

North Country National Scenic Trail
Feasibility Study
Corridor Plan and Environmental Assessment
for Addison County, Vermont



McCuen Slang and the Champlain Valley, Addison County, Vermont

Middlebury Area Land Trust
and
U.S. Department of Interior,
National Park Service

December 2013

Contents

EXECUTIVE SUMMARY	i
Chapter 1: Background on the North Country National Scenic Trail.....	4
Chapter 2: Purpose and Need for Action.....	9
Chapter 3: Objectives	12
Chapter 4: Description of Alternatives and Preferred Action	16
Chapter 5: Affected Environment	29
Chapter 6: Environmental Consequences.....	41
Chapter 7: Consultation and Coordination, Public Comments.....	52
List of Preparers.....	63
Appendices	64
Appendix A: Possible North Country Trail Route Options within the Alternative C Corridor of Opportunity (Preferred Alternative).....	64
Appendix B: North Country Trail Standards	75

List of Maps

Map 1 Authorized Route	8
Map 2 Connection with Appalachian Trail	11
Map 3 Green Mountain National Forest and Long Trail	18
Map 4 Alternative B.....	21
Map 5 Alternative C.....	25
Map 6 Possible Alternative Routes.....	65

EXECUTIVE SUMMARY

This document analyzes the feasibility, desirability, and various alternatives for extending the North Country National Scenic Trail through Addison County, Vermont, from its current eastern terminus in Crown Point, New York, to meet the Appalachian National Scenic Trail. This document analyzes the effects of proposed actions on the natural and human environment and proposes implementation of a *Preferred Alternative* to delineate and construct the extension of the trail through central Addison County.

In March of 1980, an amendment to the National Trails System Act (16 U.S.C. 1241 et seq.) authorized establishment of the North Country Trail as a National Scenic Trail (NST). To date, Congress has authorized the establishment of eleven NSTs, "...extended trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." These trails are intended to provide superlative experiences compared to other trails.

The original design for the National Trails System envisioned a connection between the North Country the Appalachian Trails in Vermont. During the 1970-75 feasibility study for the North Country NST, Vermont stakeholders expressed opposition to the section in their state. Consequently, the general route for the trail as authorized by Congress was established between eastern New York State and central North Dakota. In recent years, interest has increased in authorizing an extension of the North Country Trail to the Appalachian Trail to provide the originally-envisioned connection, and the Middlebury Area Land Trust (MALT) and National Park Service (NPS) are coordinating and facilitating the planning process to determine a route for the trail through Addison County. A planning team was formed to evaluate alternative trail corridors and possible trail route options, and to engage the public in this process to determine their support.

This study and corridor plan concludes that it is both feasible and desirable to establish an extension of the North Country NST into Vermont to connect with the Appalachian NST. It proposes establishing a planned and mapped *Corridor of Opportunity* of approximately 3-5 miles wide within which lands for the trail may be acquired, developed, managed, and protected for the Vermont extension of the North Country NST. This would help guide agencies and private volunteer organizations in their efforts to secure a route for the trail. Since all participation in the North Country NST is voluntary, this width allows flexibility when locating the trail. A decision to reject the Preferred Alternative would preclude any Federal participation in the trail extension through this county, as described under the No-Action Alternative.

Addison County, Vermont, contains a diversity of landscapes: Lake Champlain valley lowlands, the rolling hills and piedmont of the Green Mountains, and the high forested ridges of the Green Mountains that run from Massachusetts to Canada. The region is an intricate patchwork of pastoral lands (this part of Vermont is renowned for its dairy farms), wetlands and riverine systems, second-growth native woodlands, historic sites, rustic rural villages, and National Forest and privately protected open space lands. Under the Preferred Alternative, a Corridor of

Opportunity approximately 40 miles long would cross central Addison County from Lake Champlain to the Green Mountain National Forest, within which the North Country NST would be located and developed. This will include some existing trails, as well as an additional 35 miles of the Long Trail through the National Forest to connect to the Appalachian Trail. The actual alignment of an eventual trail “on-the-ground” is dependent on which landowners are willing to cooperate in establishing the trail.

The Preferred Alternative provides the potential to link Vermont State Park and Wildlife Management Areas, National Forest Recreation areas, existing trails, and small rural villages that could provide support facilities such as trailheads, parking, supplies, water and lodging, as well as attractions and points of interest. Well-placed scenic overlooks could potentially provide dramatic views of the Lake Champlain Valley, the Adirondack Mountains in New York, and the Green Mountains in Vermont.

Two Alternatives and the No Action Alternative are analyzed within this plan. In addition, two other possible Alternatives were considered but eliminated from further analysis. Both dismissed Alternatives had limitations either due to extensive length of proposed new trail or existing land uses that would preclude land acquisition (e.g., dense, small-lot residential development).

The 1982 *Comprehensive Plan for Management and Use of the North Country NST* states that the trail is primarily intended to be a hiking trail. This management approach helps ensure that it provides a high quality walking/hiking experience. It also reflects a high level of consideration for private landowners who allow the trail to cross their property or who live near the trail, who are generally more willing to accept a hiking trail than a trail with activities that have more impact on the land or are more intrusive in terms of sight and sound. Other compatible recreational activities such as snowshoeing, bird watching and nature study are encouraged. In addition, the trail may accommodate cross-country skiing on ungroomed segments that are designed and constructed for this use. Development of a low impact trail using careful design and construction techniques will result in no significant impacts to natural, cultural, social, and economic resources.

Developing and managing the North Country NST through Addison County may produce minor negative effects on the human environment; these are generally limited to a perceived increase in nuisance level. Experience has shown that these concerns do not materialize after the trail is constructed. As a group, hikers tend to be environmentally conscious and responsible, and typically do not trespass or litter. Other concerns often expressed include the potential for conflict between hikers and other recreationists (equestrians, bicyclists, hunters and anglers, snowmobilers and OHV enthusiasts). The trail’s authorizing legislation prohibits motorized use.

Development of the North Country NST extension may have potential negative effects to physical and biotic resources (e.g. soil compaction, erosion, sedimentation of waterways, habitat loss, and wildlife disturbance). However, the use of trail siting and construction techniques, existing or constructed bridges and boardwalks, avoidance of sensitive habitat areas, and the relatively short period of intensive construction activities can mitigate these effects to a negligible level. In many cases, the protection of additional open space areas and corridors may

provide a beneficial effect to wildlife populations. Volunteer trail maintenance organizations often include the monitoring and removal of invasive plant species as part of regular activities, a potential additional benefit of establishing the trail in Addison County.

Benefits for trail users and neighboring landowners would include preservation of undeveloped open space areas, recreation and fitness opportunities, and creation of additional recreation resources in the region, which may help to reduce overuse of trails in other recreational areas. Local communities may see increased visitation and associated economic activity, and experience increased local pride. Landowners may also see increased (or more stable) property resale values due to proximity to permanently protected open space. Addison County already has a strong tradition of preservation of agricultural lands and open space areas through conservation easements and similar tools.

Under Alternative C, the Preferred Alternative, a number of existing trails within the Corridor of Opportunity may be utilized as the North Country NST; a total of 13-19 miles of new trail construction would be required under this Alternative, potentially requiring an estimated \$450,000 - \$6 million in land acquisition costs. This depends on whether landowners would simply permit the trail to cross their lands or require the purchase of lands or an easement in order to secure passage. In contrast, Alternative B encompasses a longer corridor and includes no existing trails – this Alternative would require at least 60 miles of new trail construction and potentially an estimated \$1.8 million to \$18 million in land acquisition costs.

Chapter 1: Background on the North Country National Scenic Trail

In response to increasing demand for outdoor recreation opportunities in the baby-boom era following World War II, the Department of the Interior conducted a Nationwide Trail Study during the mid-1960s, culminating in the 1966 report *Trails for America*. The report proposed creation of long-distance hiking trails in various parts of our nation, patterned after the renowned Appalachian Trail and Pacific Crest Trail – the report named these *National Scenic Trails*.

National Scenic Trails (NST) are long-distance, non-motorized trails that follow major geographic features or pass through scenic areas. The North Country Trail was conceived in the mid-1960s to connect National Forests and other nationally significant resources in the northern tier of states in the northeastern and north central United States. Unlike other similar NSTs that are established along clearly discernible geographic features (e.g., Appalachian Trail, Pacific Crest Trail, Continental Divide Trail), the North Country Trail would meander through a diversity of natural, historic, and scenic landscapes. One of the earliest proposals described the North Country NST as “extend[ing] some 3,170 miles between the Appalachian Trail and Green Mountains in Vermont and the badlands of western North Dakota, where it would meet the Lewis and Clark Trail.” The Trail’s features included the Adirondack Mountains; hardwood forests of Pennsylvania and Ohio; the Great Lakes shorelines; the glacially carved landscapes of northern Michigan, Wisconsin, and Minnesota; and the vast plains of North Dakota.

From the beginning, the concept for the North Country Trail was that its eastern end should connect with the Appalachian Trail in Vermont. This was reflected in the legislation creating the National Trails System (Public Law 90-543; 16 USC 1241 et seq.), which listed the North Country Trail as one of 14 routes to be studied as potential National Scenic Trails:

“(6) North Country Trail, from the Appalachian Trail in Vermont, approximately three thousand two hundred miles through the States of New York, Pennsylvania, Ohio, Michigan, Wisconsin, and Minnesota, to the Lewis and Clark Trail in North Dakota.”

During preparation of the feasibility study for the North Country Trail, public and private interests in the State of Vermont expressed their strong desires that sections of the Trail in Vermont be omitted from the recommended route due to heavy use on the existing Long and Appalachian Trails. The North Country Trail’s link to the Appalachian Trail was consequently deleted from the study report and not included when the Trail was authorized in 1980 (see *Chapter 2: Purpose and Need for Action* for more detail).

On March 5, 1980, Federal legislation (Public Law 96-199, 16 USC 1244(a)) authorized:

“(8) The North Country National Scenic Trail, a trail of approximately thirty-two hundred miles, extending from eastern New York State to the vicinity of Lake Sakakawea in North Dakota, following the approximate route depicted on the map

identified as 'Proposed North Country Trail-Vicinity Map' in the Department of the Interior 'North Country Trail Report', dated June 1975.”

A map showing the endpoints described above can be found on page 3 (Map 1: North Country National Scenic Trail – Congressionally Authorized Route (1980)).

The National Park Service (NPS) is responsible for the overall administration of North Country NST. The North Country NST is a private-public partnership project where the on-the-ground development and management of the trail is intended to be accomplished through cooperation of Federal, State, and local governmental jurisdictions, private trail organizations, and landowners. The NPS directs trail route planning, designates official segments of the trail, furnishes trail signing, and provides technical and limited financial assistance to public and private partners.

If, as a result of this study and public input process, Congress acts to extend the North Country Trail into Vermont to connect with the Appalachian Trail, the NPS would work with and assist public and private interests and landowners in establishing and managing foot trails between Chimney Point and the Long Trail. The North Country Trail Association (NCTA) is the primary non-profit partner of the NPS. The NPS would also work with Vermont state agencies, the Green Mountain National Forest, private organizations like Middlebury Area Land Trust and the Green Mountain Club, and landowners. Volunteers would be recognized as NPS Volunteers-in-Parks.

The NPS mission with regard to the North Country NST is to acquire, develop, operate, maintain and protect, through public and private partnerships, a 4,600-mile trail that meanders across seven northern states from eastern New York to the Missouri River in North Dakota for the enjoyment of present and future generations. More than 1,900 miles of the North Country NST have been constructed and certified to meet NPS standards for the trail. Several hundred additional miles have been developed and opened to public use, but are not yet certified.

Significance of the North Country National Scenic Trail

- The North Country NST links and showcases a network of nationally significant scenic, historic, natural, and cultural features, as well as communities along its route. Due to its location, it includes a diversity of landscapes including the grandeur of the Adirondacks, the hardwood forests and countryside of Pennsylvania, Ohio, and southern Michigan, the shorelines of the Great Lakes, the glacial carved forests, lakes and streams of northern Michigan, Wisconsin, and Minnesota and the vast plains of North Dakota.
- When completed, the North Country NST will be the longest footpath in the United States. The estimated length in the authorizing legislation was 3,200 miles, but as work to complete it has progressed, it is becoming clear that the actual length will approach 4,600 miles. That will make it more than twice as long as the famous Appalachian National Scenic Trail.
- The North Country Trail provides an opportunity to explore a slice of America at a walking pace rather than at freeway speed, and a place of retreat from the hectic routine of everyday life. It exists as much for the enjoyment of the casual walker as it does for the challenge of

hikers who travel its entire length, providing outstanding opportunities for recreation, education, inspiration, solitude, and enjoyment.

National Park Service Statement of Purpose for the North Country NST

1. To establish a trail within scenic areas of the Nation to provide increased outdoor recreation opportunities and promote the preservation of, public access to, travel within, and enjoyment and appreciation of, national scenic and historic resources
2. To provide for superlative outdoor recreation opportunities and for the conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural qualities of the areas through which the trail passes
3. To provide a premier hiking trail facility and an experience consistent with preserving the landscape in which the trail is established
4. To encourage and assist volunteer citizen involvement in the planning, development, maintenance, and management of the trail, wherever appropriate

The NPS Vision Statement for the trail seeks to bring greater awareness to the North Country NST through establishment of educational and interpretive facilities along the trail, and to expand public awareness of the trail and the outdoor recreation opportunities that it provides. Greater public awareness of the trail may increase public use of the trail and support for the connection of its existing segments – this public support will help to attract the resources needed to complete and protect the trail for present and future generations.

How the Trail is Established

National Scenic Trails can only be authorized by an Act of Congress. Substantial changes in the route of a trail can only be made by an amendment to the original authorization. Consequently, the first step needed to extend the trail into Vermont, following completion of this plan, is enactment of a brief amendment to the National Trails System Act stating that the eastern terminus of the trail is “the Appalachian Trail in Vermont,” instead of “eastern New York State.”

That amendment would authorize the National Park Service, as overall administrator of the trail, to partner with public and private interests in Vermont to “certify” as official segments of the North Country NST any existing trails that will make up part of the route. The NPS would also be authorized to assist public and private partners in establishing additional segments of trail needed to complete the connection between Crown Point, New York, and the Appalachian Trail/Long Trail in Vermont. Assistance can include technical assistance relevant to the trail, provisions of tools and materials needed for the trail, and limited financial assistance to the extent such funds may be available through annual Federal appropriations. The NPS is also responsible for

providing the official trail markers for placement along the trail. To the extent funds are available, the NPS has also been providing other types of signing used along the trail.

Establishment of any segment of trail, or the certification of any existing trails, is only done with the consent of the public or private landowner. All participation in the trail, whether by a public land-managing agency, private organization, or individual landowner is completely voluntary. Allowing the trail to cross one's land does not affect the landowner's rights in any way; it does not give the Federal Government any legal interest in the land.

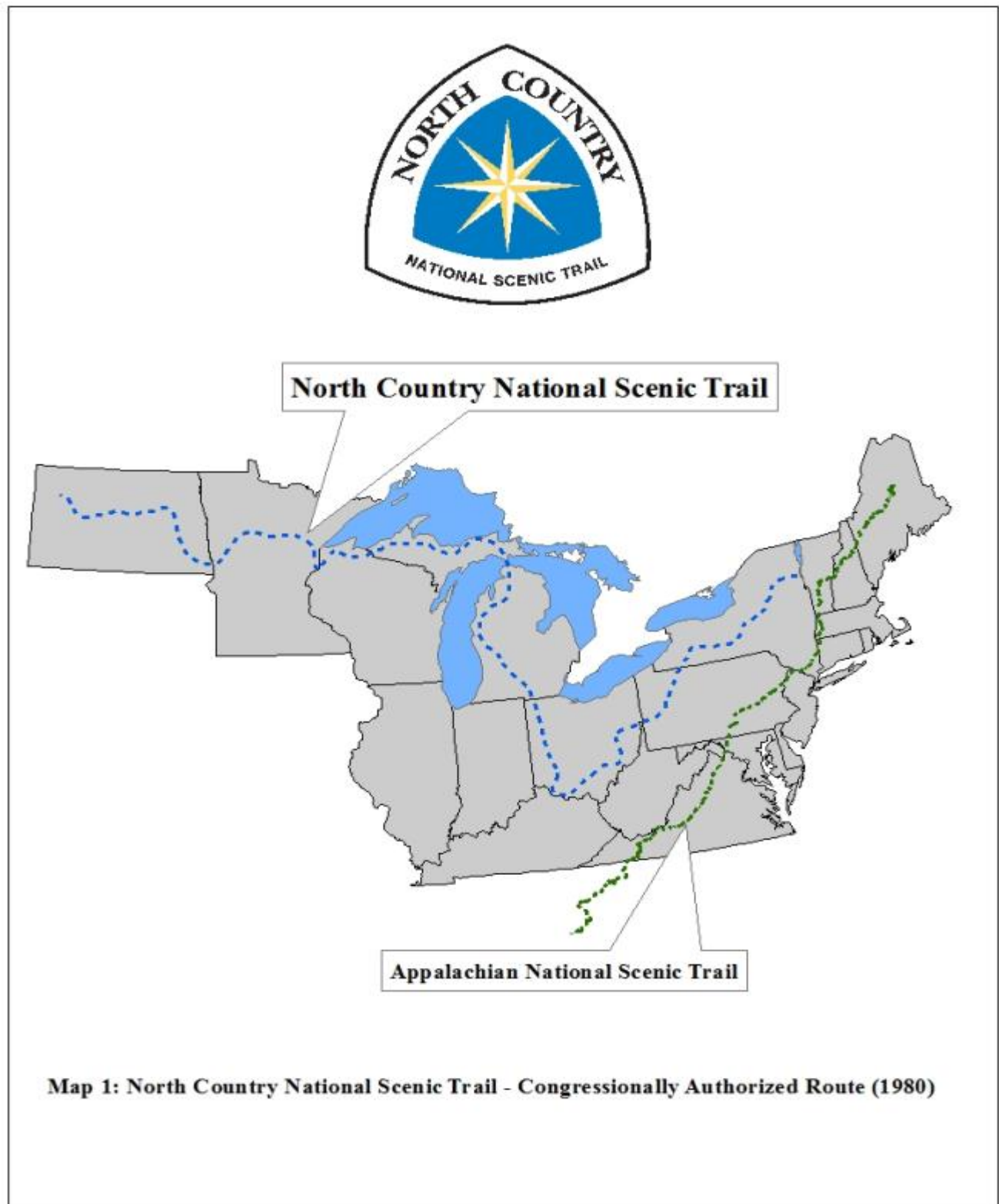
From 1980, when the trail was first authorized, until 2009, the Federal Government had no authority to purchase any lands for the North Country NST. Consequently, the NPS owns none of the North Country Trail except where it passes through a few parks and historic sites administered by the NPS. Many public agencies at all levels of government have cooperated in the establishment of the trail, allowing the trail to be established across the lands they administer. In a few cases, primarily in Wisconsin, state agencies have purchased lands to establish the trail. In addition, many generous private landowners have given permission to the North Country Trail Association or another local cooperating organization for establishment of the trail across their lands. Some have even donated permanent easements for the trail.

In 2009, Congress amended the National Trails System Act to authorize Federal Agencies to spend funds to acquire lands for the North Country NST, but only “with the consent of the owner of the land or interest in land.” This means, unambiguously, that **the Federal Government may not acquire any lands for the North Country Trail by eminent domain, i.e. the Federal Government may not condemn any lands for the trail.**

What it does mean is that there is now another option for securing and protecting lands needed for the trail—the NPS can purchase lands from willing sellers if there are appropriated funds available to do so. Since enactment of that amendment, the NPS has not utilized that authority to acquire any lands for the trail. It is not the intent of the NPS to use that authority to acquire the remaining lands for the trail. The work of establishing the remaining sections of trail will continue as it has in the past, seeking voluntary cooperation and participation from public and private landowners. However, if a landowner's only interest in allowing the trail across their lands is through sale of all or a portion of their land, or a permanent easement for the trail across their land, the National Park Service now has the authority to pursue that option.

The actual work of then creating and maintaining the trail upon such lands has been the realm of the volunteers of the North Country Trail Association and other similar statewide and local organizations such as the Finger Lakes Trail Conference, Buckeye Trail Association, and Superior Hiking Trail Association. If the extension into Vermont is authorized, the Green Mountain National Forest, Green Mountain Club, and Middlebury Area Land Trust will be key cooperators because trails they administer would be incorporated into the route of the North Country NST, as identified in the preferred alternative. The NPS recognizes these volunteers under its “Volunteers-in-Parks,” or VIP, program, just as they do for volunteers working in sites like Yellowstone National Park.

Map 1 Authorized Route



Chapter 2: Purpose and Need for Action

During the feasibility study for the North Country NST (1970-1975), several possible connections to the Appalachian Trail (AT) were explored. The Green Mountain Club (GMC), that maintains the 273-mile Long Trail in Vermont, expressed concern that another trail linking with their north-south trail through the state would exacerbate existing overuse. The Long Trail, one of the oldest long-distance trails in the nation, runs the length of the State of Vermont and coincides with the AT for 100 miles in the southern third of the state.

On September 28, 1974, the GMC Board of Trustees passed a resolution opposing the creation and designation of the North Country or any other NST (excluding the AT) in Vermont. State agencies also supported this position, which led to a request from Vermont Governor Thomas P. Salmon to Secretary of the Interior Rogers C. B. Morton to remove the portion of the North Country Trail in Vermont from the final report and study recommendations. Subsequently, the final 1975 feasibility study indicated that the eastern terminus of the North Country Trail should be at Crown Point, New York, while noting that future planning might re-examine opportunities to connect to the AT.

Legislation to authorize the North Country NST described the trail as extending from eastern New York State to the vicinity of Lake Sakakawea in North Dakota. Prior to authorization, the GMC reiterated their position on the North Country NST legislation in another resolution on January 12, 1980:

“The Green Mountain Club at this time neither supports nor opposes Senate Bill 683 that would establish an official corridor for the proposed North Country National Scenic Trail. Although S. 683 does not impact directly on Vermont or the Long/Appalachian Trail, proponents of the bill envision an eventual linkage with the Trail. Therefore, until the location(s) of such a linkage and its associated impacts can be assessed, the Club reserves judgment on North Country National Scenic Trail legislation.”

Since the North Country NST’s authorization, there has been occasional communication between NPS staff with leaders of the GMC to explore the club’s current position about a North Country NST connection to the AT. Those contacts have become more regular and the discussions more open to the possibility over the intervening decades.

In 2003, *Backpacker* magazine published an article proposing the interconnection of the AT, North Country, Lewis and Clark, Continental Divide, and Pacific Northwest Trails to create a transcontinental hiking trail through the northern tier of states called the *Sea-to-Sea Route*. This proposal would fulfill the original intent of the National Trails System from the 1960s which would have come into existence except for two events: the deletion of the Vermont portion of the North Country Trail (and thus a connection to the AT) and the authorization of the Lewis and Clark Trail as a National Historic Trail rather than a National Scenic Trail (National Historic Trail designation does not include the goal of creating an on-the-ground hiking trail along its route.)

Nonetheless, extending the North Country NST to connect with the AT creates a connection to the remaining northeastern states on a hiking route to the eastern seaboard.

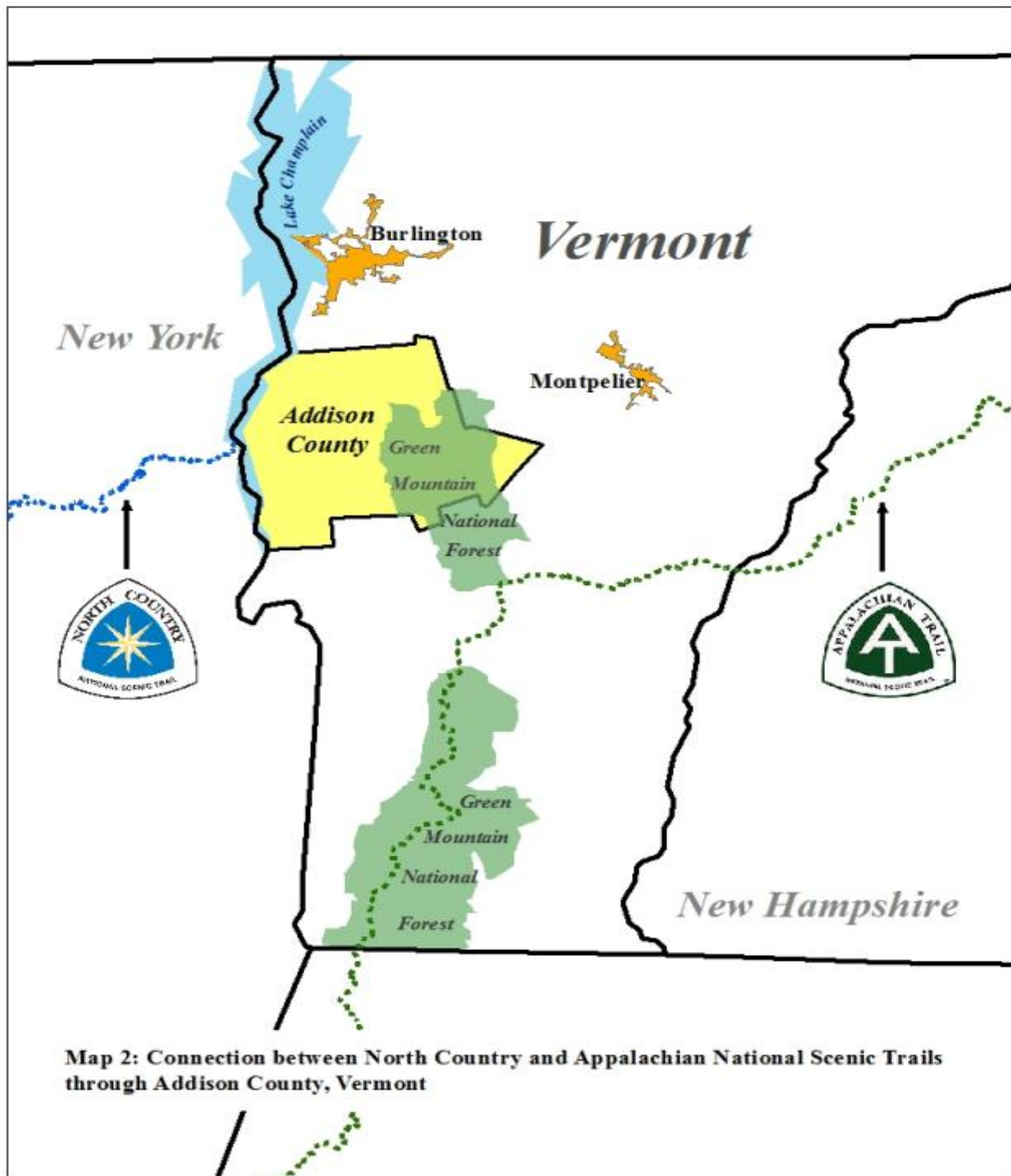
The proposed extension of North Country NST would cross Addison County, Vermont, and join existing trails in the Green Mountain National Forest that connect to the AT (Map 2: Connection between North Country and Appalachian National Scenic Trails through Addison County, Vermont). The region is rurally developed with small towns, forests, and farmland. There are public open space lands (e.g., Green Mountain National Forest, Vermont State Parks and Wildlife Management Areas) as well as existing trails such as the Trail Around Middlebury, a 16-mile loop footpath that encircles the village of Middlebury. There are also supportive local and regional groups with missions that align with the potential extension of the North Country NST. One of these is the Middlebury Area Land Trust (MALT), whose mission is to conserve, promote, and manage open natural working landscapes, as well as supporting recreational and educational opportunities in the community (Middlebury Area Land Trust manages the Trail Around Middlebury). In June 2006, NPS and NCTA staff made presentations to Middlebury Area Land Trust, GMC, and other Vermont trail representatives on extension of the North Country NST, which were well-received.

Because an amendment to the National Trails System Act will be necessary to revise the authorized route of the North Country NST and extend the eastern terminus into Vermont, an evaluation of the public support and routing opportunities for such a proposal is needed to inform Congress as they consider such a proposal. In the winter and spring of 2008, letters were sent to the NPS by NCTA, Middlebury Area Land Trust, GMC, and the Green Mountain National Forest urging the NPS to undertake this evaluation.

The purpose of this planning process is to identify and evaluate potential corridors within which the North Country NST may be extended from Crown Point, New York, to the Appalachian Trail in Vermont. The planning process provides the opportunity for public input on this proposal, particularly from potentially affected landowners and local officials. The NPS has provided financial assistance to Middlebury Area Land Trust to conduct this evaluation on its behalf and produce a report to inform agency and congressional decision-makers.

The planning process identified and evaluated a number of alternatives for extending the North Country Trail into Vermont, including analysis of the alternative of not undertaking the proposed project (a *No Action Alternative*). These alternatives take the form of proposed *Corridors of Opportunity* that run from Crown Point, New York, to the Long Trail in the Green Mountain National Forest; from here the Long Trail runs southward to meet the Appalachian Trail at Maine Junction, just east of Rutland. Specifically, the process inventories and assesses the potential effects of extending the trail through each corridor, as well as the effects of the No Action Alternative. Analysis will produce a single *Preferred Alternative*, that Corridor of Opportunity which is best suited for extension of the North Country Trail. It is this corridor that will be considered for Congressional authorization under the National Trails System Act, and within which a foot trail would be designed and established.

Map 2 Connection with Appalachian Trail



Chapter 3: Objectives

When Congress authorized the North Country NST in 1980, it directed that “The trail shall be administered by the Secretary of the Interior.” The Secretary delegated this administrative responsibility to the National Park Service.

The purpose of preparing this Feasibility Study, Corridor Plan, and Environmental Assessment is to evaluate public support and routing opportunities for an extension of the North Country NST into Vermont, and to carry out the Secretary’s responsibility in section 7(a)(2) of the National Trails System Act [16 U.S.C. 1246(a)(2)] to “select the rights of way for [the North Country] national scenic [Trail] ...” The act goes on to specify that “...in selecting the rights of way full consideration shall be given to minimizing the adverse effects upon the adjacent landowner or user and his operation. Development and management of each segment of the National Trails System shall be designed to harmonize with and complement any established multiple-use plans for the specific area in order to ensure continued maximum benefits from the land... In selecting rights-of-way for trail purposes, the Secretary shall obtain the advice and assistance of the States, local governments, private organizations, and landowners and land users concerned.”

Selection of the route for the trail is needed to facilitate the first and most critical aspect of establishing the trail—securing lands on which the trail may be constructed. This work requires contacting individual landowners either to propose acquisition of some or all of their lands or to ask permission for the trail to cross their land. To determine which landowners should be contacted for this purpose, a refinement of the general route designated by Congress is needed. It is the purpose of this plan to determine that more specific route by establishing a “Corridor of Opportunity” within which lands may be acquired for the trail, and to do so through an open process involving affected agencies and landowners as well as trail users and the general public. Securing lands for the trail in Addison County will only go forward if Congress approves extension of the trail into Vermont.



*Painted Trillium, Moosalamoo
National Recreation Area*

Therefore, the objectives of the planning process are to: define a boundary within which Federal, state, or other entities may acquire lands for the trail, design possible route locations for the trail within those boundaries, and fulfill Federal environmental requirements by taking the proposed plan through a public review and complying with the Endangered Species Act and Historic Preservation Act.

The *Comprehensive Plan for Management and Use of the North Country National Scenic Trail* (September 1982) provides general guidance on where to locate the trail. It is the purpose of this feasibility study and plan to (1) provide Congress the information it needs to consider authorizing extension of the trail into Vermont, (2) determine a specific location and route for the trail, and (3)

analyze the potential effects of establishment of the trail on the surrounding human and natural environment. Within this plan, three important elements are identified: *Corridor of Opportunity*, *Trailway*, and *Trail*.

The “Corridor of Opportunity” is the largest of these elements. It is defined by locating clusters of outstanding, interpretable geological and biological features, public lands, as well as areas of continuous scenic beauty. After these features are mapped, their patterns typically reveal a very general, natural alignment for the trail. The width of the corridor is usually on a landscape scale of 1-5 miles, although in the case of large significant features it can be wider. The corridor includes desirable features for the user to walk or gaze upon, or to be preserved. Another reason the corridor is wide is to allow flexibility in working with landowners since participation in the project is voluntary.

The Corridor of Opportunity is also the area within which lands may be acquired for the Trailway by various entities utilizing a variety of funding sources. It also defines the area within which federal involvement in land protection and acquisition for the North Country NST may occur. Lastly, the corridor provides focus and direction to the trail’s land protection program and partnerships.



Green Mountain National Forest

Two other elements, the Trailway and Trail, fit within the corridor. The “Trailway” is the width or area of land that is managed for the purpose of the North Country NST. It includes the Trail and surrounding lands that are owned, leased, or managed as part of the North Country NST. These management purposes may include but are not limited to: creating a buffer for the trail to separate it from adjoining land ownerships and uses, and protecting scenic or significant geologic features or plant communities.

The “Trail” is the actual physical tread and surrounding space that is maintained for the purpose of passage

along the trail route. The trail width may vary depending on the environment and surrounding uses upon lands through which the trail will pass.

Investigation of routes to connect the North Country NST and the AT commenced earlier than this planning effort. In December 2007, the Environmental Studies Senior Seminar at Middlebury College (Vermont) drafted the report *Extending the North Country Trail*. This study identified feasible and desirable trail routes between the present terminus of the North Country NST and the AT, based upon inventory of landmarks and points of interest in Addison County. The inventoried elements specifically included campgrounds, and natural and scenic, historic, cultural, and

agricultural sites, as well as existing recreation trails, preserved Federal and State lands and privately-conserved properties. From a composite map of these points the class developed three *Opportunity Corridors*, potential trail routes that maximize contact with these elements to create a high-quality scenic hiking experience. This study was used extensively for its inventory of elements and proposed trail routes.

In fall 2009, planning for the extension of the North Country NST in the State of Vermont began with a meeting of representatives from the NPS, Middlebury Area Land Trust, Addison County Regional Planning Commission, Middlebury College, Green Mountain Club, Moosalamoo Association, US Forest Service, and the towns of Middlebury, Ripton, and Weybridge. This group, known as the *core planning team*, was formed to oversee the planning – these team members were selected for their past interest in the North Country NST, their expertise in local trail networks and trail maintenance, their knowledge of relevant laws and policies, and, most importantly, their familiarity with potentially affected landowners. The task of the core planning team is to provide input to Middlebury Area Land Trust and the NPS on conceptual ideas for corridors and possible route options for the North Country NST, and shepherd these ideas through the public review process.

Planning was conducted with the goal of determining an ideal route to extend the North Country NST from its present terminus at Crown Point, New York, to the AT, to assist future planning efforts should the extension of the Trail be authorized. With this in mind, criteria for evaluating a potential corridor were established based on representative attributes such as plant communities, geologic features, topography, and local communities (i.e., assets) found along proposed routes that reflect the high standards for National Scenic Trails.

The primary consideration for evaluating assets was to showcase the best natural and cultural features that this region of Vermont has to offer. Also considered was the degree to which these features were already used by hikers and how useful it would be to connect them by footpaths. The following asset types were identified and evaluated:

- Scenic views
- Important natural features
- Historic sites
- Sites representative of traditional Vermont culture
- Intact agricultural landscapes
- Public lands
- Conserved lands
- Lodging and camping opportunities
- Access to supplies and other amenities

Among the most important assets identified by this process were the historic sites in West Addison, the Dead Creek and Snake Mountain Wildlife Management Areas, the agricultural landscape of Weybridge, Weybridge Caves State Natural Area, Bittersweet Falls, the Trail Around Middlebury and its natural features, Abbey Pond, Moosalamoo National Recreation Area, and the villages of Addison, Weybridge Hill, Middlebury, and East Middlebury.

It was critical to involve the local public at every opportunity to capture their vast knowledge and wisdom about additional assets that will make the extension of the North Country NST representative and exemplary of all the amenities that west central Vermont has to offer a hiker. Conceptual corridors were presented at three meetings convened for the general public, where local residents offered opinions about “can’t-miss” natural features, routes through difficult areas, potentially friendly and cooperative property owners, and important services such as lodging and food.

Several of the suggestions gleaned from the public resulted in substantial changes to the proposed corridors identified on the concept maps that were displayed at the meetings. In particular, routes through remote areas of Middlebury and Ripton that were impossibly wet or otherwise unsuitable were eliminated from further consideration. This input saved a tremendous amount of time and expense in field-checking and route-finding.

Following the public meetings, representatives of the core planning team met with representatives of the planning commissions of the towns of Addison, Weybridge, Middlebury, and Ripton. The planning commissions were offered the opportunity to ask questions about the nature, purpose, and status of the trail, and were encouraged to offer opinions about potential routes and concerns specific to their town. The commissions were also encouraged to adopt language in their Town Plan in support of the North Country NST as the plans are revised.



Chapter 4: Description of Alternatives and Preferred Action

Based on the planning work conducted by Middlebury Area Land Trust, and contingent on Congressional approval, the NPS proposes to establish a planned and mapped Corridor of Opportunity within which lands for the trail may be acquired, developed, managed, and protected for the extension of the North Country NST to the AT in the State of Vermont. The eastern terminus of the North Country NST is currently in Crown Point, New York; the most direct route to join the two trails is through Addison County, Vermont. The Champlain Bridge, newly rebuilt with excellent pedestrian access, provides a crossing over the lake and a generally eastward route would cross farmlands in the Lake Champlain valley, small rural communities, and forested lands. Further east, the route would rise into the Green Mountain National Forest – here the Long Trail follows the Green Mountains’ north-south orientation and would provide an existing route southward to the trail’s junction with the AT (Map 3: Addison County, Vermont, Green Mountain National Forest and Long Trail).

Descriptions of alternative corridors are presented below. Within the corridors, over time, the alignment of the trail on the ground would be planned and developed established through efforts of the National Park Service, US Forest Service, state and local agencies, non-profits such as the Middlebury Area Land Trust, and volunteers working on behalf of all these organizations. The National Park Service *North Country Trail Handbook for Trail Design, Construction and Maintenance* guides the design and construction of the trail in efforts funded by the NPS and carried out by NPS volunteers. The design of the proposed North Country NST corridor is based on a number of factors: providing a varied and scenic hiking experience; preservation of significant natural features; linkage to public lands for support facilities and interpretive opportunities; and, reasonable directness of route. The goal of establishing the North Country NST would best be met by Federal, State, and private partners having specifically delineated and authorized areas in which to work.

Trail Construction

In rural and semi-primitive areas such as this planning area, North Country Trail construction standards (Appendix B) call for a 24-inch tread (walking surface), with an additional 1-foot vegetation clearance zone on either side. Ground disturbance would be limited to the trail tread itself, which may have organic material grubbed or scraped away, and the subsoil graded and compacted. In flat areas the trail tread would be lightly touched to prevent it from being below the surrounding ground, which in soils that don’t drain, can cause it to be wet and muddy. Vegetation clearing for the trail may consist of brush cutting using chainsaws, a walk-behind brush mower, or pruning shears to remove limbs or small trees in the trail. Forest canopy would not be disturbed, helping to reduce regrowth of grass and shrubs back into the trail, maintain vegetative cover, and reduce splash erosion onto the trail tread. Total surface impacts would be approximately ½ acre per mile of trail construction. Trail construction and maintenance would take place using small equipment, mowers, hand tools and volunteer labor.

By following the standards in the *North Country Trail Handbook*, the physical impacts to the resources would be similar between the alternatives.

Land Acquisition and Trail Development

The costs of developing the extension of the North Country NST into Vermont would depend on a number of factors. One factor is the estimated cost of developing and constructing trail to complete the extension. This includes construction of the physical trail tread, as well as any necessary structures such as bridges and boardwalks.

Another cost associated with the extension of the trail is acquiring land, or obtaining less-than-fee agreements to allow the trail to cross properties. Less-than-fee agreements (e.g., appurtenant easements) tend to be less expensive in the short-term, but involve the long-term expense of monitoring to ensure the conditions of the agreement are kept. Fee simple acquisition requires a greater one-time cost, but tends to be preferred because it confers greater permanence to the trail and reduces long-term management costs. Acquisition costs will depend on the general cost of land, and the amount of land needed to acquire an adequate railway. While the trail is located within a discrete corridor, in some cases larger parcels or wider sections of railway may need to be purchased to maintain a viewshed, to protect the trail from adjacent incompatible land uses, for support facilities such as parking, or to accommodate willing seller preferences.

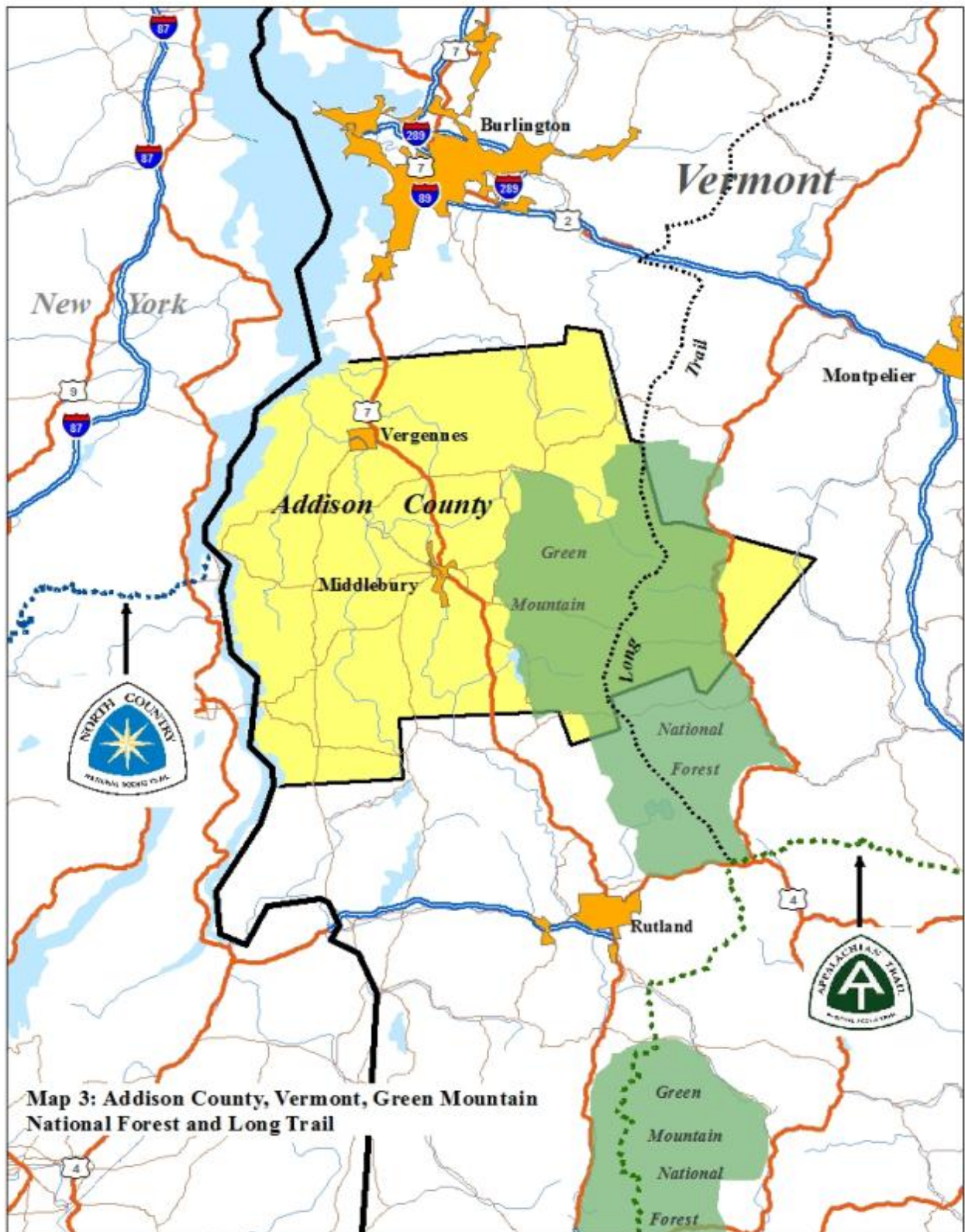
The length of the Corridor of Opportunity under Alternative C, the Preferred Alternative, is approximately 40 miles. However, there are a number of existing trails within this corridor, including the Trail Around Middlebury, trails on state lands (such as WMAs), and an extensive network of trails on lands that are part of the Green Mountain National Forest. Taking into account these existing trails, as a very rough estimate Alternative C will require acquisition and construction of between 13 to 19 miles of new trail, depending on which trail route options within the corridor are chosen. All major water crossings may be made on existing bridges (Dead Creek, Lemon Fair River and Otter Creek).

Alternative A – No Action Alternative

Under the No Action Alternative, no Corridor of Opportunity to connect the North Country NST with the AT would be identified. The NPS and its partners would not continue to pursue the amendment of the National Trails System Act to revise the description of the eastern terminus of the North Country NST from “eastern New York State” to “the Appalachian Trail in Vermont.”

The No Action Alternative would effectively fix the eastern terminus of the North Country NST at Crown Point, New York. Any local efforts to create a trail connecting the North Country Trail with the AT would take place without the technical or financial assistance of the Federal government. Any such trail created by private citizens or local organizations would not be a part of the National Trails System and would lose the benefits of legitimacy, prestige, and stability that National Scenic Trail status provides.

Map 3 Green Mountain National Forest and Long Trail



Alternative B – Addison County North Route

This proposed Corridor of Opportunity is about 58 miles in length, and between 4-6 miles wide. The corridor heads north from the Champlain Bridge between Lake Champlain and Dead Creek, crossing Lower Otter Creek near its mouth, requiring either construction of a substantial bridge. Existing bridges may be used to make all other major water crossings (Little Otter Creek and New Haven River). The corridor passes through typical Champlain Valley agricultural land and two State Parks with opportunities for camping before reaching the historic city of Vergennes. From Vergennes, the corridor heads east through portions of the towns of Ferrisburgh, Monkton, and New Haven that are characterized by smaller farms, exurban development, young forests, and the foothills of the Green Mountains. A significant number of small tracts of private land would need to be secured to cross this area. Turning southeast near the junction of the towns of Monkton, New Haven and Bristol, the corridor reaches the village of Bristol, which is surrounded by the first ridge of the Green Mountains. From Bristol, the proposed corridor continues southeast and encompasses the Bristol Cliffs Wilderness Area (3750 acres). Because the Forest Service is not contemplating a new route for the trail within this designated Wilderness Area, which is one of the smaller units in the United States, and has only one minor trail (FT 203), the Alternative B Corridor allows for the route to be established adjacent to the Wilderness to avoid potential impacts. Turning easterly again at the border of the towns of Lincoln and Ripton, the corridor re-enters the Green Mountain National Forest using existing trails in the Breadloaf Wilderness and joins the Long Trail at a point north of Breadloaf Mountain (Map 4: Alternative B Proposed Corridor).



Vergennes Reservoir, Bristol

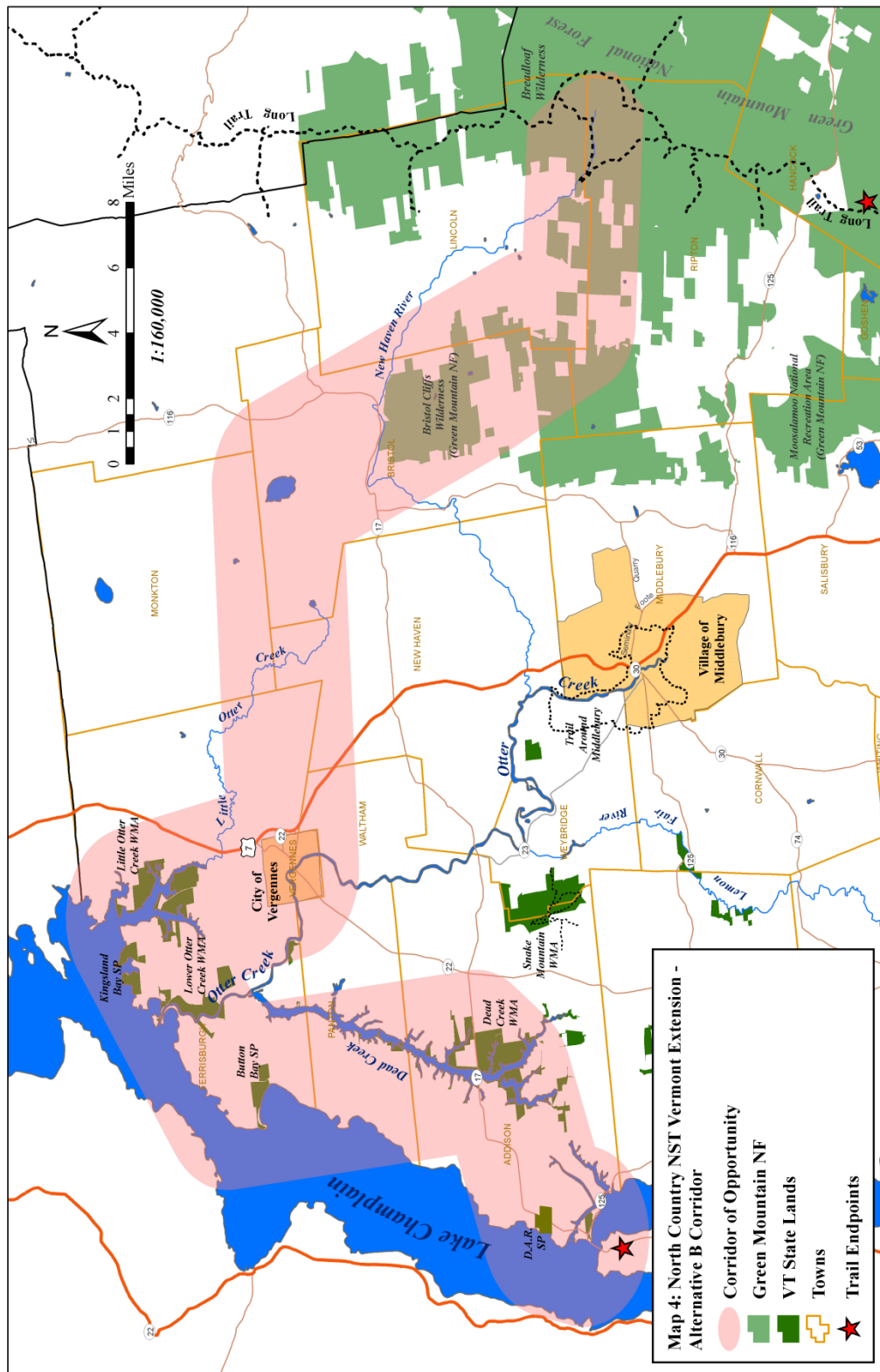
The Alternative B Corridor of Opportunity ends at this point, and the trail would follow the Long Trail south to Maine Junction and the AT, an additional distance of approximately 35 miles.

Among the assets found within this Corridor of Opportunity are:

<u>Scenic Views</u>	<u>Natural Features</u>
Views of the Green Mountains from Pantton village	Whitney Creek and McCuen Slang WMAs
Views of the Adirondacks from Button Bay and other points along Lake Champlain in Addison, Pantton, and Ferrisburgh	Extensive wetlands of Dead Creek
Views of the city of Vergennes from points in Ferrisburgh	Headwaters of Otter Creek and Little Otter Creek
Views of Bristol from North Mountain	Bristol Pond
	Vergennes Reservoir
	North Mountain and Deer Leap, Bristol
	South Mountain Wilderness Area, Bristol

Views westerly from South Mountain Views along the Long Trail	Natural features along the Long Trail
<u>Historic Sites</u> Bristol Downtown Historic District Chimney Point State Historic Site (Chimney Point Tavern), Addison General John Strong Mansion, D.A.R. State Park, Addison Capts. Louis and Philomene Daniels House, Vergennes District School #1, Panton Hawley's Ferry House, Ferrisburgh General Samuel Strong House, Vergennes Samuel Paddock Strong House, Vergennes Vergennes Historic District Vergennes Residential Historic District	<u>Local Cultural Resources</u> Bixby Library, Vergennes Vergennes Opera House Vergennes Farmers Market Bristol Farmers Market Art on Main Gallery, Bristol
<u>Intact Agricultural Landscapes</u> Conserved dairy farms of Addison, Panton, and Ferrisburgh Dairy farms near Bristol Pond Small farms and tree farms of South Lincoln	<u>Public and Conserved Lands</u> Chimney Point State Historic Site D.A. R. State Park Whitney Creek and McCuen Slang WMAs Dead Creek WMA Button Bay State Park Lower Otter Creek WMA Kingsland Bay State Park Little Otter Creek WMA Bristol Pond WMA Watershed Center- Waterworks Property Bristol Cliffs Wilderness Area Breadloaf Wilderness Area Green Mountain National Forest Approximately 17 conservation easements in Addison, 2 in Panton, 27 in Ferrisburgh, and 2 in New Haven
<u>Lodging and Camping Opportunities</u> Ten Acres Campground, Addison D.A.R. State Park, Addison Button Bay State Park, Panton Maple Hill Campsites, Lincoln Whitford House Inn, Addison Barsen House Inn, Addison Crystal Palace B&B, Bristol Inn at Baldwin Creek, Bristol Strong House Inn, Vergennes	<u>Access to Supplies and Other Amenities</u> West Addison General Store (WAGS) Panton General Store City of Vergennes- full service grocery, pharmacy, apparel stores, post office, library, banks Downtown Bristol- full service grocery, pharmacy, apparel stores, post office, library, banks, outdoor apparel store, food co-op

Map 4 Alternative B



Alternative C – Addison County Central Route (*Preferred Alternative*)

This is the Preferred Alternative. Under this proposal, an identified Corridor of Opportunity across central Addison County would receive Federal approval and the NPS would work with and assist public and private interests and landowners in establishing and managing segments of foot trails between Chimney Point and the Long Trail. Within this corridor, a trailway that is approximately 200-1000 feet or more in width would be protected for North Country NST purposes. A wider trailway may be necessary to incorporate significant features of a particular area. The corridor is intentionally designed wide enough to allow flexibility in working with cooperating landowners to site the trail since all participation is voluntary. The established corridor will define areas for purchase using public and private funding and will serve as advisory information for town and county land use planning. This Alternative fulfills the purpose and need identified in Chapter 2, and the process for trail route determination outlined in Section 7(a) [16 USC 1246(a)] of the National Trails System Act.

This preferred Corridor of Opportunity is approximately 32 to 40 miles in length and 5-7 miles in width, and runs in a generally east-southeasterly direction across Addison County. From the Lake Champlain Bridge, the corridor traverses the developed area of West Addison and a fertile, flat agricultural region. Reaching Dead Creek, the corridor climbs gradually toward the village of Addison, crossing VT Route 22A before ascending Snake Mountain. Descending to the east, the corridor crosses the Lemon Fair River lowlands and rises again to the village of Weybridge Hill.



Scenic Farm in the valley of the Lemon Fair, Weybridge

Further eastward the corridor enters the town of Middlebury, where the Trail Around Middlebury provides existing trail and access to the village. The corridor branches into two alternative routes: the northern route continues directly eastward to Green Mountain National Forest, joining the Long Trail in the Breadloaf Wilderness on existing trails; the southern route travels southeastward to East Middlebury and existing trails in the Moosalamoo National Recreation Area and Green Mountain National Forest, joining the Long Trail at a point in the Joseph Battell Wilderness (Map 5: Alternative C (Preferred Alternative) Proposed Corridor).

The Alternative C Corridor of Opportunity ends at this point, and the trail would follow the Long Trail south to Maine Junction and the AT, an additional distance of approximately 25 miles. Within the corridor, alternative trail segments have been identified and defined by discrete geographic features (Appendix A: Identification of Possible Trail Routes).

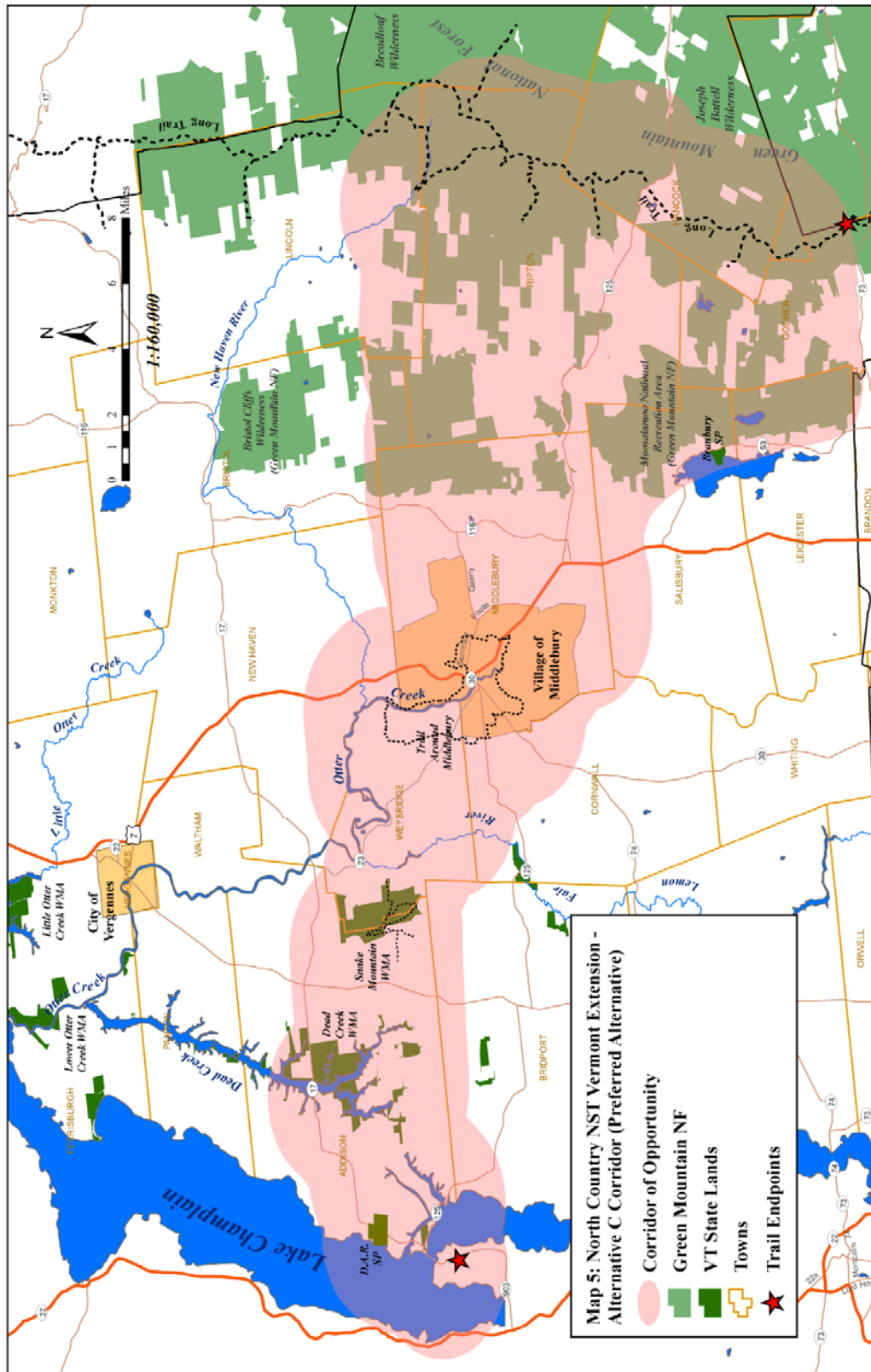
Among the assets found in this proposed Corridor of Opportunity are:

<p><u>Scenic Views</u> Adirondack views from Snake Mountain Westerly views of the Lemon Fair Valley from points in Weybridge Green Mountain views from points in Weybridge Westerly and easterly views from Chipman Hill Westerly views from Moosalamoo National Recreation Area Green Mountain views from Sugar Hill Reservoir Views along the Long Trail, described in Appendix A</p>	<p><u>Natural Features</u> Whitney Creek and McCuen Slang WMAs Dead Creek WMA Snake Mountain WMA Lemon Fair River and associated wetlands Weybridge Caves State Natural Area Bittersweet Falls Otter Creek Gorge Preserve Beldens Falls Otter Creek, including its Great Falls at Middlebury Middlebury River and Middlebury Gorge Mt. Moosalamoo and Rattlesnake Cliffs Sugar Hill Reservoir Abbey Pond and associated waterfalls Lake Pleiad Falls of Lana and Silver Lake Green Mountain National Forest Natural features along the Long Trail, described in Appendix A</p>
<p><u>Historic Sites</u> Rattlin' Bridge, New Haven/Weybridge Chimney Point State Historic Site (Chimney Point Tavern), Addison General John Strong Mansion, D.A.R. State Park, Addison Cotton Free Library, Weybridge Frost Farm, Ripton Halpin Covered Bridge, Middlebury The Heights (Thaddeus Chapman House), Middlebury Middlebury Gorge Concrete Arch Bridge, East Middlebury Middlebury Village Historic District Pulp Mill Bridge, Middlebury Stone Mill, Middlebury Old Stone Row, Middlebury Ripton Community House University of Vermont Morgan Horse Farm, Weybridge Waybury Inn, East Middlebury Wesleyan Methodist Church, Weybridge Emma Willard House, Middlebury (National Historic Landmark)</p>	<p><u>Local Cultural Resources</u> Vermont Folklife Center, Middlebury Henry Sheldon Museum, Middlebury Ilsley Public Library, Middlebury Middlebury College Town Hall Theater, Middlebury Jackson Gallery, Middlebury Middlebury College Museum of Art Robert Frost Interpretive Trail Breadloaf Campus, Middlebury College, Ripton Spirit in Nature Paths, Ripton Middlebury Farmers Market</p>
<p><u>Intact Agricultural Landscapes</u> Conserved dairy farms of Addison Conserved dairy farms of Weybridge/Lemon Fair Valley Conserved agricultural lowlands of Otter Creek valley south of Middlebury village Dairy farms and apple orchards of Quarry Road, Middlebury</p>	<p><u>Public and Conserved Lands</u> Chimney Point State Historic Site D.A.R. State Park Whitney Creek and McCuen Slang WMAs Dead Creek WMA Snake Mountain WMA Lemon Fair WMA Weybridge Town Forest Weybridge Caves State Natural Area</p>

	Otter Creek Gorge Preserve, Weybridge/New Haven Wright Park, Middlebury Otter View Park, Middelbury/Weybridge Battell Park, Middlebury Battell Woods, Middlebury Means Woods, Middlebury Jeffrey Murdock Preserve, Middlebury Green Mountain National Forest Approximately 23 conservation easements in Addison, 7 in Weybridge, 14 in Middlebury, and 3 in Ripton
<u>Lodging and Camping Opportunities</u> Ten Acres Campground, Addison DAR State Park, Addison River's Bend Campground, New Haven Moosalamoo Campground, Green Mountain National Forest, Goshen Kampersville, Salisbury Waterhouse's, Salisbury Branbury State Park, Salisbury Swift House Inn, Middlebury Inn on the Green, Middlebury Middlebury Inn Waybury Inn, East Middlebury Whitford House Inn, Addison Barsen House Inn, Addison Churchill House Inn, Brandon Cornwall Orchards B&B By-the-way B&B, East Middlebury Blueberry Hill Inn, Goshen North Cove Cottages, Salisbury On The Creek B&B, Weybridge Fairhill Country B&B, Middlebury Toutourelle Inn, New Haven Chipman Inn, Ripton	<u>Access to Supplies and Other Amenities</u> West Addison General Store (WAGS) Four Corners Store, Addison Monument Farms Dairy Store, Weybridge Downtown Middlebury- full service grocery, pharmacy, apparel stores, post office, library, banks, three outdoor apparel stores, natural foods co-op, etc. East Middlebury- convenience stores, post office Ripton General Store

The National Park Service North Country Trail Handbook for Trail Design, Construction and Maintenance guides its development. In rural and semi-primitive areas such as this planning area, North Country Trail construction standards (Appendix B) call for a 24-inch tread (walking surface), with an additional 1-foot vegetation clearance zone on either side for a total of 4 feet of clearing. Ground disturbance would be limited to the trail tread itself, which may have organic material grubbed or scraped away, and the subsoil graded and compacted. In flat areas the trail tread would be lightly touched to prevent it from being below the surrounding ground, which in soils that don't drain, can cause it to be wet and muddy. Vegetation clearing for the trail may consist of brush cutting using chainsaws, a walk-behind brush mower, or pruning shears to remove limbs or small trees in the trail. Forest canopy would not be disturbed, helping to reduce regrowth of grass and shrubs back into the trail, maintain vegetative cover, and reduce splash erosion onto the trail tread. Total surface impacts would be approximately ½ acre per mile of trail construction.

Map 5 Alternative C



Mitigation Measures

(These Measures Apply to Both Alternatives)

Invasive Species

A wayside exhibit and boot brush, as shown here, has also been located at some entrances to North Country Trail segments to inform hikers about the existence of invasive species, their effect on the native environment, appearance, and control measures. These interpretive materials include information about how the hiker can help to limit the spread of invasive species by staying on the trail and using the boot brushes.



Trail construction practices

Appendix B contains the section of the North Country National Scenic Trail Handbook that specifies the most low impact trail design standards.

Cultural resources surveys

Once on-the-ground trail alignments are determined, NPS will coordinate archaeological surveys according to Department of the Interior Standards. If any cultural resources are present, consultations with state historic preservation officers under section 106 of the National Historic Preservation Act will be done by the National Park Service.

Water quality permits

Once the trail alignment is planned, the need for structures such as puncheons, boardwalks, and bridges will be determined and water quality permits will be obtained in cooperation with the appropriate landowners.

State listed Sensitive Species

Once on the ground trail alignments are determined, the NPS will consult with State heritage Program staff in Vermont to determine any possible effects of trail construction and use on these species.

Alternatives Considered but Dismissed

One Alternative considered combined the southern trail corridor identified by the Middlebury College study with a route following the former path of the Rutland Railroad leading from Lake Champlain to the town of Leicester. This corridor passes through agricultural lowlands, rural town landscapes and rolling hills and also takes advantage of the historic railroad grade.

However, this Alternative would present significant challenges because of the difficulty and indirectness of reaching the western terminus of the railbed, which would involve a lengthy route directly through many small parcels held by a variety of property owners. Several sections of the

railbed are privately owned, and providing access to Moosalamoo National Recreation Area from Leicester Junction would also prove difficult because of the density of seasonal residences and small properties. As such, this Alternative was eliminated from further analysis.

Another Alternative considered would follow the historic Crown Point Military Road which was constructed beginning in 1759 during the French and Indian War from Charlestown, New Hampshire, on the Connecticut River to Lake Champlain. The road was used later in the War of American Independence and for many years thereafter as a means of entry for settlers to remote areas of Vermont.

While this Alternative is interesting for its historic importance, its length, passage through developed areas, sections of road walks, and lack of public lands would make trail development extremely challenging. As such, this Alternative was eliminated from further analysis.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508) and the NPS Director's Order #12 require the NPS to identify the alternative that best promotes the goals of Section 101 of the National Environmental Policy Act. The *Environmentally Preferable Alternative* is defined by the CEQ as: "...the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ 1981).

This Feasibility Study, Corridor Plan, and Environmental Assessment evaluates three alternatives, two of which are: the Preferred Alternative and a No Action Alternative. The No Action Alternative would not adopt a specific corridor for the trail. A planning team was formed to investigate corridor and possible route options and conduct a public involvement process. A number of trail routes within the Preferred Alternative's corridor were also identified and evaluated.

The Environmentally Preferable Alternative for a Corridor of Opportunity for the extension of the North Country National Scenic Trail through the State of Vermont is the Preferred Alternative. The Preferred Alternative would provide for a focused and accountable implementation of the trail. It would help to permanently protect some of the geological, biological, and historic resources within the corridor from development and would create a protected, undeveloped trailway of diverse habitats (both uplands and wetlands) that would promote an increase in biodiversity. The Preferred Alternative would increase public recreational opportunities and connect existing recreational resources. Securing a trailway in public ownership, or otherwise permanently protected,



Mountain Road Barns and the Adirondacks, Addison

would help maintain existing wildlife and, in some cases, would benefit threatened and endangered species by permanently protecting their environment. It would also provide opportunities for local landowners and visitors to have access to features and vistas along the trail as well as enhance public awareness of Vermont's landscapes and history through interpretation of features found along the trail.

The No Action Alternative contemplates no Federal involvement in or Congressional authorization of the North Country NST in the State of Vermont, and abandons any coordinated, collaborative effort to attain the goals of developing this trail extension. Without a coordinated effort, the No Action Alternative may not recognize and bring together efforts with other groups to create mutually beneficial recreation opportunities or protect significant natural or cultural resources relating to the trail.

Chapter 5: Affected Environment

Location and Geography of Addison County

The proposed trail corridors for the extension of the North Country NST into Vermont are located within Addison County, a largely agricultural and rurally-developed region in west-central Vermont.

Addison County can be divided into three roughly-equally-sized zones that are oriented north-south and parallel the orientation of Lake Champlain and the Green Mountains. The westernmost landscape is dominated by Lake Champlain and its broad valley, which features fertile farmland, native clay plain forest, the entirety of the marshes and channels of Dead Creek, and the headwaters of Otter Creek, Vermont's longest river. The towns bordering the lake (Ferrisburgh, Panton, Addison, Bridport, Shoreham, and Orwell) are among the flattest in the state. They are also home to one of the greatest concentrations of dairy farms in the state. Several thousand acres of this region have been conserved by the State of Vermont, the Vermont Land Trust, the Nature Conservancy, and others to protect both the natural heritage of Lake Champlain and its tributaries and also the productive agricultural soils of the basin.

The central portion of Addison County is characterized by the rolling hills that form the piedmont of the Green Mountains. These towns (Monkton, New Haven, Waltham, Weybridge, Middlebury, Cornwall, Salisbury, Whiting, and Leicester) are also agricultural in land use. Otter Creek is an important feature of the landscape here, as is Cornwall Swamp. The Middlebury Area Land Trust has focused its conservation efforts in the central county, while the Nature Conservancy has conserved much of Cornwall Swamp.

The eastern third of the county comprises a high and forested segment of the Green Mountains chain, which runs from Massachusetts to Canada. At the northern end of this area, the towns of Starksboro, Bristol, and Lincoln are a mix of agricultural areas and forested areas. Large portions of the towns of Bristol, Lincoln, Ripton, Granville, Hancock, and Goshen lie within the Green Mountain National Forest.

Addison County affords a wide variety of recreational opportunities. Lake Champlain, Lake Dunmore, and numerous smaller bodies of water provide access for boating, swimming, and fishing. There are ample hiking trails, particularly in the central and western portions of the county, including the trails to Mt. Abraham in Lincoln, the fifth tallest peak in Vermont and one of three arctic-alpine zones in the state. The county is home to a ski resort and is renowned for its cycling opportunities.

The county is also known for its wildlife, particularly for the spectacle of migratory birds passing through the Dead Creek State Wildlife Management Area. Bird-watching and hunting are popular activities, and Lake Dunmore and Lake Champlain are dotted with summer camps.

Geology and Soils

The geology of Addison County is largely a result of the Taconic Orogeny, a mountain-building event that took place approximately 500 million years ago. The orogeny was the result of proto-North America colliding with a chain of volcanic islands to the east, forcing a tall ridge of mountains to form along the eastern edge of the continent. These mountains eroded to form the eastern seaboard, but remnants may be seen in the Taconic range in southwestern and west central New England and the Green Mountain range that forms the spine of Vermont.

The Taconic Orogeny also likely created the Lake Champlain Basin by allowing large blocks of earth to overlap and sink relative to their surroundings. The Champlain thrust fault is a product of this period.

The region was also shaped by ice ages and glaciers, most notably by the glaciation of two million years ago that covered Vermont with a sheet one mile thick. The glaciers carved deep, steep-walled valleys along the margins of the Green Mountains and Champlain Valley. They also softened and trimmed even the highest mountain peaks.

As the climate warmed Vermont thawed, becoming fully ice-free roughly 12,500 years ago. The glacial retreat left behind debris including both boulders (called erratics) and sediment deposits (known as kames). Another result of the glacial retreat was the formation of large dams and lakes, including a large lake that filled what is today's Champlain Valley. This lake collected sediments flowing out of the streams and rivers of the Green Mountains and Adirondacks, leaving behind the fertile soils of the Champlain Valley when much of the glacial lake drained into the St. Lawrence River.

The trail construction within the selected corridor will disturb and expose approximately .5 acres of soil per mile of trail, through a variety of soil types. Where poor soils for trail surfacing are encountered, such as sand or wetlands soils, the construction and mitigation measure described in Appendix B will prevent loss of soil or soil productivity. Therefore, this topic is not analyzed further in this document.

Wetlands and Water Quality

Addison County contains a number of important lakes, ponds, wetlands, and waterways that drain from the main range of the Green Mountains.

Lake Champlain is the largest freshwater lake in the United States outside the Great Lakes. Covering 440 square miles, it flows north for 110 miles from near Whitehall, New York to Île-Aux-Noix, Quebec before entering the Richelieu River and flowing into the St. Lawrence Seaway. At the Crown Point-Chimney Point crossing, Lake Champlain is



Sugar Hill Reservoir, Goshen

approximately 2,200 feet wide. A new bridge, with pedestrian walkways, crossing these narrows was recently completed.

Dead Creek is a large wetland complex flowing north into Otter Creek just before it empties into Lake Champlain in the town of Ferrisburgh. Much of Dead Creek is protected by a State Wildlife Management Area and is managed, through a series of dams, to provide habitat for waterfowl and other wildlife.

Otter Creek is Vermont's longest river, rising in the Valley of Vermont 112 miles south of its mouth at Lake Champlain. Otter Creek is a defining feature of Addison County as it neatly bisects the region for much of its length. The Creek is known for its generally placid waters through fertile farmland except between Middlebury and Vergennes, where a series of sharp descents (many of which are now home to hydro-electric power generating stations) require numerous portages by canoeists and create dramatic backdrops to the villages of Middlebury, Weybridge, and Vergennes.

The Middlebury River drains the high mountains of the eastern third of Addison County, descending the escarpment between Ripton and East Middlebury to empty into Otter Creek about three miles south of Middlebury. This river is characterized by fast-flowing, shallow water, and river sand or gravel shores that are frequently overrun by major flood events. It also features floodplain wetlands in the Breadloaf area of the town of Ripton.

Likewise, the New Haven River flows west out of the high mountains through the town of Lincoln, descending the escarpment between West Lincoln and Bristol. After numerous dramatic waterfalls and gorges, the New Haven flattens and slows below Bristol and meanders to Otter Creek at Brooksville, approximately three miles north of Middlebury.

Lake Dunmore is a popular summer camp destination in the towns of Salisbury and Leicester. Nestled below the Green Mountain escarpment (and the Green Mountain National Forest and Moosalamoo National Recreation Area), the lake is the largest entirely in Addison County. While substantially developed for recreation (including several campgrounds open to the general public), Lake Dunmore is sufficiently wild to support a breeding population of common loons.

Sugar Hill Reservoir and Silver Lake are part of a hydro-electric power generation system in the Moosalamoo National Recreation Area. The Reservoir, created by Goshen Dam, traps water draining from the mountains before releasing it via a penstock downstream to Silver Lake. Silver Lake, a natural body of water enlarged by a dam, then holds the water for release down a .8 mile, 670-foot drop to a generating station at Lake Dunmore. Both Sugar Hill Reservoir and Silver Lake are remote, mostly undeveloped, and scenic.

Air Quality

The Air Pollution Control Division of the Vermont Department of Environmental Conservation operates monitoring facilities in Burlington and Rutland. Air quality recorded through randomized monthly samples in 2010 rated "Good" air quality in Rutland and "Moderate" to "Good" air

quality in Burlington, with “Moderate” ratings occurring in the summer months. Ratings were based on comparison to standards of ozone, fine particulate matter, carbon monoxide, and sulfur dioxide concentrations.

No part of Vermont was designated a non-attainment area by the U.S. Environmental Protection Agency as of April 21, 2011.

Vehicle trips to access trailheads are the only foreseeable connections between the alternative actions and air quality. Based on use of other sections of the North Country Trail, the National Park Service estimates there would be an increase in ten trips per day for either alternative. According to the May, 2013 report by the State of Vermont, the 2012 Annual Daily Total for Highway 17 at the Crown Point Bridge at the west edge of the study area was 3300 vehicles per day in 2012. Any increase in vehicle traffic and associated air quality impacts due to trail use would be negligible, and this topic is not analyzed further in this document.

Visual Resources

Addison County, like much of Vermont, features a diversity of landscapes. The contrast of juxtaposed open and wooded areas, mountains and valleys, and managed and wild lands forms the basis of Vermont’s visual appeal, which is a major attraction for the more than 10 million visitors the state attracts each year.



Mount Abraham, Lincoln

In the western part of Addison County, the wide open spaces of farm fields (particularly corn grown for dairy cattle feed) permit broad vistas of the Champlain Valley rimmed by the Adirondacks and the Green Mountains. This region is punctuated by several small mountain ridges with westward facing cliffs, which create stunning views of the agricultural heartland of Vermont, Lake Champlain, and the High Peaks of the Adirondacks. Snake Mountain (along the border of Addison and Weybridge) is among the most popular family hiking destinations in Vermont for its accessibility and rewarding views. Many of the villages of this area sit atop low ridges, making their steeples visible from afar and providing a vantage point for the surrounding farmland from within the village.

Central Addison County is, for many visitors, the stereotypical Vermont landscape. Rolling hills create an intimacy that may be lost in the more dramatic high mountains to the east or the broad lowlands to the west. Winding country roads connect picturesque villages such as Monkton Ridge, New Haven, East Middlebury, and Proctor. Smaller farmsteads dot the hillsides and create openings in the forest cover that permit views across small valleys. The commercial centers of

Middlebury, Bristol, Brandon, and Wallingford are typical scenic New England towns, with buildings lining neat greens and tree-lined streets.

The eastern rim of the region is formed by the highest ridge of the Green Mountains. High altitude villages and farmsteads provide close-up views of the mountains, particularly in the town of Lincoln and at the Breadloaf Campus of Middlebury College in Ripton. Many of the high points in this area provide glimpses of the vast forest cover of Green Mountain National Forest as well as the Champlain Valley to the west and the Mad River and White River Valleys to the east. The most dramatic peak in the region is Mt. Abraham, which rises to 4,006 feet above the town of Lincoln to provide 360-degree views of the surrounding landscape. This area is also home to the headwaters of several of western Vermont's most important rivers, including Lewis Creek, the New Haven River, Middlebury River, and Mill River. These rivers often form dramatic cascades in deeply incised ravines as they make their way from the high mountains into the Champlain Valley.

Construction of the North Country Trail according to the standards in Appendix B of this document would follow topographic contours as a natural surface footpath 24 inches wide with a clearing width of four feet would have negligible impacts on visual resources in this rural agricultural landscape.

Vegetation and Wildlife

Addison County is home to a variety of natural community types that change dramatically with altitude and soil type. More than two thirds of Addison County is located in the Champlain Valley biophysical region, with the remaining third being located in the Northern Green Mountains.

The Northern Green Mountains is comprised of the following natural communities:

- Alpine Meadow: on open ridge tops above 3,500 feet in elevation, the only alpine meadow found in Addison County is a severely compromised example on Mt. Abraham.
- Boreal Outcrop: on rocky mountain summits and sparsely vegetated, the boreal outcrop is home to low shrubs and vascular plants that persist in small patches of soil accumulation.
- Subalpine Krummholtz: found above 3,500 feet in elevation, krummholtz (German for *crooked wood*) is affected by thin soils, high winds, ice, and heavy snow loads, preventing trees from reaching their full size.
- Boreal Acidic and Calcareous Cliff: high elevation cliffs with vegetation defined by the acidic or calcareous nature of the rocks and soils.



Northern Hardwood Forest, Goshen

- Montane Spruce-Fir Forest: typically found between 2,500-3,500 feet in elevation, characterized by red spruce and balsam fir.
- Montane Yellow Birch-Red Spruce Forest: the forest of many mountain slopes and lower summits, generally between 2,000-2,500 feet in elevation.
- Boreal and Cold Air Talus Woodland: wooded but sporadically vegetated areas of talus, or rock fall.
- Northern Hardwood Forest: Vermont's most abundant forest, found below 2,700 feet in elevation, and characterized by sugar maple, beech, and yellow birch.
- Hemlock Forest: found in steep ravines below 1,800 feet in elevation, generally featuring hemlock almost exclusively as a dominant species.
- Wetland Communities, including Alder Swamp, River Cobble Shore, Cattail Marsh, Shallow Emergent Marsh, and Black Spruce Swamp.

In the Champlain Valley, the Northern Hardwood Forest and Hemlock Forest are present (with the latter being more common in the Champlain Valley), as well as a number of additional natural communities:

- Mesic Red Oak-Northern Hardwood Forest: like Northern Hardwood Forest, but with a substantial portion of the canopy formed by red oak.
- Red Pine Forest: usually found on rocky ridge tops, red pine forest is common in the Bristol area.
- Limestone Bluff Cedar-Pine Forest: dark forests dominated by white cedar, usually found near Lake Champlain.
- Red Cedar Woodland: found on cliff tops such as Snake Mountain and Buck Mountain.
- Dry Oak Forest: occurs on rocky ridge tops with acidic soils, particularly on Snake Mountain.
- Dry Oak-Hickory-Hophornbeam Forest: open, park-like woods, frequently found on rocky portions of dairy farms.
- Valley Clay plain Forest: once the dominant forest community type in the Champlain Valley but now rare – deep fertile soils support a very diverse vegetative community.
- Lake Sand Beach: found exclusively along Lake Champlain in Addison County.
- Temperate Acidic and Calcareous Cliff: lower elevation cliff communities with vegetation determined by soil type.
- Floodplain Forests: particularly the Silver Maple-Ostrich Fern-Riverine Floodplain Forest.
- Hardwood Swamps: especially the Red Maple-Black Ash Swamp; Cornwall Swamp is one of the most significant and extensive in the state.
- Wetland Communities, including Shallow Emergent Marsh, Sedge Meadow, Cattail Marsh, Deep Broadleaf Marsh, Deep Bulrush Marsh, Alluvial Shrub Swamp, Alder Swamp, and Buttonbush Swamp.

In the Valley of Vermont, the Northern Hardwood Forest, Mesic Red Oak-Northern Hardwood Forest, Hemlock Forest, Dry Oak Forest, Dry Oak-Hickory-Hophornbeam Forest, and Floodplain Forest natural communities are present, as well as:

- Northern Hardwood Talus Woodland: form at the base of talus slopes, generally featuring plants that do well in rocky soils.
- Red Pine Forest: often found on ridge tops; found in patches in Northern Hardwood Forest.

- White Pine-Red Oak-Black Oak Forest: warm, dry forest found near glacial outwash and general disturbance.
- Wetland Communities, including Shallow Emergent Marsh, Sedge Meadow, Cattail Marsh, Deep Broadleaf Marsh, Alder Swamp, and Buttonbush Swamp.

Invasive Species

Several noxious weeds and other pests inhabit Addison County, some of which threaten the viability of native species. Among those of particular concern are garlic mustard, Oriental bittersweet, wild chervil, Japanese knotweed, several species of honeysuckle, purple loosestrife, common buckthorn, wild parsnip, emerald ash borer, and hemlock wooly adelgid.

Wildlife

Wildlife in Addison County is typical of inland northern New England, although the Lake Champlain flyway attracts many migratory bird species that are uncommon in the rest of Vermont. Common and representative species include:

Mammal species include opossum, little brown bat, coyote, gray and red fox, bobcat, river otter, fisher, mink, striped skunk, raccoon, black bear, moose, white-tailed deer, woodchuck, beaver, and a variety of small rodents.

Herpetological species (i.e., reptiles and amphibians) include snapping turtle, painted turtle, milk snake, northern watersnake, gartersnake, American toad, spring peeper, American bullfrog, wood frog, spotted salamander, and eastern newt.

More than 225 bird species were observed in the region in 2010. Flagship species include snow geese (which congregate by the thousands during the fall migration at Dead Creek), bald eagle, peregrine falcon, five species of swallow, nearly thirty species of warbler, eighteen species of sparrow, and the ubiquitous black-capped chickadee.

Fisheries

This region is home to a number of lakes, rivers, and streams supporting cold-and warm-water fish species. These bodies of water include Lake Champlain, Monkton Pond, Bristol Pond, Dead Creek, Lake Dunmore, the Lemon Fair River, Otter Creek, Middlebury River, Sugar Hill Reservoir, and Silver Lake.

Fish species abound in these waters. Sport fish species include lake trout, landlocked Atlantic salmon, rainbow smelt, yellow perch, walleye, northern pike, chain pickerel, largemouth bass, smallmouth bass, brown bullhead, rainbow trout, brown trout, and pumpkinseed. Non-sport fish species found in the region include bowfin, carp, channel catfish, white crappie, longnose gar, white perch, sheepshead, panfish, black crappie, burbot, and brook trout.

Threatened or Endangered Species

According to the U.S. Fish and Wildlife Service, one federally Threatened or Endangered Species, the Indiana bat (*Myotis sodalis*), is known or believed to occur in Addison County. Known or

potential maternity colony sites are located in Addison, Weybridge, Cornwall, Brandon, Sudbury, and Middlebury.

In addition, several Vermont state Threatened or Endangered Species have been observed in the towns within Addison County. These include timber rattlesnake (*Crotalus horridus*), eastern rattlesnake (*Crotalus adamanteus*), upland sandpiper (*Bartramia longicauda*), common tern (*Sterna hirundo*), sedge wren (*Cistothorus platensis*), grasshopper sparrow (*Ammodramus savannarum*), and loggerhead shrike (*Lanius ludovicianus*).

The National Park Service conducted a consultation with the U.S. Fish and Wildlife Service under section 7 of the Endangered Species Act. The Fish and Wildlife Service concurred in a letter to the National Park Service dated January 9, 2013 that none of the corridor alternatives proposed in the plan would pose a threat to the Indiana Bat. Future trail alignments are planned on the ground by the NPS will make it possible to assess any possible impacts to state-listed species, and there is not further analysis of this topic in this document.

Cultural Resources

Historic Sites

The cultural history of Addison County begins, as it does elsewhere in Vermont, with the arrival of the Paleo-Indian approximately 11,000 years ago. The region was eventually dominated by the Woodland period Abenaki, who persisted well after the time of the arrival of the first Europeans. There was a substantial Abenaki settlement at the mouth of Otter Creek, and archaeological investigations have found evidence of prehistoric use of the land throughout the Champlain lowlands, particularly at Chimney Point. Modern Abenaki people still live and preserve their heritage in Vermont today.

Samuel de Champlain and French settlers arrived in 1609 but made few permanent impacts on Addison County. A notable exception is again Chimney Point, where former soldiers established a small community across the lake from Fort St-Frédéric (now Crown Point). Recent excavations related to the construction of the new Champlain Bridge have uncovered physical evidence of the French settlement.

English settlement of the area began in earnest following the Seven Years' War (French and Indian War) in the 1760s. While the county was decimated in the American Revolution, the groundwork was laid for permanent English/American settlement. Many of the earliest historic structures in this region date from the boom period between the end of the war and 1800.

Extant significant historic resources in the Addison County are typically related to the development of agriculture, industry, religion, commerce, and education. In or near the proposed trail corridors there are 38 individually listed National Register sites, including 5 National Register Historic Districts and 2 National Historic Landmarks.

National Register-Listed Historic Sites and National Historic Landmarks within or nearby the

Proposed Trail Corridors

(Historic Districts in *italics*; National Historic Landmarks in **bold**)

215 School Street (Shoreham) Addison Baptist Church Bridge 26 (Weybridge/New Haven, also known as “Rattlin’ Bridge) <i>Bristol Downtown Historic District</i> Chimney Point Tavern (Addison) Cotton Free Library (Weybridge) Capts. Daniels House (Vergennes) District School #1 (Panton) Doolittle Farm (Shoreham) East Shoreham Covered Railroad Bridge <i>Fenn Farm Historic District (Middlebury)</i> Robert Frost Farm (Ripton) Glen Dale (Cornwall) Halpin Covered Bridge (Middlebury) Hand’s Cove (Shoreham) Hawley’s Ferry House (Ferrisburgh) The Heights (Thaddeus Chapman House, Middlebury) Larrabee’s Point (Shoreham) Middlebury Gorge Concrete Arch Bridge (Middlebury)	<i>Middlebury Village Historic District</i> Old Stone Blacksmith Shop (Cornwall) Pulp Mill Covered Bridge (Middlebury) Ripton Community House Rokeby (Ferrisburgh) Shoreham Congregational Church Stone Mill (Middlebury) Old Stone Row (Middlebury) General Samuel Strong House (Vergennes) John Strong House (Addison) Samuel Paddock Strong House (Vergennes) Union Meeting House (Ferrisburgh) University of Vermont Morgan Horse Farm (Weybridge) <i>Vergennes Historic District</i> <i>Vergennes Residential Historic District</i> Waybury Inn (East Middlebury) Wesleyan Methodist Church (Weybridge) Emma Willard House (Middlebury) Witherill Farm (Shoreham)
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The Vermont State Historic Preservation Officer was consulted under section 106 of the National Historic Preservation Act during the preparation of this feasibility study, and contributed some of the information included. With the understanding that any future on the ground layout and construction of the trail by the National Park Service would be done only after completing further section 106 consultation, the State Historic Preservation Officer concurred with a finding of *No Adverse Effect to historic resources* for this corridor selection, and there is not further analysis of this topic in this document.

Traditionally Associated People

Three tribes have interests or connections to the planning area: the Nulhegan Tribe of the Coosuk Abenaki, the Stockbridge-Munsee Tribe, and the Delaware Tribe. Leaders or Tribal Historic Preservation Officers from all three were contacted, as well as the Chairman of the Vermont Commission on Native American Affairs. No objections were raised to the plan, although further consultation was requested when on-the-ground alignments are planned by the NPS, and there is not further analysis of this topic in this document.

Socioeconomics

Northern and central Addison County, where proposed trail corridors pass, includes four large town centers and one city, which host the majority of the region’s employment opportunities and contemporary cultural assets. Below are descriptions of a variety of social and economic resources of Addison County and a number of the major associated towns and cities.

Addison County

Addison County is located in west-central Vermont; its west border abuts Lake Champlain, which forms Vermont's border with the state of New York. Addison County is about 20 miles west of the state capital of Montpelier and about 15 miles south of Burlington, the state's most populous city, and is bisected by US Route 7, a primary north-south thoroughfare connecting the cities of Rutland and Burlington. The county is about 766 square miles in area and mostly rural, with about 50 percent of its area in forests and 40 percent in agriculture.

Addison County had a population of 35,974 residents in the 2000 Census and 36,821 residents in the 2010 Census. About 40 percent of the county's population resides in the large towns of Bristol and Middlebury, and the city of Vergennes. The population density of the county was 48 people per square mile in 2010. With the populations of the aforementioned large towns removed, the density of the remainder of the county was only 29 people per square mile.



Addison County Field Days, New Haven

The main commercial and population centers of Addison County are the towns of Middlebury and Bristol, and the city of Vergennes. Major employers include Middlebury College, Goodrich Corporation in Vergennes, and the agricultural sector; many residents commute to the Burlington area from the northern reaches of the county. Outside of the major towns, the economy is driven by agriculture, the forest products industry, and tourism.

Town of Bristol

The proposed trail corridor for Alternative B takes in most of the town of Bristol. As of the 2000 Census, the town of Bristol had 3,788 residents; this increased to 3,894 residents in the 2010 Census. The village serves as the economic and cultural center of northeast Addison County, a catchment area that includes the towns of Starksboro, Lincoln, Monkton, and parts of New Haven.

Commercial enterprises in the town of Bristol include a full service grocery store and a natural foods store, at least six restaurants, automotive services, garden and Christmas tree nurseries, a yoga center, music store, and a full complement of professional services including medicine, law, and photography.

The town of Bristol is home to Mt. Abraham Union High School, which serves five towns. Cultural facilities include the Lawrence Memorial Library, the Hub Teen Center and Skate Park, the Bristol Farmers Market, the Bristol Peace Garden, and several art galleries and performance spaces.

City of Vergennes

The proposed corridor for Alternative B also includes the city of Vergennes. Vergennes is the commercial and cultural center for the northwest portion of Addison County. While it had a population of only 2,741 residents in the 2000 Census, the city covers an area of only 2.5 square miles and has a population density of 1,141 persons per square mile (compared to 210 persons per square mile in Middlebury and 90 persons per square mile in Bristol in 2000). The city's population had declined to 2,588 residents in the 2010 Census. Vergennes' catchment area includes the towns of Ferrisburgh, Waltham, Panton, Addison, and parts of New Haven and Monkton.

The largest employer in Vergennes is Goodrich Corporation, an aerospace manufacturer. Other major commercial enterprises include DR Power Equipment, a car dealership, Northlands Job Corps Center, and a variety of small businesses lining its picturesque Main Street.

The city features several restaurants, a bakery, a full service grocery store, and a number of specialty food and clothing stores. The Vergennes Opera House serves as a regional performing arts space. Other cultural institutions include the Bixby Memorial Library and a weekly farmers market.

Town of Middlebury

The proposed trail corridor for Alternative C passes through the town of Middlebury. Middlebury is the Shire Town of Addison County, meaning it is the seat of county government, the county court system, and the county sheriff. Middlebury had 8,183 residents in the 2000 Census and 8,496 residents in the 2010 Census, making it the largest in Addison County. A catchment area for Middlebury could be defined as the towns of Weybridge, Bridport, Shoreham, Cornwall, Salisbury, Ripton, and parts of New Haven.

The town is home to Middlebury College, a major employer and cultural institution in Addison County. An important commercial center, Middlebury is home to a light industrial area featuring several craft and artisan businesses, including Otter Creek Brewery, Maple Landmark (wooden toys), the Vermont Organic Soap Company, Woodchuck Hard Cider, and Danforth Pewter. The industrial area also includes several farm-related enterprises, including a grain elevator and several agricultural supply and equipment distributors.

Middlebury features a movie theater, more than a dozen restaurants and other food-related businesses, a small park system and recreation center featuring a skating rink, pool, and athletic fields, and popular coffee shops and tea houses.

Among the cultural assets of the town are the Middlebury College Museum of Art, the Henry Sheldon Museum of Vermont History, the National Museum of the American Morgan Horse, the Vermont Folklife Center, the Illsley Library, and the Town Hall Theater. There are also two full service grocery stores, the region's largest farmers market, and a Natural Foods Co-op.

Recreation Resources

Much of the eastern side of Addison County is defined by the Green Mountain National Forest. The 400,000-acre national forest is the largest contiguous public landholding in Vermont; about

90,800 acres of the forest are located in Addison County. National forests are generally managed as multiple use public areas, and the lands in Addison County are no exception. Some areas, such as Moosalamoo National Recreation Area (15,857 acres), allow hiking, mountain biking, Nordic skiing and snowmobiling, and support designated campground facilities. In contrast, the forest's Wilderness areas – Bristol Cliffs (3,750 acres), Breadloaf (24,985 acres), and Joseph Battell (12,336 acres) –allow only low-impact recreational activities and provide no support services or facilities. The Long Trail, that extends the length of the state of Vermont, runs through the Green Mountain National Forest in Addison County, and joins the AT approximately 12 miles south of the county. With the Long Trail and other trails for hiking, skiing, bicycling and snowmobiling, the Green Mountain National Forest totals about 900 miles of trails.

The state of Vermont also manages a number of areas for outdoor recreation in Addison County. These include Chimney Point State Historic Site, D.A.R. State Park (95 acres), Button Bay State Park (253 acres), and Kingsland Bay State Park (264 acres) – these state properties are located along Lake Champlain, offer facilities for picnicking and camping, and are generally open in summer and fall months only. There is also a number of state Wildlife Management Areas (WMAs) in Addison County – these include: Bristol Pond, Whitney/Hospital Creek (157 acres), Dead Creek (2,858 acres), Lower Otter Creek (738 acres), Little Otter Creek (1,416 acres), Snake Mountain (1,215 acres), and Lemon Fair (341 acres). WMAs are managed for conservation of fish, wildlife, and their habitat, and to allow fish and wildlife-based activities. The county also includes Weybridge Cave State Natural Area, with one acre of land managed aboveground and an unknown amount of subterranean area.

There are also a number of smaller urban parks and forests, local open space preserves, and initiatives by jurisdictions to develop and manage recreation resources. For instance, the city of Vergennes has begun to consider the development of recreational trails connecting public natural areas such as Falls Park with outlying areas. The 2007 Middlebury Town Plan seeks to implement its vision for embracing growth while preserving quality of life in part by “conserving valuable farmland, forestland, wetlands, and open space and promoting public trails and increased recreational opportunities.” Middlebury is also known for its culture of public wellness and enthusiasm for the health and other benefits of outdoor recreation.



Otter Creek and the Trail Around Middlebury (TAM)

Besides the networks of trails associated with the public lands in Addison County, there are also a number of other trails in the county traversing a variety of ownerships, most notably the Trail Around Middlebury (TAM), a 16-mile loop that circles the village of Middlebury. There are also areas with existing trails where property owners have made commitments under less-than-fee agreements to permit trails to cross their lands.

Chapter 6: Environmental Consequences

Terms and Assumptions

Each impact topic includes a discussion of impacts, including the intensity, duration, and type of impact. Intensity of impact describes the degree, level, or strength of an impact as negligible, minor, moderate, or major. Because definitions of intensity vary by resource topic, separate intensity definitions are provided for each impact topic. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative.

Duration of impact considers whether the impact would occur over the short term or long term:

Short-term impacts are those that, within a short period of time, generally less than 2 years from when trail construction begins would no longer be detectable as the resource or value returns to its pre-disturbance condition or appearance.

Long-term impacts refer to a change in a resource or value that is expected to persist for 2 or more years. The type of impact refers to whether the impact on the resource or value would be beneficial (positive), or adverse (negative).

The impact analysis describes the difference between the three alternatives described in Chapter 4 of this document.

Cumulative Impacts

The Federal Council on Environmental Quality regulations which implement the National Environmental Policy Act, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes such other actions. Cumulative impacts can result from individually minor but collectively important actions taking place over a period of time.

Cumulative impacts are considered for alternatives B and C. These impacts were determined by combining the impacts of the alternatives with the impacts of other past, present, and reasonably foreseeable future actions. To do this, it was necessary to identify other planned actions in the surrounding area of a similar nature. Maintenance and improvement of the 35 miles of the Long Trail on the Green Mountain National Forest in Addison County was identified as being in similar nature to the trail planned for the corridor to be selected in this document. The time horizon for the cumulative impacts analysis is generally plus or minus ten years.

Alternative A: No Action Alternative

Under the No Action Alternative, an extension of the North Country Trail connecting Crown Point, New York and the Appalachian Trail would not be authorized, and the Federal government would not develop and support National Scenic Trail construction.

Under the No Action Alternative (Alternative A), any potential adverse effects to resources incurred by construction and use of the trail under Alternatives B and C would be avoided;

conversely, any beneficial effect on resources from establishment, development, maintenance and use of the extension of the trail would not be realized.

Impact Topics Considered but dropped from Further Analysis

NEPA and the CEQ Regulations direct agencies to “avoid useless bulk...and concentrate effort and attention on important issues” (40 CFR 1502.15). Certain impact topics that are sometimes addressed in NEPA documents on other kinds of proposed actions or projects have been judged to not be substantively affected by any of the alternatives considered in this EA. These topics are briefly described below, along with the rationale provided for considering them, but dropping them from further analysis.

Soundscape: Noise is defined as unwanted sound. Trail building and trail use can all involve the use of noise-generating mechanical tools and devices with engines, such as lawnmowers, chain saws and brush cutters. Chainsaws, at close range, are quite loud (in excess of 100 decibels). The use of machines such as chainsaws would be relatively infrequent and fleeting, on the order of 6-8 hours per day for a few weeks at most when clearing is taking place. The trail would run through areas of active private and public timber management operations where this noise is common and expected. Therefore, this impact topic is eliminated from further analysis in this document.

Human Health and Safety: Safety practices and training are part of the normal operating procedures when National Park Service volunteers work on the North Country Trail, and use of the trail in either of the proposed alternatives would not constitute a threat to human health and safety.

Waste Management: Development of a hiking trail in either alternative would generate neither hazardous or solid wastes that need to be disposed of in hazardous waste or general sanitary landfills. Therefore, this impact topic is dropped from additional consideration.

Utilities: It is a standard procedure that before any excavation for the trail is begun in developed areas or public rights of way, utility locator services would be contacted per State Regulations. Therefore utilities are eliminated from any additional analysis.

Transportation: The intent of this plan is to route the North Country Trail off of roads and away from railroads, water based, or aerial transportation. Therefore, this topic is dismissed from any further analysis.

Environmental Justice / Protection of Children: Presidential Executive Order 12898 requires Federal agencies to identify and address disproportionate impacts of their programs, policies and activities on minority and low-income populations. Executive Order 13045 requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children. Neither of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations as defined in the Environmental Protection Agency’s Environmental Justice Guidance; therefore, these topics are not further addressed in this document.

Indian Trust Resources/Interests: Indian trust assets are owned by Native Americans but held in trust by the United States. Other interests in Federal Actions may involve places sacred to Native Americans. The selection of the corridor will not affect Indian Trust resources, therefore these impacts are not evaluated further in this document.

Prime and Unique Agricultural Lands: Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. There are prime and unique agricultural lands found in the planning area. The trail will be designed to not impede agricultural activity nor damage soil productivity therefore this impact topic is not evaluated further in this document.

Wilderness: According to National Park Service Management Policies (2006), proposals having potential to impact wilderness resources must be evaluated. No new trail will be constructed for the North Country National Scenic Trail in Wilderness areas, so impacts are not further evaluated in this document.

Resource Conservation, Including Energy, and Pollution Prevention: The National Park Service's Guiding Principles of Sustainable Design provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook articulates principles to be used such as resource conservation and recycling. Proposed project actions would not minimize or add to resource conservation or pollution prevention, and this impact topic is not evaluated further in this document.

Air Quality: Neither alternative involve activities which would degrade air quality, and any additional vehicle trips to access the trail when constructed will be minimal, so this impact topic is not evaluated further in this document.

Impacts Common to Alternatives B and C

Vegetation and Wildlife

This section covers potential impacts to wildlife and wildlife habitat. Wildlife habitat in the study area is primarily defined by altitude and the vegetation communities present. For either alternative B or C, the trailway width acquired and managed for the trail experience would vary from handshake agreements and access agreements for as little as 10 feet up to 1000 feet or more on either side of the trail to protect a natural trail setting or viewshed, which in turn would protect wildlife habitat.

The standard design and construction practices for the trail would be the same for either alternative B or C. The difference is in the total quantity. A trail constructed with a two foot tread and a four foot clearing width would disturb about .5 acres of vegetation per mile in either alternative. Alternative B, the northern route through Addison County, would involve few if any existing trails, and would create at most 29 acres of disturbance if a total of 58 miles of new trail were constructed. For alternative C, the preferred alternative, at most 20 acres of disturbance would

occur, however this number is likely to be substantially reduced given that the North Country Trail could be designated on several existing public trails in this alternative.

An important factor in wildlife habitat quality is the increase of invasive plant species which are currently spreading into the planning area. Under both the alternatives it is possible that non-native plant species could be introduced within the trailway through import of seeds from other areas, however several mitigation measure identified in chapter 3 would minimize this possibility.

The method of designing and building the North Country Trail in forested areas is to not cause any openings in the tree canopy, and plan the trail to leave large healthy trees (see Appendix B). Trail construction would involve a human presence and scent, and sounds of trail work along the trail alignment during the period of actual trail construction, which generally occurs in work days or work weeks, where several hundred feet may be completed by a typical group of 5-15 people each day. When construction is completed, trail use would be by solitary hikers or small groups, resulting in a quieter, infrequent human presence, and little noise. Relative to other human activities in the planning area such as logging, agriculture, and residential development, these impacts would not measurably affect sensitive or listed species.

The thresholds to determine wildlife and wildlife habitat impacts are defined as follows:

Negligible: Impacts are barely detectable and/or would affect a minimal area of vegetation. Impacts to the plant and wildlife communities at key organizational levels are not detectable.

Minor: Impacts are slight, but detectable, and/or would affect a small area of vegetation or few members of the wildlife community. The severity and timing of changes are not expected to be outside natural variability spatially or temporally. Key ecosystem processes and community structure are retained at the local level.

Moderate: Impacts are readily apparent and/or would affect a large area of vegetation and/or a large portion of the wildlife community. The severity and timing of changes are expected to be outside natural variability spatially and/or temporally; however, key ecosystem processes and community structure are retained at the landscape level.

Major: Impacts are severely adverse or exceptionally beneficial and/or would affect a substantial area of vegetation and/or the majority of the inhabiting wildlife community. The severity and timing of changes are expected to be outside natural variability both spatially and temporally. Key ecosystem processes and community structure may be disrupted. Habitat for wildlife species may be rendered non-functional at the landscape level.

Cumulative Impacts on Vegetation and Wildlife

Over the past 10 years, the U.S. Forest Service has relocated approximately 10 miles of trail, totaling roughly 5 acres of vegetative clearing on various projects usually in response to weather damage, or poor alignments on old roads. Other activities involve clearing down trees and pruning back vegetation on a continuing basis. The impacts on wildlife and habitat of maintaining and

improving the Long Trail have been negligible, short-term and long-term, and adverse within the study area.

Conclusion

With implementation of the mitigation measures, the impacts to vegetation and wildlife from alternative B or C would be minor, short and long term, and adverse. Alternative C, the preferred alternative, would be expected to have less disturbance to vegetation than alternative B when the designation of existing trails into the North Country Trail is considered.

Wetlands and Water Quality

Wetlands, in addition to the biodiversity they support serve critical roles as water purifiers, facilitating settling of particulates out of the water column and filtering remaining impurities. Because of the importance of wetlands to water quality, potential impacts to wetlands and water quality will be addressed together.

Wetlands and water quality can be impacted by trails crossing wetlands. Whenever possible, the North Country Trail is routed to avoid wetlands. Once the trail alignment is established, locations of trail bridges and boardwalks would be determined and appropriate permits would be obtained from the Vermont agencies that manage water quality by the National Park Service partners developing the trail in Vermont.

Trails that are built too close to streams, built too steeply, or are not built to shed water can cause soil to wash into streams and have the potential to change the hydrology (quality or amount of water) in adjacent wetlands and waterways.

Wetlands are a protected resource managed under federal executive orders:

Executive Order 11990 was issued in 1977 “to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.”

Approved in 1998, Director’s Order 77-1: Wetland Protection (NPS 1998) was developed for use by the National Park Service in carrying out its responsibilities under Executive Order 11990. The general policies, requirements, and standards included in the manual are: (1) no net loss of wetlands and a long-term goal of net wetlands gain, (2) park wide wetlands inventories, (3) restoration and enhancement of degraded wetlands habitats, (4) planning and siting facilities to avoid or minimize effects to wetlands, (5) restoration of degraded wetlands as compensation for adverse effects to wetlands, and (6) compliance with federal environmental regulations.

Impacts to wetlands and water quality were evaluated by comparing projected changes resulting from the northern alternative and the no-action alternative. The thresholds to determine wetlands and water quality impacts are defined as follows:

Intensity

Negligible: The impact is barely detectable and/or would result in no measurable or perceptible changes to wetlands or water quality.

Minor: The impact is slight, but detectable, and/or would result in small but measurable changes in wetlands or water quality; the effects would be localized to one area in a drainage basin.

Moderate: The impact is readily apparent and would result in easily detectable changes to wetlands or water quality; the effects would be localized to a drainage basin.

Major: The impact is severely adverse or exceptionally beneficial and/or would result in appreciable changes to wetlands or water quality; the effects would be regionally important.

Alternatives B and C

In both alternatives, the entire Trail is envisioned to be built within the corridor to the standards in the North Country Trail Handbook, and routing trail through wetlands and the need for bridges would be minimized as much as possible, using existing bridges which have pedestrian provisions as appropriate. Permits would be obtained which would require best practices to be employed for building structures in wetlands and across streams.

Cumulative Impacts to Water and Wetlands. Trail improvements to the Long Trail are designed to reduce wetland impacts or reduce soil erosion into water courses from historic trail alignments. The small amount of surface exposed by the trail, and the variability of soil types and tread surfaces means that impacts to water quality are small and barely measurable, compared with uses such as agriculture, logging, and transportation. The impacts to water and wetlands from the Long Trail in Addison County are negligible.

Conclusion. With employment of the mitigation measures incorporated into trail standards and careful design, the impacts of Alternatives B or C on water quality would be minor, short to long term, and adverse.

Socioeconomics

The main socioeconomic factors that could be affected by selection of a trail corridor and development of the trail are land ownership and recreation use.

The establishment of the North Country Trail in the planning area should provide a small increase in recreation visits to the area, as people learn about the trail and it is included in regional marketing and promotion programs. The projected use of the trail is difficult to estimate, and would vary based on proximity to trailheads, and connections with other trails. Relative to the total number who already visits the region for camping, hiking, fishing, hunting, mountain biking, horseback riding, skiing and sightseeing, the increase would probably be small, the NPS roughly estimates ten new vehicle trips to the planning area per day attributed to the North Country Trail might be expected, while patterns of use on other parts of the North Country Trail show highest use by existing area residents near populated areas or existing recreation areas. Trail use has

beneficial effects on users in terms of improved health, relaxation, enjoyment of scenery and closeness to nature.

Intensity

The thresholds to determine the intensity of impacts on socioeconomics are defined as follows:

Negligible: Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be non-existent, barely detectable, or detectable only through indirect means and with no discernible impact on local social or economic conditions.

Minor: Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be small but detectable, geographically localized, affect few people, comparable in scale to typical year-to-year or seasonal variations, and not expected to substantively alter established social or economic structures over the long-term.

Moderate: Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would be readily apparent or observable across a wider geographic area, affect many people, and could have noticeable effects on the established economic or social structure and conditions over the long-term.

Major: Effects on adjacent landowners, neighbors, businesses, agencies, community infrastructure, social conditions, etc. would effect a wider geographic area, affect many people, and would have noticeable effects on the established economic or social structure and conditions over the long-term.

Towns of Bristol and Vergennes

Alternative B would likely have a negligible long-term, beneficial effect on the towns of Vergennes, Bristol, Addison, Panton, Ferrisburgh, Waltham, New Haven, Monkton, Lincoln, and Ripton. Because both communities are small in land area and densely developed, the Corridor of Opportunity under Alternative B would have little impact on current land usage and management.

Communities on Alternative C

Many downtown businesses and craft and artisanal manufacturers would benefit from an increase in visitors to the town, particularly the types of visitors that the North Country NST could bring. Middlebury has a thriving commercial center, a strong light-industrial and agricultural sector, and several keystone economic, cultural, and recreational resources that could be affected by an additional recreational trail in the area and the visitors that it brings. Alternative C would have a long-term, minor and beneficial effects on the towns of Middlebury and portions of Addison, Bridport, Weybridge, Cornwall, Salisbury, Lincoln, Ripton and Goshen.

Recreation Resources

Most of the smaller communities through which the trail would pass would benefit from additional recreational trails and could help to mitigate overuse on some existing trails. Potential exists for conflicts between recreational uses on some public lands in Addison County through which the trail may pass. This is particularly true on the state WMAs in the county: Little Otter Creek WMA



Snake Mountain and Dead Creek, Addison

(Alternative B), Snake Mountain WMA (Alternative C), and Dead Creek WMA (both Alternatives). WMAs are critical assets within the corridors and are managed for wildlife purposes rather than recreation. Conflicts between hunting and fishing interests and recreational users have not been a great problem thus far, but the Vermont Fish and Wildlife Department has struggled to balance its mission with other interests, particularly hiking. The decision to route the trail through these areas lies in the hands of that agency. Efforts would be made to mitigate any negative effects to

wildlife management, hunting and fishing activities through trail siting and seasonal closures.

In general, increased use of trails within the region has led to conflicts between user groups, including hikers, trail runners, wildlife enthusiasts, hunters, mountain bikers, and horseback riders. Development of the North Country NST may provide greater opportunities for several of these types of recreation and ease tensions between user groups. The popularity of local trails has also led to concerns about the maintenance implications of heavy use, which might be relieved in part by construction of new trails.

Under Alternative B, the formation of the city of Vergennes Recreation Committee is an indication that the city is interested in the improvement of these amenities. The city's consideration of trails to connect local parks and recreation areas may present opportunities for the development of new trails. Passage of the North Country NST within or adjacent to city limits could provide a minor long-term benefit by helping to promote the concept of connector trails and spur additional recreational planning.

In the town of Bristol under Alternative B, use of existing developed trails would have negligible effect impact on land use and management. Protecting the trailway for the North Country Trail heading southeast of Bristol may provide an opportunity to provide additional recreational trail connections to the Green Mountain National Forest.

In the town of Middlebury under Alternative C, the vast majority of users of the Trail Around Middlebury and other local hiking trails, such as the Abbey Pond Trail, are local residents. Middlebury College, the town's largest employer, promotes an environmental and outdoor recreation ethic. Students use the Trail Around Middlebury for recreational purposes and college faculty design many educational exercises around the conserved lands that protect the Trail Around Middlebury corridor. An off-road trail connection to resources such as Snake Mountain and Moosalamoo National Recreation Area would be enthusiastically embraced by the college. The extension of the North Country NST would provide a minor long-term benefit through an increase in the diversity and utility of recreational trails in the town of Middlebury.

Several existing trails within the Alternative C Corridor of Opportunity suffer from overuse or inappropriate use. Snake Mountain, sections of the Trail Around Middlebury, and the Skylight Pond area of the Long Trail are notable for their popularity and for the damage that is caused by overuse. The use of these existing sections of trail as part of the North Country NST could have minor adverse long-term effects on these trails. Designating these sections of trail as part of North Country NST could exacerbate current problems by increasing use; conversely, impacts could be mitigated by designating less-used sections of existing trail as North Country NST, constructing new trail in areas away from heavily-used trails, limiting trail use during muddy seasons, and limiting non-foot travel in sensitive areas.

Other areas in the town of Middlebury with established trails would likely experience negligible effects on land use and management under Alternative C. Additional funds that may be available due to the National Scenic Trail status could be used increase trail maintenance and trail management, and to place sections of existing trailway under perpetual easements from willing landowners, providing a minor long-term benefit for these existing trails and property owners who have already made a commitment to permitting the trails to cross their lands.

Cumulative Socioeconomic Impacts

The existence of the Long Trail has had solid positive benefits for the region and Addison County in terms of providing health and wellness benefits, and recreational experiences for area residents and long distance hikers on the trail. Because the trail is within the Green Mountain National Forest, there have not been direct effects of the trail on local governments or communities in this area.

Conclusion. The socioeconomic impacts from this alternative would be beneficial in terms of providing health and wellness benefits, and potentially protecting lands in the trailway, minor in their intensity relative to the other economic and recreation activities in the region, and long term, with benefits slowly accruing as the trail is developed and promoted.

Table 2: Summary of Effects for Alternatives for North Country NST Extension in Vermont

	Alternative A (No Action)	Alternative B: North Addison County Route	Alternative C: Central Addison County Route (Preferred Alternative)
Soundscape	No Effect	No Effect: Trail establishment would not lead to changes in ambient sound levels	
Human Health and Safety	No Effect	No Effect: Development of the North Country Trail would not pose a threat to human health or safety.	
Waste Management	No Effect	No Effect: No waste will be generated by trail development	
Utilities	No Effect	No Effect: Trail development will not affect utilities	
Transportation	No Effect	No Effect: Trail development will not affect transportation.	
Environmental Justice / Protection of Children:	No Effect	No Effect: Trail development will not cause adverse impacts to minorities or special populations	
Indian Trust Resources/Interests	No Effect	No Effect: Corridor Selection will not affect Native Trust Resources. Tribes will be consulted as further National Park Service Trail development takes place.	
Prime and Unique Agricultural Lands	No Effect	No Effect: Neither corridor selection or trail development will cause a loss of prime and unique farmlands.	
Wilderness	No Effect	No Effect: No new trails will be constructed in designated wilderness in either alternative	
Resource Conservation, Including Energy, and Pollution Prevention	No Effect: Corridor Selection and trail development would not add to resource conservation or pollution prevention, and this impact topic is not evaluated further in this document.		
Air Quality	No Effect: Corridor selection and trail development will not cause an impact to trail quality.		
Geology and Soils	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect on resources	Negligible Effect: soil erosion and compaction in wet/steep areas can be mitigated through trail construction techniques and use of structures	
Visual Resources	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect on resources	Negligible Effect: permanent conservation of open space lands within trail corridor and landscape maintenance to protect viewsheds will have a minor, long-term effect	
Vegetation and Wildlife	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect on resources	Minor Short-Long Term, Adverse Effect: Potential clearing of as much as 29 acres of vegetation for 58 miles of potential trail.	Minor Short-Long Term, Adverse Effect: Potential clearing of less than 20 acres of vegetation for 40 miles of potential trail because of use of existing trails on some sections.
Wetlands and Water Quality	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect	Minor, short to long-term, Adverse Effect: Impacts to water quality will not be measurable if trail standards and careful design is done.	

	Alternative A (No Action)	Alternative B: North Addison County Route	Alternative C: Central Addison County Route (Preferred Alternative)
Threatened and Endangered Species	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect on sensitive species.	No Effect: Corridor Selection will not impact sensitive species. When on-the-ground routes are planned, site-specific surveys will be needed.	
Traditionally Associated People	No Effect: no development or use of North Country Trail extension into VT, no subsequent effect on traditionally associated people.	No Effect: Section 106 process and cultural surveys before any new trail construction would be done and trail would avoid any cultural sites found.	
Socioeconomics	Minor Adverse Effect: no development or use of North Country Trail extension into VT, no subsequent increase in visitation or economic activity	Minor Beneficial Long Term Effects: Health and wellness benefits and small boost to tourism and recreation businesses over time as trail is developed.	

Chapter 7: Consultation and Coordination, Public Comments

The 1975 final feasibility study for the North Country Trail placed the eastern terminus of the trail in eastern New York at the Vermont state line because key trail groups and state officials in Vermont requested that the trail not extend into the state. When the National Park Service, supported by the North Country Trail Association, decided to reopen the conversation about a North Country Trail connection to the Appalachian Trail in Vermont, it was imperative that the Service first obtain support for such an investigation from key stakeholders. Letters of support were solicited and received from the Green Mountain Club (GMC), Green Mountain National Forest (GMNF), Middlebury Area Land Trust, and North Country Trail Association (NCTA) in the spring of 2008.

Because Vermont lies geographically in the NPS' Northeast Region, rather than the Midwest Region through which the trail is administered, the Superintendent, North Country NST, in concert with planning and environmental compliance staff in the NPS' Midwest Regional Office, communicated with colleagues in the Northeast Regional Office about the desire and intention to re-examine the feasibility of a North Country Trail connection with the Appalachian Trail through a formal public planning process. The Northeast Region staff identified their Rivers, Trails, and Conservation Assistance staff contact for Vermont, Jennifer Waite, as their point person for this study and planning effort. She was kept informed throughout this process and given opportunities to participate in key meetings.

The superintendent also communicated with the NPS Manager, Appalachian National Scenic Trail, and the Executive Director, Appalachian Trail Conservancy, in advance of initiating this process to let them know the intention and purpose of this effort. Both supported moving forward with a public process and emphasized the importance of allowing Vermont stakeholders to lead in the effort.

Further consultation with Vermont stakeholders led to the conclusion that the Middlebury Area Land Trust was the best choice for leading this process and assisting the NPS in preparing the feasibility study, corridor plan, and environmental assessment. The leadership of the Middlebury Area Land Trust agreed to this. Through a cooperative agreement executed in August 2009, the NPS provided financial assistance to the Middlebury Area Land Trust to underwrite the cost of the work.

In fall 2009, planning for the extension of the North Country NST in the State of Vermont began with a meeting of representatives from the NPS, Middlebury Area Land Trust, NCTA, GMC, GMNF, Addison County Regional Planning Commission, Middlebury College, Moosalamoo Association, and the towns of Middlebury, Ripton, and Weybridge. This group, known as the *core planning team*, was formed to oversee the planning – these team members were selected for their past interest in the North Country NST, their expertise in local trail networks and trail maintenance, their knowledge of relevant laws and policies, and, most importantly, their familiarity with potentially affected landowners. The task of the core planning team is to provide input to Middlebury Area Land Trust and the NPS on conceptual ideas for corridors and possible route options for the North Country NST, and shepherd these ideas through the public review process.

It was critical to involve the local public at every opportunity to capture their vast knowledge and wisdom about additional assets that will make the extension of the North Country NST representative and exemplary of all the amenities that west central Vermont has to offer a hiker. In February 2010, three public meetings were held to announce the study and present conceptual corridors. Local residents offered opinions about “can’t-miss” natural features, routes through difficult areas, potentially friendly and cooperative property owners, and important services such as lodging and food.

Several of the suggestions gleaned from the public resulted in substantial changes to the proposed corridors identified on the concept maps that were displayed at the meetings. In particular, routes through remote areas of Middlebury and Ripton that were impossibly wet or otherwise unsuitable were eliminated from further consideration. This input saved a tremendous amount of time and expense in field-checking and route-finding.

Following the public meetings, the executive director of Middlebury Area Land Trust and other representatives of the core planning team met with representatives of the planning commissions of the towns of Addison, Weybridge, Middlebury, and Ripton to explain the North Country NST and the purpose of the study. Questions about the nature, purpose, and status of the trail were answered and they were encouraged to offer opinions about potential routes and concerns specific to their town. The commissions were also encouraged to adopt language in their Town Plan in support of the North Country NST as the plans are revised.

Work on refining the corridors continued through 2010. Field investigations of potential trail routes within the corridors were conducted. Key landowners in the corridors were contacted to determine their willingness to host sections of the trail on their lands. Developing the maps and writing the draft study report continued through 2011.

The NPS North Country Trail Manager, Jeff McCusker, and NCTA Executive Director Bruce Matthews met with key stakeholders during a visit to Vermont in October 2011. Meetings were held with key leaders of the GMC, Vermont Department of Forests, Parks and Recreation, Vermont Fish and Wildlife Department, Vermont Trail Collaborative, Middlebury Area Land Trust, and Green Mountain National Forest. Each supports the extension of the North Country Trail to the Appalachian Trail in Vermont and made specific recommendations based on their perspectives, policies, and experience with trails and working with landowners.

During the Fall of 2012, the NPS carried out informal consultation under Section 7 of the Endangered Species Act with the US Fish and Wildlife Service, seeking concurrence with a finding of No Adverse Effect to the one federally listed species in the study area, the Indiana Bat.

The NPS also contacted the State of Vermont Historic Preservation Officer, provided her with a draft copy of this document, and discussed possible interests or concerns of Native Americans in the project. Subsequently, the Chairman of the Vermont Commission on Native American Affairs, the Chief of the Nulhegan Tribe of the Coosuk Abenaki, and the Tribal Historic Preservation Officers for the Delaware and Stockbridge-Munsee Tribes were contacted and the project

discussed. No concerns were expressed, other than the need to assure that on the ground cultural surveys are completed before construction of new trail take place.

During the fall of 2011 and spring of 2012, NPS staff worked with Middlebury Area Land Trust staff to finalize the public review draft of the study report, corridor plan, and environmental assessment. By the end of April 2012, the draft report was ready for public review. A public meeting to review the draft report was scheduled at the Weybridge School on May 21, 2012. A press release announcing the public review, the public meeting, and the availability of electronic and printed copies of the report was distributed to news media in the Addison County vicinity.

Individual letters announcing the availability of the draft study report, corridor plan, and environmental assessment, and the date, time, and location of the public meeting were sent to 100 public officials, elected representatives, organizations, and individuals, as follows:

Members of Congress

Representative Peter Welch

Senator Bernard Sanders

Senator Patrick Leahy

Federal Officials

Jennifer Waite, NPS Northeast Region, RCTA Program Contact, Vermont

Pamela Underhill, NPS Manager, Appalachian National Scenic Trail

John Romanowski, U.S. Forest Service, Eastern Region

Colleen Madrid, Forest Supervisor, Green Mountain National Forest

Holly Knox, Green Mountain National Forest

Jennifer Wright, Green Mountain National Forest

Carol Burd, Green Mountain National Forest

Donna Marks, Green Mountain National Forest

Ken Norden, Green Mountain National Forest

Greg Smith, Green Mountain National Forest

Tom Chapman, U.S. Fish and Wildlife Service, New England Field Office

Lisa Jackson, Regional Administrator, U.S. Environmental Protection Agency

Matthew Hake, Vermont Division Administrator, Federal Highway Administration

State Officials

Deb Markowitz, Agency of Natural Resources

Craig Whipple, Director of State Parks, Department of Forests, Parks, and Recreation

Ed O'Leary, Department of Forests, Parks, and Recreation

Chris Olson, Addison County Forester, Department of Forests, Parks, and Recreation

Patrick Berry, Commissioner, Vermont Fish and Wildlife Department

John Austin, Vermont Fish and Wildlife Department

David Sausville, Vermont Fish and Wildlife Department

William Crenshaw, Vermont Fish and Wildlife Department

Judith Erlich, Vermont Division for Historic Preservation

Giovanna Peebles, State Historic Preservation Officer, Vermont Div. for Historic Preservation
Site Administrator, Chimney Point State Historic Site

Maggie Smith, Commissioner, Vermont Department of Tourism and Marketing

Nonprofit Trail and Conservation Organizations

William Wiquist, Executive Director, Green Mountain Club

Dave Hardy, Director of Field Operations, Green Mountain Club

Pete Antos-Ketchum, Director of Operations, Green Mountain Club

Story Jenks, President, Middlebury Area Land Trust

John Derrick, Board of Trustees, Middlebury Area Land Trust

Joni Osterhault, Middlebury Area Land Trust

Bruce Matthews, Executive Director, North Country Trail Association

Andrea Ketchmark, Director of Trail Development, North Country Trail Association

Mark Wenger, Executive Director, Appalachian Trail Conservancy

Hawk Metheny, New England Regional Director, Appalachian Trail Conservancy

Jenny Nixon-Carter, Executive Director, Moosalamoo Association

Doug Sawyer, President, Moosalamoo Association

Lisa Chase, Vermont Trail Collaborative

Nancy Bell, The Conservation Fund

Middlebury College

Steve Trombulak, Professor of Environmental and Biosphere Studies, Middlebury College

Town Clerks

Jane Grace, Town of Addison

Valerie Bourgeois, Town of Bridport

Ann Webster, Town of Middlebury

Sally Hoyer, Town of Ripton

Karen Brisson, Town of Weybridge

Sally Ober, Town of Lincoln

Ann Dittami, Town of Salisbury

Therese Kirby, Town of Bristol

Sue Johnson, Town of Cornwall

Rosemary McKinnon, Town of Goshen

Pam Kingman, Town of New Haven

Mary Kinson, Town of Waltham

Chet Hawkins, Town of Ferrisburgh

Sharon Gomez, Town of Monkton

Selectboard Members

Town Addison (5)

Town of Middlebury (7)

Town of Ripton (3)

Town of Weybridge (5)

Planning Commission Members

Town of Addison (7)

Town of Middlebury (5)

Town of Ripton (5)
Town of Weybridge (5)

Mayors

Michael Daniels, City of Vergennes

An electronic copy of the study report, maps, and comment form were posted on the NPS' Planning, Environment, and Public Comment (PEPC) website. The address for this site was included in all press releases, letters to officials, and other announcement concerning the review and public meeting.

The meeting was conducted as scheduled by staff from Middlebury Area Land Trust, NPS, and NCTA. Besides the staff of these planning partners, 24 people attended the presentation and lengthy question and discussion session. There was broad overall support for the extension of the North Country Trail into Vermont to connect with the Appalachian Trail, and for the preferred alternative as the way for accomplishing that connection. Questions were asked about the way the trail is established and managed by the NPS and its partners, what assistance the NPS provides to trail partners, the working relationships among the partners, and the way the partners work with landowners to obtain access to lands for new trail segments. Assurances that the NPS has not and will not utilize eminent domain to secure lands was solicited and given. NPS staff explained the legislative restrictions which prevent the use of condemnation. Some concerns were expressed about the level of detail in the environmental analysis and NPS staff explained that the level of detail is appropriate for a corridor-level analysis. Additional environmental compliance may be needed when the location of an actual segment to be constructed is determined.

Following the public meeting, 10 letters from agency officials, organization representatives, and individuals supporting the extension and the preferred alternative were received. One letter and two anonymous commenters on the NPS PEPC site expressed their opposition to extension of the trail into Vermont. **All of the key stakeholders—NPS, Green Mountain National Forest, Vermont Agency of Natural Resources, GMC, NCTA, Appalachian Trail Conservancy, Middlebury Area Land Trust, and Moosalamoo Association---plus several individuals who sent in comments favoring Alternative C, the Preferred Alternative.**

Major Substantive Issues or Suggestions Raised by Commenters and the Response

Comment 1: The Green Mountain National Forest suggests that the Alternative C (Preferred Alternative) corridor of opportunity be expanded to include all of the Moosalamoo National Recreation Area.

Response 1: The corridor depicted on Map 5 has been expanded as suggested.

Comment 2: While the Agency for Natural Resources (ANR) offers its conceptual support, it cannot extend its complete support for the project unless and until public and private landowners affected by the trail provide their consent.

Response 2: A new section entitled “How the Trail is Established” has been added to the end of Chapter 1. It clearly states that all participation in the trail is voluntary on the part of public and private landowners. Location of the trail on any land is only possible with the consent of the landowner. In 2009, Congress granted Federal Agencies the authority to acquire lands for the trail, but only from owners who give their consent. To date, the NPS has not used that authority. The NPS does **not** have condemnation authority for the North Country NST.

Comment 3: The ANR believes it may be difficult to accommodate the trail on the Dead Creek, Snake Mountain, and others Wildlife Management Areas (WMAs) for a number of reasons.

Response 3: See Response 2, above. Segments of the North Country Trail will not be established on WMAs unless and until the Vermont Fish and Wildlife Department gives its consent to do so.

Comment 4: According to the ANR, the Weybridge Caves State Natural Area is a sensitive and potentially dangerous site; it may not be appropriate location for the North Country Trail.

Response 4: Weybridge Caves State Natural Area has been removed from Maps 5 and A1. Route Option 5A has been modified to not go to the location of Weybridge Caves.

Comment 5: In traversing private land areas, the GMC recommends securing permanent arrangements like easements or fee acquisition, and only from willing sellers.

Response 5: Permanent land rights for the trail is the most desirable arrangement. It ensures that the investments made in establishing the trail, particularly the investment of volunteer time, is preserved forever into the future. However, at this time there are very few resources for purchasing trail lands or easements, and some landowners may be willing to host the trail on their lands but not sell their lands, preferring to see what kind of a “neighbor” the trail is before making a permanent commitment. As stated in Response 2, above, any arrangement is only with the consent of the landowner.

Comment 6: The GMC recommends crossing Branbury State Park on Lake Dunmore because it offers camping and other amenities for hikers.

Response 6: Branbury State Park has been added to Maps 5 and A1 and the Alternative C (Preferred Alternative) corridor of opportunity has been expanded to include the park. This does not mean that the eventually-established trail will go to the park; it merely means that selecting a route that includes the park is now a possibility since it is now within the corridor of opportunity.

Comment 7: The Appalachian Trail Conservancy (ATC) only supports acquisition of land from willing sellers.

Response 7: See Response 2.

Comment 8: ATC asks whether the NPS will provide the NCTA and GMC with funding to scope, design, construct and maintain the connection to the Long Trail, and the portion of the Long Trail that the North Country Trail will follow, to National Scenic Trail standards.

Response 8: The National Trails System Act give the NPS, as administrator of the trail, broad authorities to assist public and private partners involved with the trail, including provision of tools and equipment, materials, signs and trail markers, technical assistance, and limited financial assistance. The NPS recognizes the important role such assistance plays in advancing the completion of the trail. The reality that partners in the trail must understand is that the NPS' ability to provide these forms of assistance is limited by the amount of annual appropriations to the NPS for the trail. There are currently not enough resources to assist each partner in the ways they might desire. The relationships between the NPS and partners in Vermont, and among those partners, will be an evolving reality following Congressional authorization of the extension. The extent to which funding and other assistance accompanies those relationships will have to be explored within the limited resources available to the NPS.

Comment 9: Support for and continued progress on the Trail extension should be based not only on the merits of the Trail concept itself, but also on the condition that acquisition of Trail land will not occur without landowner consent. Trail supporters at the Weybridge School presentation stated that it is no one's intention to acquire property except by consent, but Federal law can be changed or reinterpreted, and public positions can evolve or be overridden.

Response 9: See Response 2. The new section on "How the Trail is Established" was added to Chapter 1 primarily to put into this plan and the public record that it has been and is the practice of the NPS, NCTA, and all other partners to only establish trail where there is the consent of the landowner. Our system of property rights makes this the only legally viable course of action. Only since 2009 has the NPS had any authority to purchase lands or easements for the trail, and that authority can only be used if the owner of the land consents. No land acquisition funding for the trail has been appropriated since that authority was enacted, so the NPS is presently in no position to even approach a landowner. NPS staff have submitted requests for such funding and have hopes that some funding might become available for this purpose in the future. As far as future changes in authority or perspectives of the players involved, no one can predict or guarantee the future, but all current partners agree on this point and will not seek any change in practice, policy, or legal authority.

Comment 10: I suggest an alternative for Route Option Segment 7A. I suggest that about 0.75 miles east of Case Street on the Abbey Pond Trail, turn right onto an old road and head south on land mostly owned by the Green Mountain National Forest. Go about 4 to 4.5 miles to the North Branch Road and follow it south to the junction with Route 125 at the bridge at the east end of East Middlebury. At this point, pick up Segment 7B. Enclosed are two maps depicting this alternative.

Response 10: This has been incorporated into this study and plan as Segment 7C in “Appendix A: Possible North Country NST Route Options within the Alternative C (Preferred Alternative) Corridor of Opportunity.”

Comment 11: I do not want to see the agricultural lands of Addison County fragmented with trail corridors or trailheads.

Response 11: The NPS and other partners and potential partners in the North Country Trail do not want to fragment agricultural lands either. Careful design of the trail, plus obtaining the input and consent of the owners of those agricultural lands should help to avoid such an outcome. Section 7(a)(2) of the National Trails System Act, we have this guidance which speaks to this point exactly: “...in selecting the rights-of-way full consideration shall be given to minimizing the adverse effects upon the adjacent landowner or user and his operation. Development and management of each segment of the National Trails System shall be designed to harmonize with and complement any established multiple-use plans for the specific area in order to insure continued maximum benefits from the land.”

Comment 12: I don’t want to see any additional NPS trails created in Vermont without NPS staffing for day-to-day law enforcement rangers and NPS maintenance crews. It can’t be handed off to the State of Vermont or Green Mountain National Forest.

Response 12: None of the National Scenic Trails administered by the NPS (six of them) or the USDA-Forest Service (five of them) have law enforcement rangers patrolling them daily. Except on lands that these agencies own and administer (national parks and national forests), such rangers would have no legal jurisdiction anyway. The many years of experience with these kinds of trails have not demonstrated a need for such a level of law enforcement. As for trail maintenance, both the NPS and USDA-FS depend on volunteer trail organizations to provide the maintenance workers not only for these long-distance trails, but increasingly for other trails on their lands as well. This historic practice will continue if the North Country Trail is extended into Vermont.

Comment 13: Your proposal does not contain complete and accurate costs. Where is the funding coming from? Where is the future management and maintenance funding coming from?

Response 13: Because the trail is built and maintained by volunteer trail organizations, the costs of trail construction, maintenance, and management is extremely low. See Comment and Response 8, above. The NPS provides for some of the needs of these volunteer trail crews to the extent that its budget allows. Remarkably, these volunteer trail organizations will raise their own funds to do the work if Federal assistance is not available. Accurate cost estimates are impossible at this point. Until the exact trail route within the corridor is determined, we cannot know how many bridges will be needed, how many linear feet of boardwalk will need to be constructed, etc. Until that route is designed, we do not know how many miles of existing trail will be incorporated into the route, thus not requiring any construction costs. What we do know to be true is this—new segments of the North Country NST get build as (1) lands become available on which to build the trail, (2)

volunteers are available to do the work, and (3) funding becomes available to cover any costs associated with building the segment.

Comment 14: The NPS should not be creating new trail development activity that will increase use in Bristol Cliffs, Battell, and Breadloaf Wilderness Areas.

Response 14: The selection of Alternative C as the Preferred Alternative means the trail will not go to the Bristol Cliffs Wilderness Area. Among the Route Options with the Alternative C corridor, most stakeholders and people who have commented favor either Segment 7B or 7C, rather than 7A. Thus, it is unlikely the eventual trail will pass through the Breadloaf Wilderness Area. Route Options 7B and 7C would utilize existing trails in the Battell Wilderness Area, so no new trail will need to be constructed in that wilderness area. The NPS depends on the Green Mountain National Forest staff to raise any concerns they have about routing the trail through the Battell Wilderness Area, and so far they have not expressed any concern.

Comment 15: The study contains unsubstantiated statements about hiker impact, ecosystem impact, and wildlife and open space. Statements like “experience has shown” are invalid. Whose experience? Where? The entire “Chapter 6: Corridor Impact Analysis” is troublesome. There is a general lack of supporting facts, studies, or citations to ground the conclusions as more than opinion.

Response 15: The environmental assessment incorporated into this feasibility study was completely rewritten to conform to the guidance in National Park Service Director’s Order 12, which guides compliance with the National Environmental Policy Act. The corridor-level analysis is somewhat general in nature, in the same manner as the environmental impact statement prepared for the entire North Country Trail when it was proposed in the 1970s. A paragraph was added to the beginning of Chapter 6 to clarify this point. The determination of the exact alignment of trail on the ground is an iterative process that will happen at different times after the completion of this study and planning process, primarily because the trail can only be established where landowners consent to it being on their lands, or consent to selling certain lands or easements upon their lands. Only then can more detailed impact determinations be made. In some cases, environmental compliance procedures will have to be followed at that point, such as for obtaining certain permits relating to water resources or doing surveys to determine if archeological resources might be present. Because the simple footpaths created for National Scenic Trails are designed to lie “lightly on the land” and are built according to today’s state-of-the-art trail sustainability standards, their impacts to the environment are rather minimal. There is a huge body of experiential knowledge regarding these trails expressed through current trail construction and maintenance handbooks by various organizations. (A portion of the NPS’ handbook for the trail are in Appendix B.) There are very few scientific research studies from which to glean the type of hard statistical information the commenter appears to be wanting.

Over the Fall of 2012 and the Winter of 2013, this document was reviewed by the NPS Midwest Regional Office in Omaha. Based on their comments, the Environmental Analysis section was

rewritten and resubmitted to Omaha in July, 2013. The Regional Office approval for release of the document to the public in final draft form was granted on September 30, and due to the government shutdown, the document was released on October 25 for a comment period through November 25, 2013.

Five comments were received on the July 2013 draft of the document. They are summarized below, and responses provided.

Comment 16: One commenter pointed out that the Highway 125 bridge across the Middlebury River in East Middlebury was being replaced in 2014, and would be widened to provide pedestrian access.

Response 16: We have edited our description of this bridge in Appendix A on potential routes within the preferred corridor.

Comments 17 and 18: From a private citizen, and one from the Green Mountain Club, supported NPS selection of the preferred alternative.

Response 17 and 18: None required.

Comment 19: A comment letter from the District Ranger of the Rochester District of the Green Mountain National Forest pointed out that we had not updated the map of alternative C to encompass the entire Moosalamoo NRA as we agreed to do from the previous draft. The letter also stated that our narrative of Alternative B contained conflicting descriptions of the potential route, and there were conflicting statements about potential impacts to the Bristol Cliffs Wilderness Area in several places in the document. The Forest Service pointed out that there was only one short trail in the Wilderness, and the area is being managed without developed trails.

Response 19: We put the correct maps of both Alternative B and C into the document, and clarified that although the Corridor of Opportunity encompasses the Bristol Cliffs Wilderness, the North Country Trail, the trail would be routed adjacent to the Wilderness, if that was the decision of the Forest Service.

Comment 20: From a private citizen, two questions were posed: 1) How will the National Park Service NCT project into Vermont reduce the USFS trails deferred maintenance backlog of \$524 million? 2) What is the National Park Service backlog of Nationwide Trail Maintenance costs?

Response 20: 1) We feel that in principal, designating the North Country National Scenic Trail on Forest Service Lands into Vermont would have a neutral or slightly beneficial on the Forest Service trail deferred maintenance backlog for the Green Mountain National Forest. We write this because of the additional volunteer and public support National Trail Designation would bring to the affected trails in question, given the thousands of volunteer hours and dollars that are raised every year for the North Country Trail in the nine National Forests which currently host the trail. That said, we cannot predict deferred maintenance effects with any certainty until an actual route is designated on the ground, whether it be on existing or planned trails. Even then, there are many

design, climatological, institutional, and geographical factors that affect trail maintenance, and make accurate maintenance cost estimation difficult at best.

2) The North Country National Scenic Trail is administered by the National Park Service (NPS) through partnerships under the National Trail System Act, and the trail is not owned by the NPS nor is it considered an asset for which deferred maintenance is tracked, except in a few NPS units through which it passes. Due to the unique nature of the partnerships that develop and maintain the trail across over 165 public jurisdictions and private land ownerships, NPS deferred maintenance accounting and reporting does not apply to the North Country Trail.

List of Preparers

Middlebury Area Land Trust:

Josh Phillips, former Executive Director
Joni Osterhault, Stewardship and Web Coordinator

National Park Service:

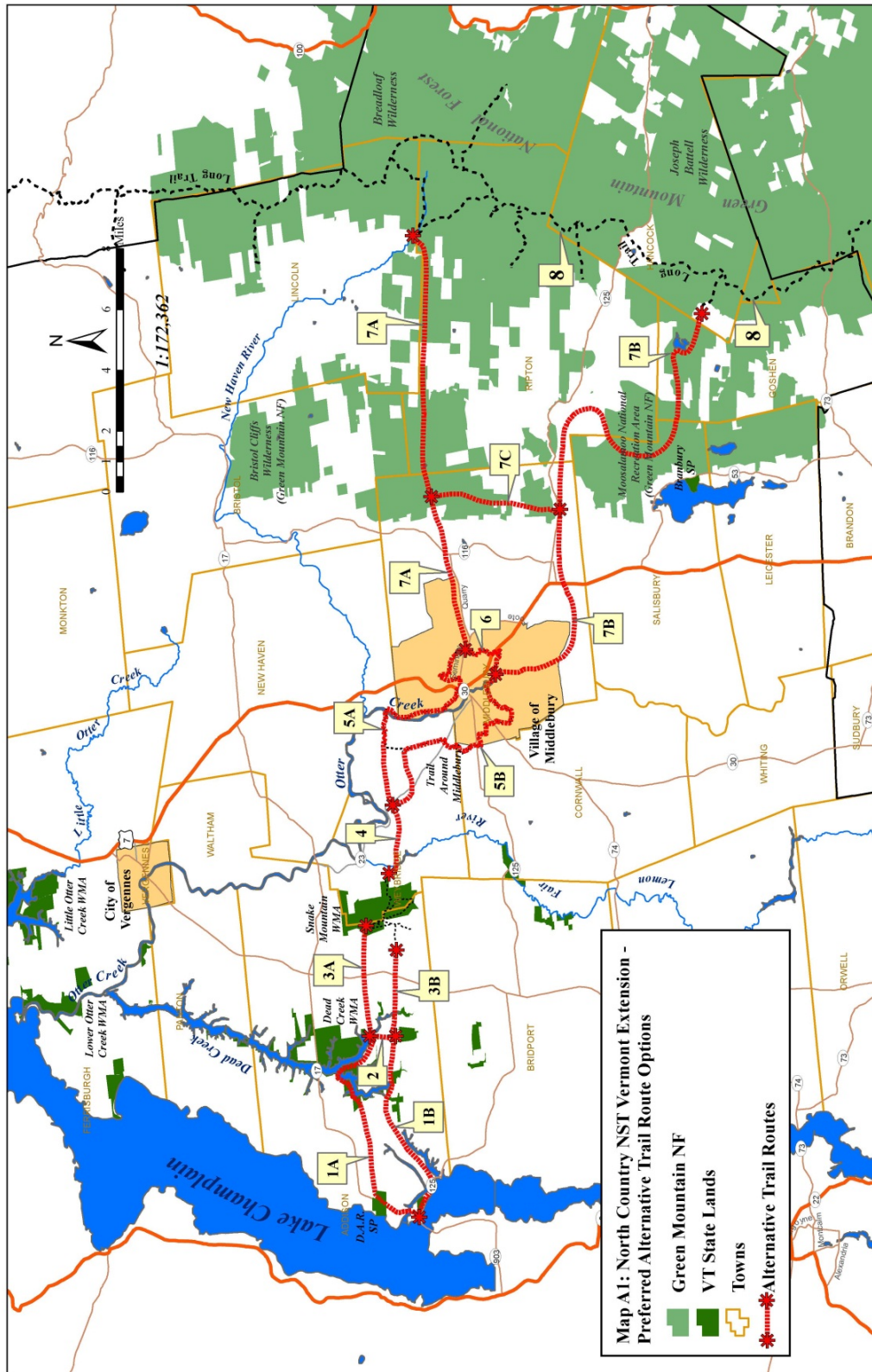
Dean Gettinger, former Acting Manager, North Country National Scenic Trail
Tom Gilbert, former Superintendent, Ice Age and North Country National Scenic Trails
Mark Holden, Trail Planner, Ice Age National Scenic Trail
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Pam Schuler, Acting Superintendent, Ice Age and North Country National Scenic Trail

Appendices

Appendix A: Possible North Country Trail Route Options within the Alternative C Corridor of Opportunity (Preferred Alternative)

In addition to identifying the Preferred Alternative Corridor for the extension of the North Country Trail into Vermont, it is useful to also identify potential trail route alignments within that corridor. Because of the corridor's width of about 3-5 miles, identifying possible route options will focus eventual efforts to establish the trail and enable planners to design routes that best showcase the area and exemplify the trail's mission and goals.

Map 6 Potential Routes within Alternative C Corridor



Segment 1A: Chimney Point to Dead Creek (north route)

Segment 1A leads from the current eastern terminus of the North Country Trail at Crown Point, New York, into the state of Vermont on the Lake Champlain Bridge. This segment is 7.5 miles in length. The segment runs through conserved forest and farmland in the town of Addison before entering the Dead Creek Wildlife Management Area (WMA). Here there is an existing 1.4-mile trail that runs northeast to the west parking area of the Brilyea Access. The trail follows the Brilyea Access Road across a series of dams and bridges to the east parking area and then continues south along another existing trail for 1.3 miles before exiting Dead Creek WMA.

This segment passes through active and attractive dairy farm lands along little-used or unused farm roads. This segment features several of the most important assets in the region: Chimney Point State Historic Site—an important Native American, French Colonial, and early American settlement; D.A.R. State Park (which includes 70 tent sites and 26 lean-tos, as well as the John Strong Mansion); and the Bridge Restaurant, West Addison General Store, Goodies Snack Bar, and Ten Acres Campground, which offers tent sites, showers, food, and laundry services. Most importantly, this segment includes Dead Creek WMA, one of the premier wildlife-viewing areas in the northeastern United States. This wetland, grassland, and late successional hardwood forest is important habitat for rare bird species, amphibians, and reptiles, and hosts spectacular fall migrations of Canada and snow geese.

Using existing trails within Dead Creek WMA, little new trail construction would be required, and most of the segment crosses public rights-of-ways and limited private landholdings. This segment traverses a representative and popular section of the area and would be a highlight of the North Country Trail in Vermont.

Segment 1B: Chimney Point to Dead Creek (south route)

Segment 1B also enters Vermont from the Lake Champlain Bridge, but turns southeast toward the Whitney Creek WMA. After following 1.25 miles of existing trail along Whitney Creek, this segment follows a farm road to Nortontown Road to utilize two bridges over a branch of Dead Creek. Crossing a small section of the Dead Creek WMA and utilizing a Vermont Department of Fish and Wildlife right-of-way, the segment crosses private field and forest landholdings before intersecting with the Segment 2 connector. Total length of this segment is 5.6 miles.

Segment 1B shares many attributes with Segment 1A: short road walks, access to historic sites and trail-friendly amenities, and excellent views of wetlands and characteristic of Addison County farm landscapes. Whitney Creek, in particular, is an excellent natural resource that is frequented by a variety of migratory and breeding bird species. This segment also passes the Whitford House bed-and-breakfast.

Unlike Segment 1A, however, Segment 1B does not feature the most significant and scenic portions of Dead Creek WMA; it also crosses significantly more private landholdings.

Segment 2: Dead Creek Connector

Segment 2 is a short connector that crosses conserved farmland in a general north-south direction east of Town House Road and west of a main branch of Dead Creek. Segment length is 0.9 miles.

Segment 3A: Dead Creek to Snake Mountain (north route)

Segment 3A begins at the easternmost Nortontown Road crossing of Dead Creek. After crossing a small parcel within Dead Creek WMA to the north, the segment crosses private farmland, some of which is conserved, before reaching VT Route 22A. This section of the segment is wet and might present trail construction and maintenance challenges.

After crossing Route 22A, the segment uses conserved forest land to reach Mountain Road, then crosses onto private forest land on the west slope of Snake Mountain. The segment turns south to follow the base of the cliffs and joins the existing main trail to the summit of Snake Mountain. Total segment length is 3.6 miles.

This segment is attractive because it brings users to within 1.5 miles of the village of Addison, the Post Office, and the Addison Four Corners Store. It also utilizes relatively few private landholdings, some of which are under conservation through the Vermont Land Trust. It also uses the network of pre-existing woods roads on the west slope of Snake Mountain, which may be periodically impacted by logging.

Most importantly, this segment provides a connection to the Snake Mountain trail system, one of the finest scenic and natural features in Vermont – westerly views of Addison farmland, Lake Champlain, and the Adirondacks are unparalleled. Snake Mountain rises over 1,000 feet from the surrounding Champlain Valley and was the site of the Grand View Hotel, constructed in 1870. The main trail to the summit still uses the carriage road to the hotel. The Snake Mountain WMA also hosts a variety of mammal species, breeding peregrine falcons, and a 9,500 year old bog near the summit.

Unfortunately the popularity of Snake Mountain has resulted in overuse and other management problems for the Vermont Department of Fish and Wildlife and The Nature Conservancy, which own the majority of the trails on the mountain.

Segment 3B: Dead Creek to Snake Mountain (south route)

Segment 3B begins with a major crossing of Dead Creek that, given the topography and flood prone nature of this reach, would require construction of a substantial bridge. After the crossing, the segment continues east across shrub and farm fields, crosses VT Route 22A, and follows or

parallels Wilmarth Road, a gravel road with little traffic, before reaching the Wilmarth trailhead at Snake Mountain. Following the existing trail, the segment passes through the Wilmarth Woods Preserve (owned by The Nature Conservancy) and joins Segment 3A near the summit of Snake Mountain (see Segment 3A for more information on Snake Mountain). Total segment length is 3.0 miles.

This segment, while scenic, presents a few extra difficulties beyond those in Segment 3A. The required bridge over Dead Creek is a logistical problem, requiring careful siting and private landowner consent. The use of the Wilmarth Trail is also not ideal given concerns about severe overuse.

Segment 4: Snake Mountain to Weybridge Valley

Leaving the summit of Snake Mountain, Segment 4 follows existing trail eastward and descends to the Snake Mountain access road in Weybridge. From the parking area, the segment runs south and east, using an existing bridge on Prunier Road to cross the Lemon Fair River. Turning east from the river, the segment continues along a series of farm roads and hedgerows to just west of the village of Weybridge Hill. Total segment length is 3.2 miles.

Segment 4 is particularly attractive and suitable, leading from Snake Mountain down into the low, wet, scenic valley of the Lemon Fair River, utilizing the Prunier Road bridge to avoid the challenge of crossing the flood-prone lowlands. After the river crossing, this segment enters prosperous dairy farm lands, which have mostly been conserved by the Vermont Land Trust and are either owned or leased by Monument Farms Dairy. Monument Farms is very supportive of the North Country NST concept and has been extremely helpful in designing a potential route through this region.



Monument Farms Creamery and the Weybridge Valley

This segment provides great bird-watching opportunities, from the cerulean warbler (a species of special concern in Vermont) on the east slope of Snake Mountain to wading birds in the Lemon Fair River and grassland species in the lowlands to the east.

Segment 5A: Weybridge Valley to Middlebury (north route)

Heading east from the village of Weybridge Hill, Segment 5A crosses the Monument Farms Dairy. Leaving the village and passing the Weybridge Congregational Church, the segment continues east, crossing pasture and forest lands, skirting south of Weybridge Caves State Natural Area. Continuing east, Segment 5A crosses small private landholdings and Morgan Horse Farm Road to enter the Otter Creek Gorge Preserve (owned by Middlebury Area Land Trust).

Using the existing North Gorge Trail, the segment turns south as it approaches Otter Creek and joins the Trail Around Middlebury just west of the Arnold Bridge at Beldens Falls. The North Gorge Trail is 1.1 miles long. Crossing the river, the trail swings south through another section of the Otter Creek Gorge Preserve and enters Wright Park, an important natural area owned by the town of Middlebury and managed by Middlebury Area Land Trust. The segment follows the Trail Around Middlebury through the northern section of the village of Middlebury before ascending Chipman Hill. After reaching the summit of Chipman Hill, the trail descends through mixed deciduous forest to a meadow, crosses Washington Street, and enters Means Woods. Continuing south through Means Woods, this segment ends at the parking area at the intersection of the Trail Around Middlebury and Seminary Street Extension. The distance along the Trail Around Middlebury from Beldens Falls to this parking area is 4.9 miles. The total length of Segment 5A is 9.1 miles.

Segment 5A represents a broad diversity of assets and utilizes a number of important and popular pre-existing trails and public lands. At its west end, the segment passes the Monument Farms Dairy, where visitors can purchase locally produced milk, cheese, and other dairy products. The village of Weybridge Hill is one of the region's most picturesque, with historic buildings and farms and excellent views back west across the valley to Snake Mountain. The Congregational Church provides public restroom facilities that are popular with cyclists.

The Otter Creek Gorge Preserve is among the wildest areas in the Middlebury area, with unique geological features and access to a rare undeveloped section of Otter Creek. It is also adjacent to the University of Vermont's Morgan Horse Farm, an architecturally and historically significant farm complex dedicated to the propagation and improvement of the Morgan Horse breed.

The Trail Around Middlebury is a popular 16-mile loop trail encircling the village and traversing the towns of Middlebury, Cornwall, and Weybridge. This segment includes both remote and in-town sections of the Trail Around Middlebury which are well used by trail runners, mountain bikers, and dog walkers.

Wright Park, like Otter Creek Gorge Preserve, provides access to diverse natural communities. Otters, beavers, and bobcats make the park their home, while migratory birds visit the shrubby southern section. At present, the Trail Around Middlebury (and Segment 5A) passes through the northern part of the village of Middlebury, which can provide most amenities required by passing

hikers. There is a range of lodging and dining options, several grocery stores for resupply, and two outdoor outfitters. The town also has a Post Office, hospital, and limited access to public transit. The village includes two National Register Historic Districts and the National Historic Landmark Emma Willard House.

Chipman Hill is a popular hiking destination for Middlebury residents because it is walk-able from the downtown and residential areas. It features a number of unmarked trails in addition to the Trail Around Middlebury and provides good views across the village to the Adirondacks to the west and the Green Mountains to the east.

Means Woods is a significant natural area, popular with local residents for its spring displays of wildflowers and mature forest.

Segment 5B: Weybridge Valley to Middlebury (south route)

Beginning at the same point as Segment 5A, Segment 5B turns south to follow hedgerows before turning east to cross Bittersweet Falls Road. Passing Bittersweet Falls, the segment uses existing trails to ascend through a hemlock forest and emerge along a large meadow to reach James Road. Crossing James Road the segment passes through mixed fields, forest, and scrub over privately owned parcels, one of which has been conserved by Middlebury Area Land Trust. The segment crosses VT Route 23 and joins the Trail Around Middlebury 1.9 miles east of Bittersweet Falls.

The segment follows the Trail Around Middlebury south and crosses Route 23 again, skirting farm fields before reaching the Middlebury College Organic Garden and VT Route 125. The Trail Around Middlebury crosses Route 125 and ascends through fields and forest to VT Route 30 near the Middlebury College Athletic Campus. Crossing Route 30, the segment circles the Ralph Myhre Golf Course and the College athletic fields to reach South Street near Porter Hospital. Segment 5B then crosses South Street and proceeds across the Boat House Bridge (footbridge) over Otter Creek before ending at Creek Road. Total segment length is 8.0 miles.

Segment 5B shares many of the positive characteristics of Segment 5A. It passes near Weybridge Hill and the Monument Farms Dairy. It also provides easy access to all that Middlebury has to offer, and unlike Segment 5A it mostly avoids road walking in town. The section of the Trail Around Middlebury around Middlebury College is especially popular with trail runners and is heavily used by students.

Perhaps the best attribute of Segment 5B is its inclusion of Bittersweet Falls, a very attractive and little known waterfall surrounded by interesting topography and mature forest communities.

Segment 6: Trail Around Middlebury Connector

Segment 6 is a short connector that follows the Trail Around Middlebury in a clockwise direction from the Means Woods/Battell Woods parking area on Seminary Street Extension through Battell Woods. Skirting a meadow, the trail crosses U.S. Route 7 and enters the Murdock Woods

Preserve. Segment 6 reaches Creek Road after passing the Middlebury Middle School and a small housing development. Segment 6 is 1.9 miles in length.

Segment 6 includes pleasant walking through attractive forests in Battell and Murdock Woods. The sections on paved streets are short and quiet for the most part, but the crossing of Route 7 is difficult and unpleasant.

Segment 7A: Middlebury to Long Trail (north route)

Segment 7A leads east from Battell Woods, passing behind a small farm before crossing Foote Street and entering a red pine forest owned by Middlebury College. Turning north to cross Quarry Road, the segment passes an apple orchard and continues north and east through the rolling fields of the Muddy Brook area before reaching Case Street (VT Route 116).

The segment continues east from Case Street along the Abbey Pond Trail, maintained by the U.S. Forest Service, and reaches Abbey Pond after approximately 1.8 miles. Leaving the Abbey Pond Trail, Segment 7A heads southeast and then northeast in the Frost Mountain region, utilizing existing winter recreation trails to reach the Lincoln-Ripton Road after 2.3 miles.

The segment then heads 3.0 miles nearly straight east along the Lincoln-Ripton town line to reach the Catamount Trail and Segment 8. The total length of Segment 7A is 10.5 miles.

Segment 7A has much to recommend it, traversing both typical Champlain Valley farmland and Green Mountain highland areas. Among its most attractive features are the rolling countryside of Muddy Brook and the farms and orchards east of Middlebury.

The Abbey Pond Trail is also a great asset. While steep, the trail follows a tumbling brook for much of its length, highlighting a series of waterfalls and cascades. At the summit of the first ridge of the Green Mountains, Abbey Pond itself is remote and beautiful, a haven for wildlife.

East of Abbey Pond, Frost Mountain features a fire tower affording 360° views of the towns of Ripton and Lincoln and the main ridge of the Green Mountains to the east. In general, though, Segment 7A is hindered by several miles of wet, difficult terrain between Abbey Pond and the trailheads leading up the main ridge of the Green Mountains to the Long Trail.

While Breadloaf Mountain, Silent Cliff, and the lifts at Middlebury College Snow Bowl feature vistas to the west, there are few highlights of the section of the Long Trail between Emily Proctor Shelter and Sucker Brook Shelter. Skylight Pond, however, is one of the premier sites on the Long Trail system—a high altitude pond ringed by spruce and frequented by moose and other wildlife. The U.S. Forest Service has expressed concerns about directing more foot traffic to this sensitive site.

Segment 7B: Middlebury to Long Trail (south route)

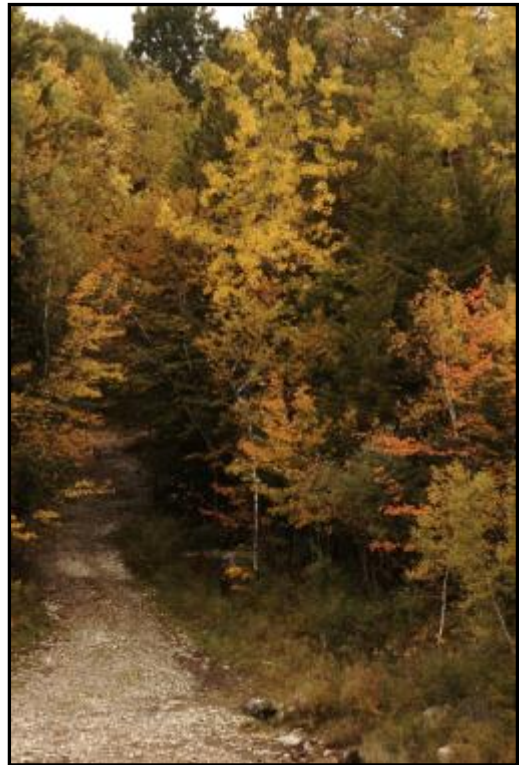
Segment 7B leads south from the village of Middlebury along Creek Road to an existing trail easement behind a small farm. Heading generally south-easterly over low, wet conserved farmlands and woodlots, the segment reaches Three-Mile Bridge Road and turns east, generally following the road to a major intersection with U.S. Route 7 at the west edge of the village of East Middlebury.

Crossing the Route 7 bridge over the Middlebury River, the segment turns east onto a short existing trail easement and follows the south bank of the Middlebury River along existing woodland trails for 1.9 miles before reaching VT Route 125 at a bridge over the Middlebury River that defines the east end of East Middlebury. Route 125 is designated as the Robert Frost Memorial Highway. Climbing a steep ridge just south of Route 125, the segment joins the Oak Ridge Trail 1.0 miles from the bridge over the Middlebury River.

The Oak Ridge Trail leads into the Green Mountain National Forest and the Moosalamoo National Recreation Area. This trail, designated for bicycles and hiking, ascends the first ridge of the Green Mountains heading generally southeasterly. After 8.0 miles the Oak Ridge Trail joins the Mt. Moosalamoo Trail just north of the summit of Mt. Moosalamoo. From this junction, the segment follows the Mt. Moosalamoo Trail 2.5 miles east to the Moosalamoo Campground.

East of the campground, Segment 7B crosses Forest Service Road 32, the main thoroughfare in the Moosalamoo National Recreation Area. Following the Catamount Trail/Horseshoe Trail east, the segment reaches Sugar Hill Reservoir, then circles the reservoir counter-clockwise, reaching the Sucker Brook trailhead approximately 3.5 miles southeast of the Forest Service Road 32 crossing.

The Sucker Brook Trail then ascends the main ridge of the Green Mountains for 1.0 miles to reach the Long Trail and Segment 8 at Sucker Brook Shelter. The total length of Segment 7B is 17.9 miles.



*Trail near Sugar Hill Reservoir,
Moosalamoo National Recreation Area*

Segment 7B is attractive both for its varied terrain and its easy access to the Moosalamoo National Recreation Area and its network of trails. While the section of the segment south of Middlebury village is low and wet, it does provide extensive exposure to Otter Creek and the Middlebury River and provides broad views of the Green Mountains to the east.

After crossing U.S. Route 7, the segment provides access to East Middlebury, a charming historic village that features the Waybury Inn. The Middlebury River and Gorge at East Middlebury is particularly dramatic as it flows west out of the mountains to meet the Champlain Valley.

As the segment enters the Moosalamoo National Recreation Area, it enters the woods for a more wild, remote experience than a hiker will find anywhere within the proposed trail corridor before reaching the Long Trail. Along with the trails it would likely traverse, the segment would bring the hiker within close range of such popular destinations as Lake Dunmore, Silver Lake, Rattlesnake Cliff, the Falls of Lana, Blueberry Hill Inn, the Blueberry Hill blueberry picking area, and the Spirit in Nature Paths.

Sugar Hill Reservoir is a particularly scenic asset on Segment 7B. While man-made, the reservoir is surrounded by forest and provides views of Worth Mountain and the main ridge of the Green Mountains. Sucker Brook Trail is also a particularly beautiful way to ascend to the Long Trail, crossing and then following the powerful Sucker Brook to Romance Gap.

Segment 7C: Middlebury to Long Trail (7A-7B combination route)

Segment 7C is a potential connection between Segment 7A and 7B that utilizes the western portions of 7A near Middlebury, including about 0.75 miles of the Abbey Pond Trail east of Vermont Highway 116 (Case Street), and then transitions to segment 7B, utilizing trails in the Moosalamoo Recreation Area, including the Oak Ridge, Moosalamoo, and Sucker Brook Trails, to reach the Long Trail. This Route Option offers several advantages over using just 7A or 7B:

- It avoids several miles of wet, difficult terrain on the eastern portion of 7A between Abbey Pond and the trailheads leading up the main ridge of the Green Mountains to the Long Trail.
- It eliminates directing more hikers to Skylight Pond, a high altitude pond ringed by spruce and frequented by moose and other wildlife. The U.S. Forest Service has expressed concerns about directing more foot traffic to this sensitive site.
- It avoids traversing long stretches of private land south and east of Middlebury.
- It reaches the Long Trail at the southernmost point within the corridor, which is highly preferred by the Green Mountain Club.

The 7C connector between 7A and 7B leaves the Abbey Pond Trail about 0.75 miles east of Case Street, turning south onto an old road on land mostly owned by the Green Mountain National Forest. It continues south for about 4 to 4.5 miles on this old road until it connects with the North Branch Road. It follows the North Branch Road south to its junction with Highway 125 east of the bridge over the Middlebury River. From there, the route climbs a steep ridge on the south side of the highway and joins the Oak Ridge Trail (following the remainder of Segment 7B).

Other possible routes in the same vicinity, providing a similar connection between Segments 7A and 7B, were explored by local residents during the summer of 2012.

If Route Option 7C was eventually developed as the route of the North Country NST between Middlebury and the Long Trail, hikers would still have the option of making a side trip to Abbey

Pond by continuing on that trail, and they could choose to cross the Highway 125 Bridge to visit the village of East Middlebury.

Segment 8: Long Trail South and Side Trails

Utilizing Segment 7A:

From the eastern terminus of Segment 7A, Segment 8 provides several opportunities for climbing to the Long Trail via side trails. The Catamount Trail is coincident with Forest Service Roads 54 and 59 in this area, which may be used to access the side trails. The northernmost access follows Forest Service Road 201 from its junction with Forest Service Road 54 to reach the Emily Proctor Trail. The Emily Proctor Trail climbs 3.5 miles to the Long Trail just north of Breadloaf Mountain at Emily Proctor Shelter.

Further south on Forest Service Road 59 is the Skylight Pond Trail, which is 2.6 miles long and reaches the Long Trail south of Breadloaf Mountain near Skyline Lodge.

The third side trail also departs from Forest Service Road 59. The Burnt Hill Trail climbs to a point between Kirby Peak and Burnt Hill 2.2 miles east of Forest Service Road 59.

From its junction with the Emily Proctor Trail, the Long Trail follows the ridge of Breadloaf Mountain, where there is a vista overlooking the Champlain Valley to the west. The Long Trail then turns south to reach Skylight Pond and Skyline Lodge. This area is particularly sensitive to overuse and is a maintenance concern for the Green Mountain Club and the U.S. Forest Service.

Passing along the ridge of Battell Mountain and Mt. Boyce, the Long Trail passes Boyce Shelter before reaching Silent Cliff, which overlooks the Middlebury College Snow Bowl and the Breadloaf area of Ripton. The trail crosses VT Route 125 at Middlebury Gap, traverses the Snow Bowl ski area, and passes Lake Pleiad before ascending Worth Mountain. From the trailhead at the Emily Proctor Trail to Sucker Brook Shelter, this section of Segment 8 is 17.9 miles.

Utilizing Segment 7B or 7C (or Segment 7A south of Sucker Brook Shelter):

South of Sucker Brook Shelter, the Long Trail ascends the eastern peak of Romance Mountain to follow a long summit ridge that includes Gillespie Peak, Cape Lookoff Mountain, and Mt. Horrid. Mt. Horrid features the “Great Cliff”, which towers over Brandon Gap and afford views of the Gap and the surrounding mountains. From Mt. Horrid, the trail drops over 1,000 feet to Brandon Gap to cross VT Route 73.

South of Brandon Gap, the trail skirts the summits of Goshen Mountain, Farr Peak, Bloodroot Mountain, and Mt. Carmel, passing both Sunrise Shelter and David Logan Shelter along the way. South of Mt. Carmel it follows a long ridge with several views to the west of the Chittenden Reservoir and beyond. Passing Rolston Rest Shelter and Tucker-Johnson Shelter, the Long Trail descends to Sherburne Pass and the Appalachian at Maine Junction. The distance from Sucker Brook Shelter to Maine Junction is 24.3 miles.

Appendix B: North Country Trail Standards

Below is taken from Chapter 4 of the National Park Service handbook, “The North Country National Scenic Trail: A Handbook for Design, Construction, and Maintenance” (1996):

The objective of trail standards is to ensure a consistent look without compromising local initiative, a high standard of quality without over-building, a basic level of safety without removing all risk, accessible portions without compromising the character of the trail, and environmental and resource protection. Standards were developed to meet these objectives without compromising the character of the trail or imposing undue hardship upon those who maintain the trail. Whenever it is possible to retain the foot- trail-through-the-woods character, but still allow a very determined, mobility-impaired individual to get through simply by increasing trail width by an inch or two, it should be done. There are case-by-case exceptions, but every effort should be made to conform to the trail standards when building or rebuilding trail.

The North Country NST passes through a variety of Recreation Opportunity Spectrum (ROS) classes. Therefore, the trail should not and will not look exactly the same from end to end. It is not appropriate to build the trail to urban standards in a semi-primitive setting, nor vice versa. For this reason all standards are based on the ROS setting. Consistency is achieved through signing, blaze color, and the fact that a segment occurring in a particular ROS setting (roaded natural, semi-primitive, etc.) will look similar to a segment in another area that is in the same ROS setting.

Figure 1 on page 33 summarizes the desired trail design standards. If a trail segment is significantly below these standards, it should be gradually improved. However, if no attempt is made to rectify the situation, it may be decertified or closed. Whenever a portion is being reconstructed or receiving heavy maintenance, attempts should be made to bring it up to standard. Although these guidelines do not prevent a particular trail segment from exceeding desired standards, it should not be assumed that doing so is always desirable. Routinely exceeding the standards will adversely impact the character of the trail and hiker experience.

Exceeding trail standards in selected locations may be appropriate, such as the trail segment in the Little Miami Scenic Trail (OH)—a converted rail-trail that accommodates multiple use and is designed as fully-accessible. (See Figure 1.)

TREAD WIDTH

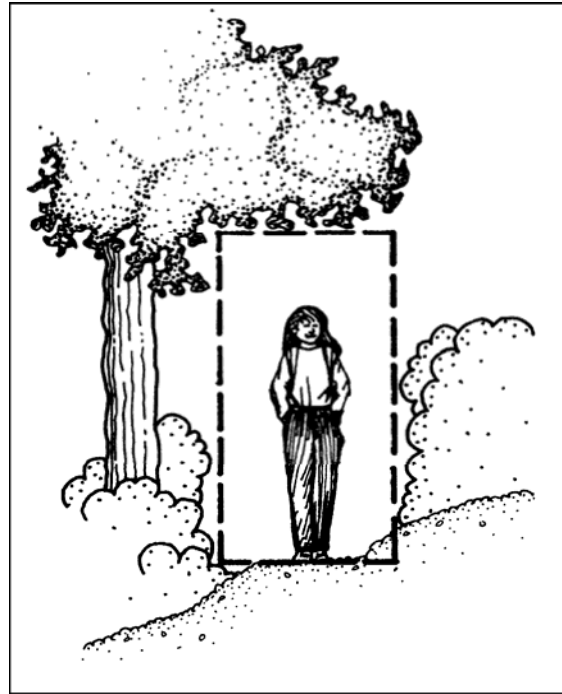
Tread width refers to the actual walking surface of the trail—whether native soil, grass, or surfaced. Initial tread should be constructed or smoothed to this standard. In less used areas the bare tread may gradually transform into a tread that needs to be mowed. This is acceptable as long as the basic underlying, smooth structure is still in place.

CLEARING WIDTH

Clearing width is the area kept free of brush, limbs, briars, tall grass, weeds, and other obstructions which would slap against the hiker or their pack, or soak them following a

rain or heavy dew. In heavily wooded areas, the clearing width is normally maintained simply by pruning limbs. Here, the area between the edge of the tread and the edge of the clearing is normally leaf litter or short herbaceous plants. While four feet is the average standard width, some variation is allowed and encouraged—it is visually appealing and often more sensitive to adjoining natural resources. In wooded areas there are occasions when it is desirable to narrow the clearing width in order to route the trail between two large, visually interesting trees. Generally, the trail winds between existing medium to large size trees, and is created by cutting only smaller trees and saplings. Narrowing the clearing width below the desired standard is done only for reasons of aesthetics—not merely to reduce trail construction/maintenance efforts. When the trail is crossing fields or prairies, it is suggested that as a minimum, the entire desired clearing width should be mowed. It

may be desirable to widen the mowing to create a variety of gentle clearing undulations. Some of these may highlight a particularly bright clump of wild flowers or a well- developed flowering shrub such as a hawthorn or dogwood.



In selected wooded areas (especially near roads) a common practice is to reduce the clearing width for a short distance (25 to 100 feet) to discourage unauthorized use by ATVs, horses, etc. (When this is done accessibility may be compromised).

Figure 1 (on page 33) shows the clearing width on each side of the tread. On a hiking segment in a rural area, the total clearing width would be the 24-inch tread plus 12 inches on each side for a total of 48 inches (the commonly accepted 4-foot clearing window).

CLEARING HEIGHT

The trail should be cleared to a height of 8 feet (10 feet within Wisconsin DNR properties). At this height, branches that could snag on a tall hiker's extended pack or attachments, such as a fishing rod, are removed. Branches that could restrict the trail when weighted with rain or snow are also removed. If the trail is in an area of deep snow and it receives winter use, clearing may have to be higher. Whatever the reason for a higher clearing height, an overhead canopy of branches should remain to slow the growth of grasses and shrubs that thrive in sunlight.

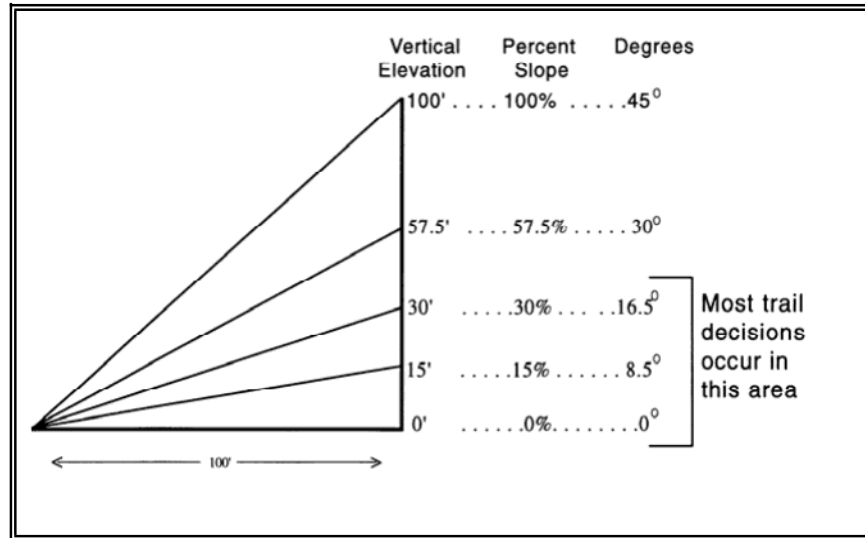
SLOPE (SUSTAINED)

The slope (grade) of the trail may be the key factor contributing to tread stability. Trail grades must be moderate to promote a stable, maintainable tread and a more pleasant hike. The trail should be designed to traverse a hilly area with gentle changes in grade. Grade and slope are interchangeable terms.

To avoid erosion, the slope should normally be less than 10%—even in steep terrain. Grades less than 7% in all soils are ideal, but in sandy soils are almost a necessity to prevent erosion. In flatter areas, trail should be located so that there is some grade to provide for proper drainage. A grade should undulate gently to provide natural drainage and to eliminate monotonous level stretches and long, steep grades that are tiring to trail users.

Slope can be calculated in degrees, but is normally calculated in percent by dividing the vertical distance by the horizontal distance and multiplying by 100 (10 feet of rise/100 feet of horizontal distance X 100 =

10%). An easier, more accurate way to determine slope is through the use of a tool, about the size of a compass, called a clinometer. By sighting through the clinometer, the percent of slope can be read.



SLOPE (MAXIMUM)

While reasonable efforts should be made to construct the trail using the sustained slope guidelines, there are occasions where doing so is impossible. Because of terrain obstructions, such as cliffs, it may be necessary to use a short, steep segment to regain access to more moderate slopes. In these instances, the maximum slope guidelines should be used and additional erosion control measures incorporated. Sections of trail exceeding the sustained grade standards should normally be less than 100 feet.

In some areas, it may be necessary to go up a very steep slope for a short distance. In these areas, steps may be necessary but should be considered as a last resort due to the barrier they impose on many people.

CROSS SLOPE

Cross slope is a consideration when constructing trail across the face of a hill (sidehill trail). Some degree of cross slope, or out slope, is desirable so that water moving down the face of the hill continues across the trail. A cupped trail or a trail that slopes back into the hill collects water and is undesirable. However, the cross slope should not exceed the percentages shown in Figure 1. Cross

slopes greater than those shown make walking on the trail uncomfortable and serve as an impediment to mobility- impaired individuals. A 5% cross slope on a 24-inch tread amounts to a drop of 1.2 inches.

OTHER STANDARDS FOR ACCESSIBLE TRAIL

These standards apply only when a trail segment is designed to be fully accessible. Figure 1 specifies the maximum distance between passing and rest areas. Each passing space should be 60" × 60". At intervals specified, rest areas are built adjacent to passing areas and may include a bench or other facilities.

TRAIL SURFACE

In most cases, the native material found during trail construction will be satisfactory for surfacing the trail. However, if the material consists of large amounts of topsoil or organic matter, it should be set aside for later use as a cover and planting surface for exposed sub-soil.

Figure 1 shows a range of surfaces that are acceptable in the various ROS settings. While several options are shown for rural/roaded natural areas, the strong preference is for native surfacing. The Accessible Surface Standards apply only when a trail segment is designed to be fully accessible. Wood chips should not be used to correct wetness problems. They only add more organic material to the site and compound the problem when they rot. Also, wood chips cannot be used on steeper slopes as they do not stay in place. They are acceptable on relatively level sections of trail to smooth an otherwise rough tread surface and to help retard weed infestation and wear of the natural surface.

**FIGURE 1. NORTH COUNTRY NATIONAL SCENIC TRAIL
TRAIL CONSTRUCTION DESIGN STANDARDS**

Standards (desired)	Recreation Opportunity Spectrum Class			
	Urban	Rural and Roaded Natural	Semi primitive	Primitive
<u>Tread Width</u> Hiking Segments Accessible Segments	48" 60"	24" 36"	18" 28"	*
<u>Clearing Width</u> (each side of tread))	24"	12" (WIDNR-24")	12"	*
<u>Clearing Height</u> (min.)	10'	8' (WIDNR-10')	8'	*
<u>Grade (max. sustained)</u> Hiking Segments Accessible Segments	10% 5%	10% 8%	15% 12%	*
<u>Grade (max.)</u> Hiking Segments Accessible Segments	15% for 100' 8% for 30'	20% for 100' 10% for 50'	30% for 100' 10% for 50'	*

<u>Cross Slope (max)</u>	3%	5%	8%	*
<u>Other Accessible Segment</u> <u>Standards</u> Passing Spot Int.- max Rest Area Interval-max	N/A 1200'	600' 1200'	1200' 1/2 mile	N/A
<u>Surfaces</u>	Asphalt. Concrete. Stabilized- aggregate. Screening(1). Wood Chip. Sod.	Native. Wood Chip(2). Stabilized- aggregate. Screening(1).	Native	Native
<u>Accessible Surfaces</u>	Asphalt. Concrete. Stabilized- aggregate.	Asphalt. Stabilized-aggregate.	Native. Stabilized- aggregate.	Native

*In Primitive ROS (wilderness), human impacts and changes to the scenery are meant to be less obtrusive—when entering a wilderness area, one accepts greater personal risk. Trails in primitive areas lay "light-on-the-land." Because of this, no hard standards have been established. Generally, the tread is more faint, the grade varies depending on the terrain, etc. However, it is still important to consider trail design standards which protect the environment. Because trails in wilderness areas may receive less frequent maintenance, designing a trail that requires little maintenance is of utmost importance.

- (1) Limestone screenings include the fines.
(2) Not in wet areas—adds to the problem.