodents also use brush piles.
    - Increase structural diversity. Timber harvesting can be designed to increase the forest's structural diversity by creating small openings that will regenerate to a mix of tree seedlings/saplings, shrubs, and berries, and, at the same time, release existing regeneration, and harvesting a mix of size-classes to create a forest with more size-class and canopy layer diversity. This forest structure is particularly important to forest-nesting song bird species (see Appendix I: Audubon Bird Habitat Assessment).

- Create Early Successional Habitat: Patch cuts of 1-2 acres create a habitat desired by certain birds that are not found in older forests (nashville, chestnut-sided, and mourning warblers). In addition, these areas provide increased browsing opportunities for deer, moose, and snowshoe hare. Berry patches may become established in these areas, providing food for a number of mammal and bird species. Currently the regenerating ski-slope areas in Compartment 2 provide this type of habitat. Since it is a type of habitat that is transient and only lasts for approximately 15 years, management activity is required to maintain it on the landscape. This is a decision that the Town can make as it fine-tunes its management goals and objectives. It is recommended to keep early successional habitat clearings towards the edges of a forest block, rather than in the interior, so as to protect birds and mammals that require intact mature forest habitat. The most reasonable areas for this type of management are in Forest Stands 11, 12, and 13. Small group selection (.1 to .25 acre openings) cuts can also be used to diversify forest structure and attract different birds as a forest matures from an even aged management history.
- Regenerate Hemlock for Future Winter Shelter: This is a somewhat uncertain process, also involving timber harvesting, but if successful, would have been worth the effort. Some areas of the Hemlock-Northern Hardwood Forest have abundant regeneration already. Timber harvesting activity in that area could aim at carefully releasing the hemlock understory. In other areas, timber harvesting guidelines can be followed that would have the best chance at resulting in hemlock regeneration.
- Remove Invasive Species: There are scattered plants of Morrow's honeysuckle in many places on the Town Forest. Common barberry is present but uncommon. Multiflora rose and common buckthorn are found in a few locations. It is recommended to target specific areas for removal, before these plants become established throughout the forest, and definitely before any timber harvesting activity takes place.

- Modify, maintain, and perfect the construction of existing biking, hiking, and cross-country skiing trails system to eliminate potential erosion issues and disturbance of fragile habitats. Re-routing of trails due to erosion control problems may be needed in a few areas. Potential new trail construction should consider the information and guidelines presented in this report.
- Install long term monitoring plots associated with the Back-Country Ski Zone to lay the basis for possible future adjustment of the zone's boundaries, if the cutting of line-of-sight trails is proposed.

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