

Natural Resource Inventory & Management Plan for Greensboro Ridge Natural Area

Hanover, New Hampshire

August 28, 2012



Watershed to Wildlife, Inc.



Greensboro Ridge Natural Area

Hanover, New Hampshire

Tax Map: Map 1, Lot 3 **Current zoning:** Rural Residential

Location: off Greensboro Road

Directions to the property: From intersection of Route 120 and Greensboro Road, head east on Greensboro Road. Turn left on Velvet Rocks Drive, proceed to end. Property lies north and east.

Owner: Hanover Conservancy, 16 Buck Road, Hanover NH 03755, (603) 643-3433,
www.hanoverconservancy.org

Previous owner: Simpson Development Corporation, PO Box 1081, Norwich VT 05055,
(802) 295-7961

Plan preparers:

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- Greensboro Ridge Stewardship Committee of the Hanover Conservancy
- Watershed to Wildlife, Inc., 544 Jefferson Road, Whitefield, NH 03598 (603)444-0000,
www.watershedtowildlife.com

Date of donation: May, 2008

Conservation Easement: Held by Town of Hanover Conservation Commission

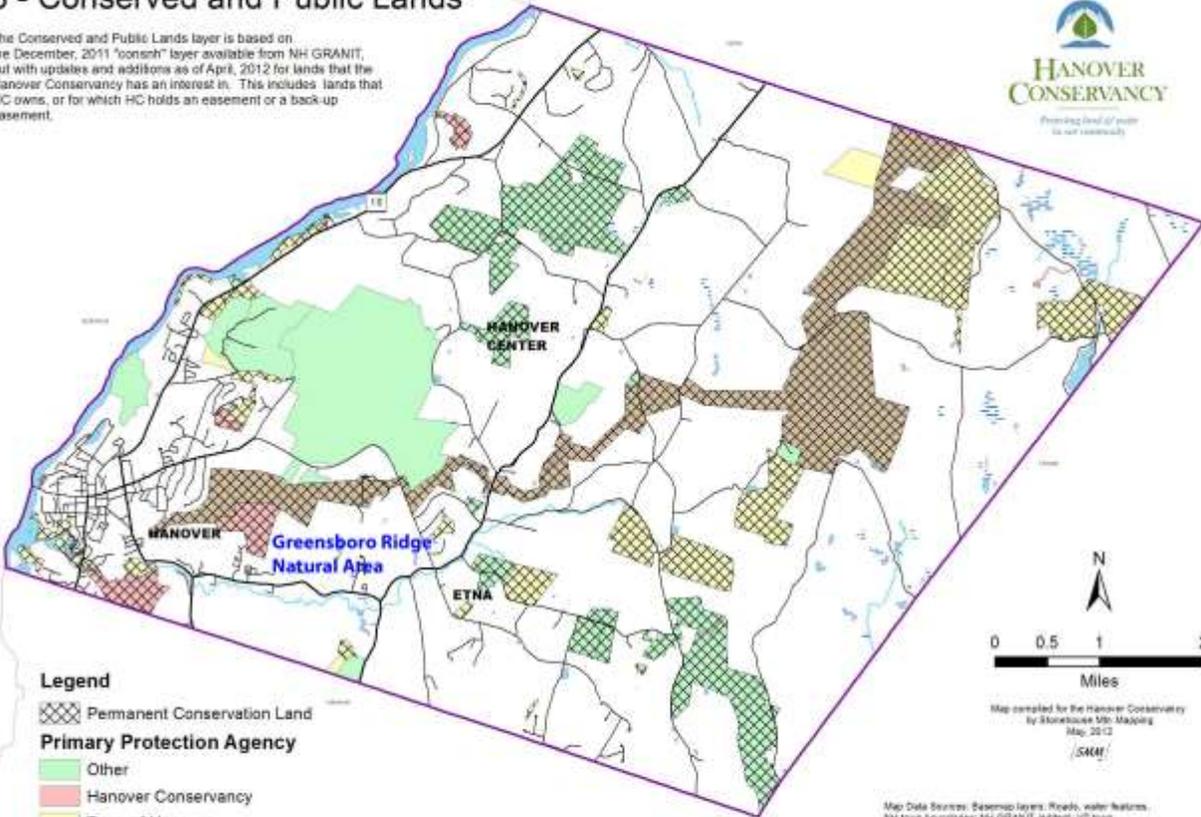
Pertinent management information: The purpose of acquiring the property was to guarantee protection from future development and to assure management of the land as relatively pristine woodland for the public good.

Brief description of use restrictions:

- ❖ Non-motorized, pedestrian, passive, low-impact, non-commercial outdoor recreational and outdoor education purposes, such as hiking, wildlife observation, cross-country skiing
- ❖ No camping
- ❖ Bicycles permitted on the Silent Brook (Village Common) Trail only
- ❖ Agriculture or forestry, in accordance with a management plan and best practices
- ❖ No subdivision
- ❖ No structures or signs other than specified ancillary structures or signs necessary for habitat management, passive, low impact recreation, agriculture, or forestry
- ❖ No mining or disturbance of soil or drainage other than necessary for those purposes; must not harm recognized rare, threatened, or endangered species
- ❖ No dumping, burning, or burial of trash, yard waste, man-made or hazardous materials
- ❖ No storage or parking of vehicles, trailers, boats, or recreational vehicles.

8 - Conserved and Public Lands

The Conserved and Public Lands layer is based on the December, 2011 "consrv" layer available from NH GRANIT, but with updates and additions as of April, 2012 for lands that the Hanover Conservancy has an interest in. This includes lands that HC owns, or for which HC holds an easement or a back-up easement.



Legend

Permanent Conservation Land

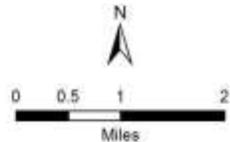
Primary Protection Agency

Other

Hanover Conservancy

Town of Hanover

US Dept. of Interior, National Park Service A/T



Map compiled for the Hanover Conservancy
by Stonehouse Mfg. Mapping
May, 2012

Map Data Sources: BaseMap layers, Roads, water features,
NH town boundaries, NH GRANIT (4/4/01), VT town
boundaries, VCDL
Conserved and Public Lands layer: consrv layer from NH GRANIT
with updates on HC lands.

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I. Introduction

A. The Greensboro Ridge Natural Area

The Greensboro Ridge Natural Area is located in the Mink Brook watershed in Hanover, New Hampshire. The 113.42-acre property ranges in elevation from 650-1090 feet above sea level, and is generally south-facing in aspect. It forms a significant part of the scenic backdrop of Route 120 northbound and from parts of Greensboro Road. The property is largely forested except for several wetlands and a few openings created by a previous owner as potential house sites. The northern part of the property abuts National Park Service land protecting the corridor of the Appalachian Trail. The AT dips onto the Greensboro Ridge Natural Area for a short distance. Greensboro Ridge Natural Area, located 1 ½ miles from downtown Hanover, is part of a matrix of contiguous forested wildlife habitat and a recreational trail network that extend from Trescott Road to Greensboro Road.

B. Land Use History

It is likely that part of the southern portion of the property was used for grazing in the past. The land is rocky and wet, and did not lend itself readily to agriculture or good pasture. Stone walls run along the east side of the property and in the interior, and there are remnants of rock piles, barbed wire fencing, and old logging roads. In the 1990s, when the property was part of a seven-lot subdivision, Greensboro Limited Partnership created some clearings to showcase potential house lots.

C. Acquisition by the Hanover Conservancy

The Conservancy owns the Greensboro Ridge property outright, subject to a conservation easement conveyed by Simpson Development Corporation to the Town of Hanover. The property had been part of a major planned residential subdivision project. The Hanover Conservancy, then known as the Hanover Conservation Council, received a gift of the land in May, 2008 from Simpson Development Corporation, the developer of the Velvet Rocks and Silent Brook subdivisions. This gift was a condition of Planning Board approval (#22 of the Planning Board approval 001-003P2004-10) which permitted a 65-unit Planned Residential Development. Condition #29 of that same approval required the permanent protection of the 113 acres. The Council received a stewardship fee of \$12,000 from Simpson Development Corporation to help care for the property into the future.

The land was conveyed (deed recorded in Grafton County Registry of Deeds Book 3520 pp. 600-603) subject to

- a scenic easement (Book 1524, p. 632),
- the conservation easement (Book 3515, p. 373)
- access easement granted to the Town of Hanover (Book 2595 p. 437) and
- trail easements for public access, with restrictions on the width of two planned trails.

The purpose of acquiring the property was to guarantee protection from future development and to assure management of the land as relatively pristine woodland for the public good. The Conservancy's ownership also guarantees protection of an approximately eight-acre wetland in the northwestern corner of the property as mitigation required by the State of New Hampshire to compensate for wetland disturbance in the Velvet Rocks development. It is worth noting that

only commonly held land belonging to the Velvet Rocks development abuts the Greensboro Ridge Natural Area. The nearest house lot is over 500 feet from the property line. Access to the lot immediately to the east (Map 1, Lot 7) is through the Silent Brook development at the eastern edge of the as-yet-unbuilt Pod 3, and does not go through Conservancy land. This is depicted on Plan 12555 recorded on November 10, 2006. A small triangle at the northwest corner of the property near the Appalachian Trail is subject to a protective covenant (scenic easement) recorded in Book 1524 p. 632.

About the Hanover Conservancy - The Hanover Conservancy was founded as the Hanover Conservation Council in 1961 and became the Hanover Conservancy in 2011, its 50th anniversary year. Its mission is to protect land and water in the community and to inspire appreciation of natural resources for the benefit of the Hanover community and beyond. The Conservancy achieves its mission through land conservation, active management and stewardship, science-based information-sharing, community education, and support for conservation-oriented public policies.

D. Memorandum of Understanding

On May 1, 2008, a Memorandum of Understanding (MOU, see appendix) was signed by Simpson Development Corporation, the Council, and the Town of Hanover regarding trail location, trail construction, and trail use on the property. This MOU has provided the basis for management of trails at the Greensboro Ridge Natural Area.

E. Conservation Easement

Simpson Development Corporation conveyed a conservation easement on the property to the Town of Hanover in May, 2008. Town staff (Vicki Smith) prepared a Baseline Documentation Report as a record of the condition of the property at the time it was protected. This report, available at the Conservancy office, describes forest cover, soils, and special features. The Town monitors the easement by visiting the property each year to compare current conditions to this baseline. Reports on the results of this monitoring are available at the offices of both the Conservancy and the Town.

Purposes of the Conservation Easement

- ❖ Protect scenic, undeveloped land as public open space within Hanover
- ❖ Protect an undeveloped buffer along the Appalachian Trail
- ❖ Protect natural habitat of native flora and fauna and the ecological processes that support them
- ❖ Preserve the land for outdoor recreation and education of the general public
- ❖ Preserve the quality of groundwater and surface water

Uses controlled by the conservation easement

- ❖ Non-motorized, pedestrian, passive, low-impact, non-commercial outdoor recreational and outdoor education purposes, such as, but not limited to, hiking, wildlife observation, cross-country skiing
- ❖ No camping
- ❖ Bicycles permitted on the Silent Brook (Village Common) Trail only



- ❖ Agriculture or forestry, in accordance with a management plan and current best practices, as long as not detrimental to the purposes of the easement and does not impair the scenic quality of the property as viewed from public roads or trails
- ❖ No subdivision
- ❖ No structures or signs other than specified ancillary structures or signs necessary for habitat management, passive, low impact recreation, agriculture, or forestry
- ❖ No mining or disturbance of soil or drainage other than necessary for those purposes; must not harm recognized rare, threatened, or endangered species
- ❖ No dumping, injection, burning, or burial of trash, yard waste, man-made or hazardous materials
- ❖ No storage or parking of vehicles, trailers, boats, or recreational vehicles.



F. Natural Resources Inventory

In 2011, the Hanover Conservancy retained Watershed to Wildlife, Inc., a natural resource consulting firm with considerable experience in Hanover and Lebanon, to conduct a Natural Resource Inventory of Greensboro Ridge to help guide the Conservancy's management of the property into the future. Biologists John Severance and Elise Lawson of Watershed to Wildlife visited the property throughout the seasons to conduct research. Members of the Hanover Conservancy's Greensboro Ridge Stewardship Committee participated in each field visit. The biologists gave a public presentation of their findings in January, 2012. This management plan draws from their findings.

Methodology - The inventory project began by assembling existing data, including:

- GRANIT data- UNH Complex Systems Research Center
- USGS topographic maps (digital raster graphic - historic and most recent)
- NRCS soils data
- National Agricultural Imagery Program 1992, 2003, & 2009
- U.S. Fish and Wildlife National Wetland Inventory data
- Stonehouse Mountain Mapping (base layers for property and trails)
- New Hampshire Natural Heritage Bureau data
- Botanical Survey Field Work report by Alice Schori, 2001

Field work was conducted on the following dates and explored local knowledge -

- February 24, 2011 with Adair Mulligan, Gail McPeek, Andrea Caruso, Andrew Deaett and Anne Evans
- May 19, 2011 with Steve Shadford, Sandy Chivers, Adair Mulligan, and Gail McPeek
- July 25, 2011 with Adair Mulligan, Gail McPeek, John Joline, Vicki Smith, and Martha Cochran

Seasonal components to field work included:

- Winter – focus on wildlife species sign (tracks, scat, feeding, denning) and habitat types
- Spring – focus on vernal pools, wildlife sign, bird species, habitat communities, wetlands, and vegetation
- Summer – focus on plant species, forest health and habitat types, wildlife sign and presence, wetlands and drainage.

GPS locations were taken using a Garmin GPSmap 76CSx, WAAS enabled (not survey accurate) Data gathered through digital photography, field book notes and documentation were compiled and maps and a written report were produced. A public presentation was given in January, 2012. This Natural Resources Inventory is a working document which can be continually updated and expanded. The three days of field work for this project provided snap-shots of habitat types, plant species and wildlife species. The property is a diverse landscape containing ridges with rock outcrops, streams and drainages, and wetland complexes that run roughly north/south, offering opportunities for repeatable and ongoing wildlife transects for monitoring and documenting natural resource features.

Lists of wildlife and plant species can be expanded and recorded over time.

The description of the property's geological features was contributed by Carl Renshaw, Professor of Earth Sciences at Dartmouth College, and member of the Board of the Hanover Conservancy.

II. Resource Descriptions

A. Geology

Geologically, Greensboro Ridge is part of the Lebanon Dome, one of a series of granitic domes that form many of the hilltops along the eastern edge of the Connecticut River. Geologically similar nearby domes include the Mascoma Dome that forms Holt's Ledge and the Smarts Mountain Dome which forms the mountain of the same name. These domes, along with others that extend through western New Hampshire and central Massachusetts to Long Island Sound, are collectively known as the Oliverian Domes.

It is thought that the Lebanon, Mascoma, and Smarts Mountains domes may be connected at depth and likely were part of the magma chamber that fed the Ammonoosuc volcanoes. During Ordovician times (about 460 million years ago) the area that is now Greensboro Ridge was similar to the modern arc of volcanic islands of Indonesia. In Indonesia, the island arc is the surface manifestation of the subduction of the northbound Australian Plate beneath the Eurasian Plate. During Ordovician times, the Ammonoosuc volcanoes and their granitic magma chambers were the surface manifestation of the subduction of the floor of the ancestral Atlantic Ocean. The Oliverian Domes are thought to represent the magma chambers of an arc of island volcanoes, the Bronson Hill Complex, created during the first episode of Appalachian mountain building, or the Taconic Orogeny.

In the center of the Lebanon Dome is Lebanon granite that forms the highest parts of the Greensboro Ridge Natural Area. Encircling the granite is Lebanon border gneiss, granite that has been secondarily compressed and has developed a banded texture. The foliated (i.e., banded) border gneiss is visible at the lower elevations of the ridge. The Lebanon granite is pinkish in fresh exposure owing to its rich content of potassium feldspar, named orthoclase. The characteristic hue fades in the weathered surfaces of the rocks as the feldspar weathers to kaolinite, a white, chalky clay.

While the rocks of Greensboro Ridge are quite old, their present topography is much more recent and reflects the effects of the recurring ice sheets that covered the region during the last two million years. As the ice sheets advanced southward, they ground smoothly over the upstream,

north-facing slopes of hills. But along south-facing ridges, such as Greensboro Ridge, rocks were subjected to slow but inexorable pulling and plucking, leaving a ragged and relatively steep surface.

B. Soils

The USDA Natural Resource Conservation Service (NRCS) soils map indicates that the majority of the property is underlain by the Cardigan-Kearsarge Rock Outcrop Complex, with rock outcrops less than 100 feet apart. This soil type occurs on hilly or moderately steep hilltops and hillsides. Cardigan soils make up about 40% of this unit, Kearsarge soils 30%, rock outcrops 15%, and other soils 15% (primarily very stony Stissing silt loam). Inclusions (about 10%) of well drained Bernardston soils and moderately well drained Pittstown soils also occur, and places where bedrock blocks the drainage developing poorly drained soils. Stissing silt loam, which is poorly drained, is found primarily in the north end just to the west of the center of the property where the caves, headwaters wetland, and intermittent stream are located. There are up to 15% inclusions in the Stissing soil unit consisting of very poorly drained depressions with black organic surface layers and mounds of moderately well drained Pittstown soils.

NRCS also mapped 63D, Charlton sandy loam near the bottom (or south end) of the property. This is a well drained soil with inclusions (up to 15%) of long narrow drainages that are moderately well to poorly drained areas. Fracture patterns in some of the outcrops are indicative of feldspar content.

During field investigations, biologists detected a plant community near the center of the property approximately 150 feet east off Oli's Eagle Trail. Reference to the maps and/or GIS data will pinpoint this area as GPS point #895 (taken 5-19-11) that indicated a microhabitat of higher pH soils. Biologists documented blue cohosh and maidenhair fern in numerous locations but none were as robust as those in the GPS #895 area. It is possible that the ledge in this area contains calcites that are slowly weathering into the groundwater and soil, raising the pH value. Indicator plants include basswood, maidenhair fern and blue cohosh. Such habitat could be hospitable to walking fern (*Asplenium rhizophyllum*), listed as a rare species in New Hampshire. Searches for this plant in 2011 were unsuccessful.

C. Water Resources

On the Greensboro Ridge Natural Area, just over 10 acres of wetlands were documented, covering 9% of the property. The wetland types vary greatly and include the following:

- Palustrine¹ Forested Wetlands
- Palustrine Scrub Shrub Wetlands
- Palustrine Emergent Wetlands
- Open water including vernal pools
- Riverine Upper Perennial Streams
- Riverine Intermittent Streams (fed by high water runoff and snow melt)

¹ Palustrine wetlands support vegetation and include marshes, swamps, bogs, fens, and the small, shallow, permanent or intermittent water bodies often called ponds.

Wetlands are essential habitat for the majority of plant and animal species in New Hampshire. Edge habitats within and around wetlands are frequently used by a great variety of wildlife. It is estimated that riparian (streamside) areas and wetlands are used by over 90% of the region's wildlife species and provide preferred habitat for over 40%.

1. **Wetlands** - A few of the larger wetland complexes found are described below:

Hemlock forested wetlands - These wetlands are located in pockets throughout the entire property. They contain mostly eastern hemlock (*Tsuga canadensis*) with a few scattered white pine (*Pinus strobus*), balsam fir (*Abies balsamea*), and red spruce (*Picea rubens*). These wetland complexes flow primarily south with some indications of channelization as slopes increase. These wetlands offer excellent dense softwood habitat with a thick canopy and very little undergrowth.

Red Maple-Black Ash-Swamp Saxifrage swamp - This is a classic but not very common type of seepage swamp in central and southern New Hampshire, with plants indicative of seepage and/or enriched conditions readily apparent. They are typically found along the borders of larger swamp systems and are very slightly sloped. Red maple (*Acer rubrum*) dominates the tree canopy, with other hardwoods in lesser amounts. Diverse herbaceous and moss species assemblages may be present, although *Sphagnum* moss is usually absent." An abundance of the swamp saxifrage (*Saxifraga pensylvanica*) in bloom was documented in this area on May 19, 2011.



Swamp saxifrage (Saxifraga pensylvanica) plants in bloom were documented throughout the wetland complex found in the western portion of Greensboro Ridge Natural Area.



Black ash (*Fraxinus nigra*) and yellow birch (*Betula alleghaniensis*) were documented along with red maple (*Acer rubrum*). The nearly level terrain further supports the description of this category. Although probably not an exemplary example, this wetland area fits this community profile best of the Natural Community categories described by the New Hampshire Natural Heritage Bureau. This wetland is found in the western portion of the Greensboro Ridge Natural Area and is 0.87 acres.

Saxifrage Swamp. Photo taken on May 19, 2011

Shrub/Scrub, open water/emergent headwater basin wetland - This wetland occurs in the northern part of the property and has characteristics best described as a hybrid bog/fen system. There is no defined inlet but a defined outlet flows intermittently, serving as a headwater supply to a small perennial stream. It is a narrow basin between two steep forested slopes dominated by hemlock and with an abundance of rock outcrops. The basin contains open water areas with emergent vegetation, and a thick black mucky soil layer, a Histosol.

Adjacent to this wetland are crevasses, some large enough to be more like caves. They were explored on February 24, 2011 when the wetland was frozen and could be crossed wearing snowshoes. The caves contain many potential den sites.

Yellow spotted salamander (*Ambystoma maculatum*) egg masses, wood frog (*Rana sylvatica*) tadpoles, and green frogs (*Rana clamitans melanota*) were observed in open water along the entire length of this wetland, confirming its function as a vernal pool, on May 19, 2011. Red spotted salamander (*Notophthalmus viridescens viridescens*) newts and adult wood frogs were documented. Blue Flag (*Iris versicolor*), cinnamon fern (*Osmunda cinnamomea*), sphagnum mosses (*Sphagnum spp*), meadowsweet (*Spiraea latifolia*), and red maple (*Acer rubrum*) were the dominant plant species found.

A porcupine (*Erethizon dorsatum*) carcass was found nearby, suggesting predation sometime in the previous winter months. Additional plant species were documented during a site visit on July 25, 2011 and include: service berry (*Amelanchier spp.*), yellow birch (*Betula lutea*), wet aster sp., gold thread (*Coptis groenlandica*), royal fern (*Osmunda regalis*), wool grass (*Scirpus cyperinus*), red oak (*Quercus rubra*), New York fern (*Thelypteris noveboracensis*), bedstraw (cleaver) (*Galium aparine*), northern bugleweed (*Lycopus uniflorus*), gray birch (*Betula populifolia*), bur-reed (*Sparganium spp.*), yellow sedge (*Carex flava*), shallow sedge (*Carex lurida*), marsh St. Johnswort (*Hypericum virginicum*), and interrupted fern (*Osmunda claytoniana*). The uniqueness of this wetland in this higher elevation area is evident with its broad diversity of plant and animal species and its location among both dense softwood and northern hardwood forests.



Winter photo of the northern wetland on Greensboro Ridge Natural Area.

Below: Mid summer photo of the northern wetland taken from a similar location



2. **Vernal Pools** - Among the more unusual and important wetland types are vernal pools. Vernal pools provide essential breeding habitat for certain amphibians and invertebrates such as wood frogs (*Rana sylvatica*), yellow spotted salamanders (*Ambystoma maculatum*), marbled salamanders (*A. opacum*), and fairy shrimp (*Branchinecta lynchi*). These species depend on vernal pools as breeding sites, because they are mostly temporary water bodies, thus devoid of fish and other aquatic predators. Reptiles such as Blanding's turtle (*Emydoidea blandingi*) and

spotted turtle (*Clemmys guttata*) also rely on vernal pools as important feeding areas in early

spring. Vernal pools fill annually from precipitation, runoff, and rising groundwater, typically in the spring and fall. By mid-summer, however, these wetlands are typically dry, making them a dynamic habitat for the plants and wildlife specifically adapted to them.

Several vernal pools were documented throughout the Greensboro Ridge Natural Area. Although some are isolated pools, many are associated with the larger wetland complex in the northern part of the property. A particularly classic example occurs on the southern property line on the west side.



“Text book” vernal pool found along the southern boundary of Greensboro Ridge Natural Area

3. Perennial and Intermittent Streams

The Greensboro Ridge Natural Area contains headwaters and small sub-watersheds with associated riparian zones and floodplains. These areas are important for most wildlife, many plant species, and water quality, particularly for downstream receiving waters. The Greensboro Ridge Natural Area contains three drainages that form two perennial and one intermittent stream running roughly north to south. During field work for this project, tracks of animals such as fisher, mink, and raccoon were documented along these drainages. The streams are all well shaded, helping to keep water temperatures cool during the summer months.



Upper part of a perennial stream which begins on the Greensboro Ridge Natural Area. It is well shaded, cool, and an important part of this ecosystem.

D. Forest Resources

1. Dense Softwood - Dense softwood is the largest habitat type at the Greensboro Ridge Natural Area, composing nearly 47 acres or 41.9% of the area. Eastern hemlock (*Tsuga canadensis*) is the primary species with some balsam fir (*Abies balsamea*) and white pine (*Pinus strobus*). Field work confirmed that white tail deer use these hemlock stands in the winter.

There are extensive networks of deer trails as well as bedding sites and feeding areas. In some areas, the deer were feeding on acorns from scattered oak trees within the stand.

Dense softwood stands are important deer wintering areas, which cover only about 3% of the land base in New Hampshire. For an area to be considered a deer yard two basic elements must be met:

- Core area identified by concentrations of dense softwoods
- Mixed hardwood and softwoods adjacent to, or within the core area provide accessible forage.

2. Northern Hardwood Forest - Just over 17 acres or 15.3% of the property contains northern hardwood-dominated stands. The largest four areas are found in the northeastern, central and western portions of the property. Common tree species documented in the hardwood stands include: white ash (*Fraxinus americana*), white birch (*Betula papyrifera*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), aspen (*Populus tremuloides*), and beech (*Fagus grandifolia*). Less common species observed and scattered throughout the hardwood stands were black cherry (*Prunus serotina*), ironwood (*Carpinus caroliniana*), hornbeam (*Ostrya virginiana*), and basswood (*Tilia americana*).

Many of the trees in the northern hardwood stand as well as mixed-wood forest are mature specimens producing abundant supplies of mast², particularly beech nuts and acorns. Although there are trees old enough to produce nuts and berries throughout the property, the northern hardwood stands contained the most mature individuals:



- Most trees in these stands have large diameters over 12" DBH (diameter at breast height)
- The open, mature hardwood stands show relatively less undergrowth compared to other, younger hardwood and mixed-wood stands
- There was abundant bear sign on and around the trees.

Bear claw marks were seen on many mature beech trees indicating that bears were climbing them to reach the beech nuts.

Below, A cache of acorns found in a hollow portion of a hop horn beam tree.



Mature hardwood stands containing mast-producing beech and oak trees are very important for wildlife in the fall, when the nuts are a critical source of protein and fats. Black bear rely on nuts in the fall as they store up fats and protein. During field work it was evident that these mast trees were well used by many species, both mammals and birds (black bear, white tailed deer, squirrels, mice, wild turkey, and ruffed grouse, among others).

3. Mixed-wood Stands - A large portion of the property (38.2%) is a mixture of softwood and hardwood species interspersed throughout approximately 43 acres. The mixedwood timber type is a result of the soils, slopes, aspect, wetlands, and past land use. Dominant tree species

within these stands include: sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), beech (*Fagus grandifolia*), red oak (*Quercus rubra*), white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*), and balsam fir (*Abies balsamea*). Although

² Mast refers to nuts and fruits produced by woody plants. "Hard mast" refers to nuts and "soft mast" to fleshy fruits. Forest tree and shrub mast is an important seasonal food for many forest wildlife species. Examples of mast- producing trees and shrubs are oaks, beech, ash, apples, hickories, beaked hazelnut, dogwoods, and choke cherry.

mixedwood stands are found throughout the property, the largest contiguous section occurs in the eastern portion of Greensboro Ridge Natural Area.

E. Other Habitats

1. **Rock Outcrops** - Scattered throughout the property are a number of rock outcrop ridges. These ridges generally run in a north/south direction and especially among dense softwood stands. The USDA Natural Resource Conservation Service (NRCS) soils map indicates that the majority of the property is underlain by the Cardigan-Kearsarge Rock Outcrop Complex, with rock outcrops less than 100 feet apart. This soil type occurs on hilly or moderately steep hilltops and hillsides.

During field visits in May and July several colonies of maidenhair fern and blue cohosh were noted, often at the base of rock outcrops. They indicate that the pH is higher and the soil more suitable for species preferring rich forest soils. The rock outcrops may contain calcium deposits that are slowly leaching into the soils through natural weathering.

Weathering rock contributes to the characteristics of the soils.



2. **Permanent Openings** - As the percentage of permanent openings in New Hampshire has decreased significantly over the past 50 years, the Fish and Game Department is encouraging landowners to create or maintain openings as important wildlife habitat. Permanent openings dominated by grasses, forbs, brambles, and fruiting shrubs provide necessary habitat for about 22% of New England's wildlife species, and are seasonally important habitat to nearly 70% of species.

The Greensboro Ridge Natural Area contains 3.24 acres or 2.9% permanent openings. These were originally cleared for house-sites, before the land was donated to the Hanover Conservancy. These openings are all located in the southern part of the property and are adjacent to a variety of habitat types including wetlands, dense softwood stands, northern hardwoods and mixed-wood stands. Although they cover only a small percentage of the total property, these openings create a diversity of habitat that will attract a variety of wildlife species.



Opening on the Greensboro Ridge Natural Area property, now being invaded by young white pine. Fisher tracks can be seen on the snow in the foreground. This area will revert to pine forest if the pines are not removed to maintain the opening.

F. Wildlife

The Greensboro Ridge Natural Area offers habitats for a diversity of native species of wildlife. The property is contiguous with extensive other protected habitat, forming a well-connected corridor for the movement of wildlife. While a number of species such as bobcat and Eastern coyote may not use the Greensboro Ridge property as core habitat, they are believed to use this area for feeding or moving to other core areas nearby.

1. **Mammals** - Black bear (*Ursus americanus*) occupy the property and likely den there. Claw marks on mature beech trees indicate that the property provides an important food source. White-tailed deer (*Odocoileus virginianus*) use the area heavily. There is a network of trails used by deer, and dense softwoods provide a deer wintering area. Two prominent members of the weasel family, the Fisher (*Martes pennanti*) and American mink (*Neovison vison*) frequent openings and drainages, respectively. Greensboro Ridge Natural Area is well known for its prime porcupine (*Erethizon dorsatum*) habitat, especially where ledges and rock overhangs provide good wintering dens. The property contains several potential den sites of Red fox (*Vulpes vulpes*), and coyote tracks have been observed. Raccoon (*Procyon lotor*) are common, traveling along drainages and visiting vernal pools and wetlands. Other small mammals include red and gray squirrels and likely also voles, moles, shrews, and mice.
2. **Birds** - Thirty-two species of birds have been recorded on the property to date, including hawks, three species of woodpeckers, other common forest-dwelling birds, and a variety of warblers. Large oaks near the northern edge of the property may offer good hawk-nesting habitat. A limited amount of edge and open habitat restricts the number of species that might use the property. Brown-headed cowbird, a common nest parasite, has been observed here.

G. Non-Native Invasive Species

Greensboro Ridge Natural Area has largely escaped infestation by non-native invasive plants due to the continuity of its relatively undisturbed forest canopy. However, on the southern part of the property where several openings were created as potential house sites, the disturbance has allowed glossy buckthorn to seed in, and it is beginning to become established. Forget-me-not, a biennial herbaceous plant, has become abundant in wetlands and along streams. No other invasive plant species were noted at the time of this writing.

H. Existing Recreational Features and Uses

The recreational trail network on the Greensboro Ridge Natural Area has its origins in the May 1, 2008 Memorandum of Understanding between Simpson Development Corporation, the Hanover Conservation Council, and the Town of Hanover. The MOU guided the location, construction, and uses of two specific trails, the "AT Connector Trail" (now called Oli's Eagle Trail) to provide access to and from the Appalachian Trail, and the "Village Common Trail" (now called the Silent Brook Trail). Oli's Eagle Trail and the Silent Brook Trail, with its two wooden bridges, were developed as of 2009. The Greensboro Highlands Trail was built in 2012.

1. **Parking** Simpson Development Corporation provided space for the general public for parking cars on its property at or near the trailheads. The parking area at the northern end of Velvet Rocks Drive provides space for approximately six cars, and provides direct access to both trails. The designated parking area for the east end of the Silent Brook Trail at the Silent

Brook development is located at some distance from the trailhead, at the far eastern side of the property.

- 2. Trails** - The MOU specifies that trails are to be open for the use of the general public for non-motorized, transitory, low-impact, non-commercial outdoor recreation such as hiking, cross country skiing, picnicking, and nature study. No mechanized, motorized, or electrically driven equipment or vehicles of any nature are allowed on the property except during construction or for emergency purposes. No party has the right to expand the use of any trail. Non-motorized bicycles are permitted on the Silent Brook Trail only (5/1/2008 MOU). The Conservancy has the right to post against bike or pedestrian use in the event of significant overuse or damage to trail. Prior to posting, the Conservancy will consult with the other parties to the MOU. The MOU noted that future trails may be created with the approval of the Conservancy and the Town.
- a. **Oli's Eagle Trail** - This trail, originally called the AT Connector Trail, was built by the Trails Committee of the Hanover Conservation Commission working with Oli Simpson and Troop 45 of Hanover for Oli's Eagle Scout project. The trail begins at the trail head at the top of Velvet Rocks Drive and ends at the Appalachian Trail.
 - b. **Silent Brook Trail** -This trail, originally called the Village Common Trail, was built by Simpson Development Corporation. It includes two wooden bridges spanning water drainages. At the time of this writing, there is a persistent drainage problem on one section of the Silent Brook Trail.
 - c. **Greensboro Highlands Trail** - To create a loop hike with the two original trails and expand educational opportunities on the property, the Conservancy asked Watershed to Wildlife, Inc. to recommend a route that would not interfere with key habitat. Refinements suggested by the Upper Valley Trails Alliance, Greensboro Ridge Stewardship Committee, and Town of Hanover were incorporated in the route that was built by Hanover Conservancy volunteers in May - June of 2012.

I. Educational Use

The Hanover Conservancy uses the property for educational field trips, particularly programs that focus on geological history and wildlife habitat. A sign at the trailhead parking area was designed by Oli Simpson as part of his Eagle Scout project in conjunction with Troop 45. As of this writing there is no interpretive kiosk, permanently displayed trail map, or published guide to the Natural Area.



J. Historic Resources

A stone wall, a few isolated rock piles, an old woods road that runs partway up the eastern side of the property, and several fragments of barbed wire are the only evidence of historic land use. There are no cellar holes, wells, foundations, or other evidence of occupation on the property.

III. Management

A. Summary of Goals & Objectives

USES

1. Permit low impact recreation, educational activities, and scientific research.
2. Allow deer hunting to continue; promote safety of trail users during hunting seasons.
3. Prohibit horseback riding, motorized vehicles, disturbance of plants and wetlands, trapping and other hunting.

HABITAT QUALITY

1. Protect streams, wetlands, and the upland buffers around them.
2. Allow the forest to recover naturally from natural disturbances, except in extreme cases where great fire hazard is created. Remove only trees that present a hazard to trail users.
3. Retain existing softwood forests.
4. Protect cavity trees, mast-producing trees and shrubs, and hardwoods 12"+ DBH.
5. Maintain existing permanent openings and edge habitats.
6. Control glossy buckthorn; monitor for invasive species and new forest pests.

RECREATION

1. Provide trailhead signage; maintain trails and provide discreet internal signage and blazing to the degree that is adequate for public safety.
2. Construct trailhead kiosk.
3. Consult partners and build one or two new trails.
4. Use best management practices (BMPs) when work is necessary near a stream.
5. Consider publishing a detailed map and guide to the property.
6. Invite Valley Quest to create a quest for this property.

CONSERVATION

1. Be alert to opportunities to conserve abutting undeveloped lands on east and west sides.

ADMINISTRATIVE

1. Identify and mark boundaries where indistinct.
2. Map and photograph historic features. Document past changes in land use if possible.
3. Monitor property regularly.
4. Conduct regular review of this management plan.
5. Work with the Greensboro Ridge Stewardship Committee, Hanover Conservation Commission, Velvet Rocks Homeowners' Association, and Appalachian Trail Conservancy

B. Current and Potential Threats

HABITAT QUALITY

- Current threats include invasive plants and growth of white pine in openings.
- Potential threats include dogs swimming in vernal pools and dumping of yard waste or other debris brought in from neighboring lands.

WATER QUALITY

- Current threats include trail erosion where trails cross drainages.
- Potential threats include dog waste entering streams.

RECREATION

- Current threats include trail erosion on the Silent Brook trail.
- Potential threats include hiker safety during deer hunting season.

C. Management Partnership

The MOU requires the Conservancy and the Town to meet on the property at least annually to walk the trails and identify any maintenance or restoration that is required. The MOU specifies that the Town, through the Trails Committee of the Conservation Commission, shall maintain both the AT Connector Trail (Oli's Eagle Trail) and Village Common Trail (Silent Brook Trail), and that the Conservancy has the right to close either if the Town fails to maintain them. While the MOU specifies that the Conservancy has no affirmative obligation to maintain the trails, in practice, volunteers of the Hanover Conservancy have maintained Oli's Eagle Trail. This responsibility should be reviewed with the Town with consideration given to having the Conservancy manage all trails, perhaps after the Town has repaired the drainage problem on the Silent Brook Trail.

1. **Future of the MOU:** Now that four years have passed since the property has been conveyed from Simpson Development Corporation, a natural resources inventory has been completed and a full management plan prepared, this MOU may be extinguished after the management plan is approved by the Conservancy and the Hanover Conservation Commission, as long as each is satisfied that this management plan fulfils the spirit of the MOU.
2. **Greensboro Ridge Stewardship Committee:** The Hanover Conservancy has established a Greensboro Ridge Stewardship Committee composed of neighbors and friends of the Natural Area. This all-volunteer committee provides an essential source of advice for management of the property and can help monitor trails, report problems, and assist with light maintenance where appropriate. Neighbor members can also serve as key liaison with the Velvet Rocks Homeowners' Association. The Greensboro Ridge Stewardship Committee should have at least five members, including a member of the Hanover Conservancy Board of Directors and at least one neighbor. Subcommittees formed to accomplish a specific task should be chaired by a member of the Stewardship Committee and can be comprised of interested community members.
3. **Homeowners' Associations:** The Velvet Rocks Homeowners' Association and Silent Brook Homeowners' Association, which own land abutting the south side of the Natural Area, are valuable partners at Greensboro Ridge. The Conservancy and its Greensboro Ridge Stewardship Committee should meet with the Homeowners' Associations on a regular basis to discuss areas of mutual concern, such as boundary marking.
4. **Appalachian Trail Conservancy:** The Appalachian Trail Conservancy (ATC) is another key partner, since the AT crosses briefly onto Hanover Conservancy land. The ATC should be contacted whenever changes in signage or trail maintenance activities affecting this area are contemplated.

C Activities

The following permitted and prohibited activities are derived from the conservation easement that controls management of the Greensboro Ridge Natural Area, observations made during the

natural resources inventory, and the Conservancy's experience in managing protected lands elsewhere in Hanover:

1. Permitted Activities

- Non-motorized, pedestrian, passive, low-impact, non-commercial outdoor recreational and outdoor education purposes, such as, but not limited to, hiking, wildlife observation, snowshoeing, cross-country skiing, geo-caching, orienteering, photography
- Bicycling on the Silent Brook Trail only
- Trail construction and maintenance, including water crossings as long as they are built using best management practices
- Signs necessary for habitat management, passive, low impact recreation, agriculture, or forestry
- Scientific research
- Agriculture or forestry, in accordance with a management plan and current best practices, as long as these activities are not detrimental to the purposes of the easement and do not impair the scenic quality of the property as viewed from public roads or trails
- Hunting of deer in season

2. Prohibited Activities

- Camping
- Subdivision
- Structures other than specified ancillary structures
- Signs other than those necessary for habitat management, passive recreation, agriculture, or forestry
- Mining or disturbance of soil or drainage other than necessary for those purposes; must not harm recognized rare, threatened, or endangered species
- Dumping, injection, burning, or burial of trash, yard waste, man-made or hazardous materials
- Storage or parking of vehicles, trailers, boats, or recreational vehicles
- Horseback riding
- Bicycling on trails other than the Silent Brook Trail
- Motorized vehicles of any kind
- Activities with commercial purposes
- Picking wildflowers or other plants
- Disturbing vernal pools or other wetlands
- Trapping
- Hunting of animals other than deer
- Disturbance of scenic qualities of the area protected by the scenic easement in NW corner

D. Management of Water Resources

Management should strive to protect the limited wetland areas on this property to maintain their diversity, integrity, and high functional value:

- Provide breeding areas for amphibians, insects, and crustaceans and a food source for other wildlife
- Provide potential habitat for wild brook trout

- Some help to maintain valuable natural openings with varying amounts of sunlight and open water
- Help reduce flooding and provide a water source during droughts
- Protect water quality on the property and downstream in the Mink Brook watershed by filtering nutrients, organics, and pollution

Management should also protect the upland buffers adjacent to wetlands and riparian buffers along streams, because they:

- Offer shade and wildlife travel corridors
- Help maintain moisture in the wetlands
- Prevent erosion and sedimentation into the wetlands



Management should protect the three perennial streams and the paths of intermittent streams with riparian floodplain zones by maintaining adequate vegetative buffers and using best management practices (BMPs) when trail clearing or other work is necessary near a stream. Trails should be designed to minimize water crossings and be built using BMPs. Keep wildlife travel corridors intact along drainages and streams. Encourage pet owners to pick up pet waste to keep it from contaminating surface waters.

E. Forest Management

The largely unbroken forests of the Greensboro Ridge Natural Area provide high quality habitat for many species, as identified in the natural resource inventory. While forestry and agriculture are permitted by the terms of the conservation easement, there is currently no compelling need for timber stand improvement or other active management of the forested parts of the Natural Area.

1. Natural Disturbance - Insect defoliations, ice storms, wind storms, lightning strikes, forest fires, and other natural disturbances are a part of the cycle of life in a forested ecosystem and an important stimulus for forest regeneration and renewal. Dead and dying trees provide nesting cavities for birds and other wildlife. Fallen trees and limbs return nutrients to the forest soil and provide substrate for new plants. The Hanover Conservancy seeks to allow natural forces to continue to shape the Greensboro Ridge Natural Area into the future, and in general will not interfere with these processes. Exceptions can include removal of selected individual trees that are deemed to be a safety hazard near trails. Should the forest experience a major disturbance that could result in forest fire hazard to the closely neighboring human community, the Conservancy will consult with the Town of Hanover and its Fire Department to decide upon an appropriate course of action.

2. Dense softwoods - While wildlife management goals usually call for a target of 20% cover in dense softwood, a larger percentage is beneficial on the Greensboro Ridge Natural Area, where 42% is covered with this forest type, to protect wetland complexes, streams and water quality, and because there is evidence of plentiful wildlife in these areas. The surrounding land contains mostly hardwood or mixed-wood stands, and therefore retaining softwood on the property is important for diversity. Existing conditions should be maintained to ensure winter cover and wildlife travel corridors, protect nesting habitat and cavity trees, and provide good cover for recreational use, including cooling shade in summer and reduced snow depths in winter.

3. Mast trees - Maintain the current level of mast-producing trees and shrubs, including all hardwood trees with a diameter at breast height (DBH) of 12 inches and more, especially

- Red oak (acorns) and beech (beechnuts)
- Black cherry trees (fruits)
- White pine, balsam fir, hemlock, red spruce (cones and seeds).

Consider planting native mast-producing shrubs along the edge of openings, such as hawthorn, beaked hazelnut (in dry settings), American cranberry bush, and highbush blueberry (at moist edges).

F. Wildlife Management

Existing forested conditions should be maintained to protect cover for wildlife travel corridors, nesting habitat and cavity trees. Avoid disturbance of cave-like areas and other potential den sites for bears, fox, and porcupine, and route trails away from these areas.

1. Hunting - Hunting deer is a long-standing tradition on this land and on the abutting parcels to the east and northeast. It is permitted on the Appalachian Trail corridor to the north. However, the land to the west and south is heavily settled. The Greensboro Ridge Natural Area's deer population cannot be considered in isolation from that of neighboring lands. The deer population in Hanover is growing significantly to the point of becoming a nuisance in some areas, particularly in the absence of predators, with fewer hunters, high nutrient value forage offered by cultivated gardens, and closure to hunting of the nearby Trescott Water Company lands. The Greensboro Ridge property should remain open to deer hunting as a way to offer a modest form of population control. Many trail users are unaware that hunting has traditionally occurred on this land and do not take proper precautions during hunting season. Trail users should be warned to dress properly during hunting season and the dates posted prominently. Existing Wildlife Safety Zone signs should be removed.

2. Trapping - Trapping of mink, fisher, fox, and bobcat should not be permitted on the property.

G. Management of Permanent Openings

Because permanent openings in the forest canopy are an increasingly rare habitat type in New Hampshire, and because they offer habitat diversity that benefits a variety of birds and other wildlife, these openings should be maintained. Several of the openings offer scenic views to the south and provide a pleasant change from the otherwise forested trails. Because other openings exist adjacent to the Natural Area near the trailheads, creation of more permanent openings is not necessary. Openings offer an opportunity for invasion by non-native species, and these areas should be monitored for this potential problem.

Maintain existing openings and edge habitats by cutting regenerating trees, particularly the rapid-growing white pine which is beginning to invade the openings. Ideally, the openings would be bush-hogged or weed-whacked at least once every three years.

H. Invasive Species and Other Pests

Glossy Buckthorn has been observed on the southern part of the property in clearings made for potential house sites. The Hanover Conservancy should implement a program to monitor

invasive species and control or eradicate as needed. The infestation of buckthorn is currently manageable with volunteer assistance. Marking control areas will be useful in controlling re-sprouting after cutting. Another garden escape that has become abundant and invasive in wetlands and along streams in the Natural Area is forget-me-not (*Myosotis scorpioides*). This biennial herbaceous plant should be hand-pulled for several seasons in a row. Volunteer monitors should be trained to recognize these plants and also new forest pests such as hemlock woolly adelgid and emerald ash borer.

I. Management of Historic Resources

Stone walls are a visual echo of the land's history and also provide shelter for weasels and other small mammals. Stone walls and rock piles should remain undisturbed by trail building or other activities. Barbed wire indicates former pasturage and in some cases property boundaries. It should remain undisturbed. Trails should be routed far enough from remnants of barbed wire to avoid creating a safety hazard. Sections of stone walls near the southeast boundary appear on the survey map. Other historic features should be identified on the property map and photographed. To the extent possible, changes in land use such as when roads, fences and buildings were built and types of farming practices used, should be documented to improve understanding of the historic values of the property and indicate what hazards might be found.

I. Research, Education & Interpretation

The Greensboro Ridge Natural Area offers a valuable outdoor laboratory of forest ecology and display of geological features.

1. Scientific Research- Scientific research that does not substantially disturb the property should be encouraged, and requires written permission of the Hanover Conservancy.

2. Signage – Signage in the Greensboro Ridge Natural Area should be sufficient to provide for the safety of the public using the trails without creating a distraction from the natural setting. Trailhead signs at both ends of Oli's Eagle Trail and both ends of the Silent Brook Trail should be attractive but unobtrusive and identify the property, permitted uses, and the landowner and contact information. A sign at the AT junction should indicate the most direct route to Greensboro Road and ideally will indicate distance.

3. Interpretation - A trailhead kiosk should be constructed at the parking area at the top of Velvet Rocks Drive to provide trail safety information and notices for the public, an up-to-date trail map, and information about the property, user etiquette, and permitted uses. Identify the best site and gain permission from the homeowner's association, if necessary. Information about the Natural Area on the Conservancy website should be expanded. A published guide with trail map and information about the natural resources on the property should be considered.

4. Programs - Outdoor trip programs should continue to provide education for the public. Other organizations proposing trips to the Natural Area should notify the Hanover Conservancy as a courtesy. Modest expansion of the trail system could extend educational opportunities by providing controlled views of features such as vernal pools, edge habitats, wildlife openings, or stream riparian areas.

5. **Quest** – The Valley Quest program of Vital Communities should be invited to create a quest focusing on the rocky ledges and other notable features of the property.

K. Boundary Lines

The north and west boundary with the federal land surrounding the Appalachian Trail is well blazed with yellow. The east boundary is also marked. However, the southern boundary was not marked before the transfer of the property from Simpson although it is closest to the neighborhoods where encroachment is most likely to occur. Nearby are permanent openings that may require active management by the Conservancy. Simpson Development should identify the boundary so that the Hanover Conservancy can mark boundary line trees with paint and/or a blaze or a boundary marker. Once done, this should be maintained by repainting every five years or sooner if needed. *Clearly identifiable boundary lines with tree blazes and bright paint.*



L. Recreation

The Greensboro Ridge Natural Area is increasingly enjoyed by hikers, including those arriving via the Appalachian Trail and from feeder trails from the Greensboro Road neighborhood. The trail network is currently limited to one connection to the Appalachian Trail that showed evidence of increasing wear in 2011. The Silent Brook Trail linking the Velvet Rocks Drive parking area with the Silent Brook development seems to carry less traffic but is subject to erosion and drainage problems in some places.

1. **New Trails** - The MOU established two initial trails and provided for the possibility of future additional trails. Any new trails would be for foot travel only and their route should be approved by the Conservancy's Greensboro Ridge Stewardship Committee and the Trails Committee of the Hanover Conservation Commission. No new trails linking to the Appalachian Trail should be constructed, due to the desire of the Appalachian Trail Conservancy to avoid creating shortcuts.

In 2011 the Hanover Conservancy asked Watershed to Wildlife, Inc. to advise on potential new trail routes to maximize the educational value and public enjoyment of the property while avoiding impacts to sensitive areas. Two routes were proposed, one leading west from Oli's Eagle Trail to tour an interesting series of wetlands, and the other passing north-south from the Oli's Eagle Trail near its junction with the AT to the east end of the Silent Brook Trail. New trail alternatives would disperse foot traffic and allow visitors to walk a loop rather than "out and back" on the only existing trail. Expanding the foot trail system with an additional loop or two could also provide wildlife viewing opportunities, particularly near wetlands and vernal pools. Mountain biking is confined by the conservation easement to the Silent Brook Trail; therefore, no expansion of mountain biking trails is contemplated.

The Conservancy asked the Upper Valley Trails Alliance to help design foot trail routes based on Watershed to Wildlife's proposal, and called upon the Greensboro Ridge Stewardship Committee to assist. In 2012, after receiving formal approval from the Hanover Conservation Commission and the Conservancy Board of Directors, the Conservancy built the Greensboro Highlands Trail with the professional assistance of the Upper Valley Trails Alliance and labor supplied by Conservancy volunteers and volunteers from Hypertherm.

2. **Trail construction** - The MOU specifies that trails shall not be paved, although hard pack crushed stone may be used in appropriate locations and has been used on steeper parts of the Silent Brook Trail. It also specifies that the Silent Brook Trail ("Village Common Trail in the MOU) is to be no wider than six feet with a nine foot bed. The Trail layout should avoid wet areas and minimize water crossings. When necessary, simple, rustic log footbridges should be used to cross from top of bank to top of bank, employing BMPs to avoid disturbing the stream or its banks. Trails should avoid passing close to obvious wildlife denning areas and to vernal pools where dogs using the trail could create disturbance.
3. **Trail maintenance** - Trails shall be maintained to customary standards. In particular, erosion shall be controlled and blockages removed in reasonable time. Brush shall be cleared to keep a safe, passable tread way; adjacent trees and brush shall be cut only if they pose a safety hazard or interfere with intended use. If possible, conceal cut logs and clippings where they are not visible from the trail. Trails passing through ferny openings require more regular clearing. Use of the trail system should be monitored annually to ensure erosion problem spots do not develop, especially where loose soil can wash into streams.
4. **Blazing** - Blazing trails at the Greensboro Ridge Natural Area shall be the sole responsibility of the landowner, the Hanover Conservancy. Trails should be blazed for the safety of the public using them, but not to such an extent that the blazes become a distraction from the natural setting. Avoid painting blazes on rocks. Place blazes approximately 6-7' above the ground so they will be functional with heavy snow cover. Blazes should be painted 2" wide by 6" long and spaced so only one blaze can be seen at a time in either direction. Light blue is the preferred color. Early efforts at trail blazing at Greensboro Ridge may have led to over-use of this marking tool, and can be corrected by scraping paint off rocks and thick tree bark and by painting over unnecessary blazes on thin-barked trees.
5. **Trail etiquette** - Visitors are expected to practice low impact hiking, leaving plants and wildlife undisturbed, and keeping pets under control. Pet owners should pick up after their pets and restrain them from disturbing vernal pools or other wetlands and from harassing wildlife. Under New Hampshire law, dogs chasing deer may be shot by officials and the owner fined.
6. **Waste** - Visitors are expected to carry out and remove their own trash. The Conservancy will not provide a waste receptacle at the trailhead that could create a blowing trash problem and attract scavenging wildlife.

M. Monitoring

Members of the Greensboro Ridge Stewardship Committee should monitor the property, especially trails, at least twice a year and report problems or observations to Conservancy staff. If a timber harvest is occurring on a neighboring property, the natural area should be monitored several times a week during the cut. A representative of the Hanover Conservancy should accompany Town staff on annual monitoring of the conservation easement.

N. Management Plan Review and Updates

This management plan should be reviewed at least every five years by the Greensboro Ridge Stewardship Committee. Changes to the plan should be approved by the Hanover Conservation Commission.

O. Conservation Opportunities

The property is bounded on the north by the conserved Appalachian Trail corridor and on the south by developed lands of the Velvet Rocks Drive and Silent Brook residential areas. The Conservancy should monitor for opportunities to acquire and conserve abutting undeveloped lands on the east and west.

VI. Action Plan

MANAGEMENT PARTNERSHIP

1. Work with the Hanover Conservation Commission to revisit the 2008 MOU regarding trail maintenance responsibility and consider revising or extinguishing it.
2. Establish regular communications with homeowners' associations.
3. Engage the Greensboro Ridge Stewardship Committee to monitor the property regularly.

PERMITTED/PROHIBITED USES

4. Allow deer hunting to continue; alert trail users of hunting seasons and safety precautions.
5. Remove Wildlife Safety Zone signs.

HABITAT QUALITY

6. Maintain existing openings and edge habitats by cutting invading trees such as white pine.
7. Control glossy buckthorn; monitor for invasive species and new forest pests.

RECREATION

8. Provide trailhead signage; maintain trails and provide discreet internal signage and blazing to the degree that is adequate for public safety.
9. Restore eroded areas on trails with guidance of Upper Valley Trails Alliance.
10. Avoid locating new trails so close to vernal pools that dogs are attracted to them.
11. Expand information on website.
12. Construct trailhead kiosk after identifying best site and gaining permission from homeowner's association, if necessary.
13. Publish a detailed map and guide to the property.
14. Invite Valley Quest to create a quest for this property.

ADMINISTRATIVE

15. Mark boundaries where indistinct; ensure that Simpson Development identifies southern boundary.
16. Map and photograph historic features. Document past changes in land use if possible.