

Town of Shelburne

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Open Space
and
Natural Resource Conservation Plan
2004

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Executive Summary

Shelburne's natural environment - its open meadows and scenic vistas, its woodlands and wildlife, its rivers, lakes and wetlands – is a major contributor to the deep satisfaction people feel about living in our community. Yet the very characteristics that drew us here, and continue to draw others, can at the same time be placed at risk by our land-use activities, and by poorly-planned development of remaining open land. Because of strong public support in Shelburne to protect the Town's diverse natural legacy, the Shelburne Selectboard has charged the Shelburne Natural Resources and Conservation Committee (SNRCC) with developing an Open Space Plan (OSP).

This Plan defines, inventories and suggests ways to manage the remaining unprotected open space in our Town, and recommends a process to effectively leverage the financial resources in the Town's Conservation Fund (CF), generously supported by a large majority of Shelburne voters. This Plan is intended to supplement the Town's Comprehensive Plan, and to provide guidance on managing the necessary and inevitable development of our remaining open space, now and in the future, in a responsible and environmentally-sensitive way.

Open space is defined in the Plan as areas of Shelburne's landscape that are essentially undeveloped, such as ridges, streams, woodlands, wetlands, shorelines and agricultural lands. Open space can be publicly or privately owned, and may or may not be legally protected. It can vary in size from large plots of contiguous mixed or uniform cover types, river "buffer" zones, or small patches of land that include sensitive or protected species.

The benefits of open space are numerous, and there is a growing recognition of its positive impacts on communities across the country. These benefits include: enhanced property values, protection of water quality, habitat conservation,

agricultural production, economic opportunity, a strong sense of community, and improvements to physical and psychological health. It also provides financial savings to the Town by reducing the need for additional infrastructure and services that new developments require.

Types of open space include Natural Areas, Working Landscapes, Passive Recreation Areas, and Viewscape Areas. Each of these can be further partitioned into sub-categories, and a rich set of data can be collected upon which evaluations of a given parcel can be made.

Shelburne's Open Space Plan has four major components:

A Vision – Shelburne residents believe that natural resources and open space make the Town a desirable place to live and should be conserved for future generations to enjoy and appreciate. At the same time, land conservation needs to occur in a community that continues to change and grow, but that remains faithful to the Town's rural, small-town, village-centric priorities. Those areas with high natural resource value should be subject to careful stewardship. Of particular importance are those lands which protect water quality, preserve wildlife habitat and travel corridors, foster agricultural activities, and provide scenic benefits.

An Inventory of Open Spaces – Key to an effective open space plan is an accurate inventory of open space land in Shelburne. This plan has assembled a broad array of landform characteristics by parcel, and applied a new land management tool called a geographic information system (GIS) to organize, analyze and present information about each. Maps were created by the SNRCC that depict critical natural resource types, and a system developed to identify and rank specific parcels with high overall natural resource values. Water bodies in Shelburne are also considered "open space" and include Lake Champlain, Shelburne Pond, the LaPlatte River, and Muddy, Monroe and McCabe's Brooks.

Significant wetlands, both forested and non-forested, occur around Shelburne Pond and along the various rivers, brooks and streams.

A Set of Conservation Priorities – Identification of parcels with high natural resource values can be a complex process. Different resources provide different benefits, and measuring and weighing these require careful consideration and judgment. The GIS tool is ideally suited to assisting in this task, allowing for differential weighting of each resource attribute, which can be modified as experience is gained, data quality improves, and community needs evolve. Parcels with the highest resource value, which typically include relatively large areas with more than one important resource, have been classified by the SNRCC as “Gems”. Parcels with the second-highest level of resource value are identified as having High Priority, while parcels with lesser rankings are identified as Medium, Low and None. According to one set of calculations developed using the system, 6900 acres (73% of the undeveloped land in town) were considered in the Gem category. Another 400 acres (4%) were rated as having a High resource value for conservation. Of the unprotected lands analyzed above, some 3400 acres (36)% of the undeveloped land in Town) were considered in the Gem category. Almost 200 (196) acres (2%) were rated as having a High Priority for conservation. Generally speaking, unprotected lands with highest resource value receive the highest priority for future conservation initiatives.

A Plan of Action – The SNRCC proposes a comprehensive open space conservation program for the Town using three complementary initiatives:

Proactive Conservation Planning

- Expanded resource mapping, and authorization to conduct regular updates to the Open Space Plan.
- Creation and maintenance of management plans for conserved land.
- Formalization of the process for use of the Town Conservation Fund.

Development Review & Associated Conservation Incentives

- Regulatory measures to protect natural resources.
- Tax incentives to encourage sound development practices that recognize the importance of our open space priorities.

Conservation Education

- Promotion of good stewardship and support for land conservation through education and outreach within the Town and neighboring communities.

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1.0 INTRODUCTION

Since enacting its charter in the mid-eighteenth century, the Town of Shelburne has experienced considerable changes in land use patterns. Once a sparsely populated rural farming community, today Shelburne is a rich mosaic of landscapes - from woodlands to residential neighborhoods, from agricultural lands to commercial properties.

1.1 PURPOSE

The primary purpose of this plan is to enhance the Town's ability to protect lands with high natural resource value. More specifically, the Plan aims to:

- guide future land development in a way that will realize the Town's long-term vision for conserving important natural resources;
- guide use of the Town's Conservation Fund;
- serve as a foundation document for the Town's Comprehensive Plan;
- establish a prioritization (ranking) system for use when evaluating properties in the Town for development and conservation;
- inform the public on open space and land conservation issues;
- and enhance public awareness about the benefits derived from—and threats posed to—Shelburne's Natural Resource base.

The challenge facing the Town today is to balance and maintain current, as well as future, land uses without severing historic links to the past or jeopardizing the quality, integrity, and character of the town. The very factors that have made Shelburne an attractive place to live could be lost if unplanned growth occurs. It is the intent of this document to guide town-wide planning efforts. To ensure that Shelburne develops in a pattern that best matches the ideals of its citizens, the Town of Shelburne updates its Comprehensive Plan at least once every five years, with the next major revision slated for completion in the summer or fall of 2004.

1.2 VISION STATEMENT

It is the community's vision that:

The natural resources and open spaces that make Shelburne a desirable place to live shall be conserved for future generations to enjoy and appreciate. This conservation shall occur in the context of a community that is also growing and changing.

The character of Shelburne will continue to be defined by the Town's rural, small town, village-centric atmosphere; its natural, recreational, and educational assets; and the more than 40 year tradition of citizen-directed growth.

Those areas with high natural resource value and that are important to Shelburne and the state, will be subject to careful stewardship. These areas include places deemed of local importance as well as those of regional or statewide significance. Particular importance will be placed on lands whose development adversely affect water quality, wildlife habitat, agricultural lands, and scenic areas.

The Town will protect and conserve its working farms, forestland, core habitat areas important to flora and fauna, and corridors that link these core areas. Because personal connections with nature are important to maintain Shelburne's heritage and sense of community, passive recreational opportunities that don't alter natural areas will exist. The Town will be a place of natural beauty and uninterrupted views.

1.3 ORGANIZATION OF THE PLAN

As part of town-wide planning efforts, the Natural Resources and Conservation Committee guided the development of a comprehensive and community-based Open Space Plan (see Appendix 1 for a description of this process). The Open Space Plan begins by defining open space and its benefits, as well as highlighting some of the natural treasures of the town. The plan concludes with

policy recommendations on how to best preserve these “gems” through institutional, regulatory and non-regulatory measures. It is hoped this Plan will serve both as an educational resource and a policy reference for the community.

It is not the purpose of this plan to be “the be all and end all.” This document represents a first step in what must be acknowledged is an evolving process. Just as with Town Comprehensive Plan, the plan will need to be regularly updated. Finally, as the scope of this plan is limited (i.e., it focuses on protection of open spaces with significant natural resource values as opposed to open space with other values), future plans may need to look more broadly at open space.

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2.0 DEFINITION OF OPEN SPACE

For the purposes of this Plan, open space is defined as an area of Shelburne's landscape essentially undeveloped, such as ridges, streams, woodlands, wetlands, shorelines, and agricultural lands. Open space lands typically have no buildings or other complex human-made structures in current service, except for active farms with barns and other agricultural structures. The lands may be in their natural state to serve important environmental and/or aesthetic functions, or they may be used for agriculture, forestry and/or passive recreation. Either way, they ensure the continued functioning of the natural infrastructure that is essential to sustaining Shelburne's outstanding quality of life.

2.1 Typology

Open space can be publicly or privately owned and may or may not be legally protected. It includes agricultural and forest land, undeveloped shorelines, scenic lands, nature parks and preserves. It also includes water bodies such as lakes and bays. Land defined as open space depends in part on its surroundings. In Shelburne, someone's backyard or a narrow corridor surrounded by developed areas is not considered open space, even though the same property might be considered as such in a larger city. However, size is not a limiting factor of open space. Whatever its size, ownership status, or landscape context, open space always serves to protect sensitive ecosystems, scenic landscapes, water resources, and other important features of the natural and human environments.

Finally, protection of open space may not always include public access. Indeed, public access might be incompatible with other open space uses such as wildlife habitat, fragile plant and animal communities, flood control, or water supply. Also, public access might be incompatible with an individual property owner's right to privacy.

2.2 Focus on Lands with Conservation Value

The definition of open space provided above suggests four key land types, which are detailed as follows:

Natural Areas Unique or irreplaceable features of the natural landscape, including (but not limited to) areas supportive of wildlife habitat, unusual plant species, geologic features, and wetlands.

Shelburne is rich in natural resources that benefit the community, the state and beyond. Core habitat areas provide living areas for diverse populations of native aquatic and terrestrial species, including rare fish and plants. Wetlands provide multiple functions, including wildlife habitat, flood protection, and natural filtration of harmful contaminants. Cliff areas provide scenic vistas and a snapshot of the geologic history of the region as well as unique wildlife habitat. Conservation areas such as Shelburne Pond, the Nature Conservancy lands and Shelburne Farms provide space for these resources and should be buffered against encroachment.

Working Landscapes Lands which directly contribute to the ecological and economic health of the region through active management for cultivation or harvest, or which is open and is used for purposes directly supporting public health, security, and well-being.

Working lands in Shelburne are those areas supporting farming (dairy, food and alternative products) and forest production activities. These properties contribute to the local economy, offer a sustainable source of food and wood products, and form a link to our Town's past. They also provide other benefits, such as wildlife habitat, scenic open space, and a buffer to sprawl development that can affect the quality of life in the Town.

Passive Recreation Areas Areas which promote the physical, social, and spiritual well-being of the Region's people by helping to meet their needs for recreation, community, and/or connection to the natural landscape.

Passive Recreation Areas offer places for Shelburne residents to gather, commune with nature, and enjoy physical activity, such as walking, hiking, or

snowshoeing, without significantly altering the natural environment. Important examples in Shelburne include Shelburne Falls, Lake Champlain, Shelburne Pond, the Shelburne Bay Park, LaPlatte Nature Park, and Ti Haul.

Viewscape Areas Areas that significantly contribute to the aesthetics, scenic integrity or overall character of the landscape.

The visual surroundings of any community are generally a key part of its sense of identity and heritage. Landscape viewing can be evaluated at different distance zones (e.g. foreground, middleground, background) or in terms of focal points (i.e. elements of view that tend to draw or capture the eye). Set within a broad valley on the edge of Lake Champlain, with rolling farmlands and woodlands, the Town has a rich diversity of visual resources. Viewscapes give our town its character, provide a sense of place and peace, and help connect residents to their environment.

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3.0 BENEFITS OF OPEN SPACE

The benefits of open space are both tangible and intangible. In addition to the largely intangible benefits of open space, there are many quantifiable reasons to preserve these areas. The following common examples of benefits that accrue from open spaces are presented for illustrative purposes.

- **Net gain for Town budget** – Maintenance of open space saves the Town money by reducing the need for local services, such as sewage treatment, schools, fire, police, and roads. While conservation easements can cause a reduction in tax revenues, in contrast, if the open space land were developed into residential properties, the tax revenue generated for the Town typically would be **less** than the cost of the additional services required by the new development – resulting in a net loss for the Town. A May 1999 study of the towns of Ferrisburgh, Highgate, Shoreham and Swanton found that land conservation decreased taxes for three of the four communities and in Shoreham the owner of a \$100,000 property would pay additional \$13.79 in taxes per year.
- **Enhanced property values** – Property values within a community tend to remain steady or increase where communities place a high value on preserving their environmental and scenic resources.
- **Protection of water quality** – Maintenance of open space, such as forests and fields, protect surface and ground water resources by acting as a natural filter for removing chemicals, debris, and other pollutants before they enter our water system, reducing the need for expensive filtration systems. Shelburne relies on Shelburne Bay and Lake Champlain for its drinking water. Water resources located in Shelburne, including Shelburne Pond, Muddy Brook, the LaPlatte River, and the McCabe Brook, all affect these watersheds and thus the quality of our water for drinking, farming and recreation.
- **Habitat Conservation** -- Open spaces often provide the critical habitat necessary to support rare, endangered and threatened species. These habitats can include intact ecosystems or corridors that allow for movement

patterns. As natural open space is preserved, so will species richness, habitat diversity, and the health of all species will be proportionally maintained. The protection of these areas of biodiversity is a legacy passed from one generation to the next.

- **Agricultural production** -- Working farms (including dairy, corn, apple, wine, and other commodities) enhance the economic vitality of the local community. They contribute to the local economy by providing income for farmers and creating demand for products and services. They not only offer residents the opportunity to eat locally grown food but, by producing an enticing product, help “brand” Shelburne. This “brand” or recognition creates a market for other goods and services produced in the community and also entices people to want to visit or live here.
- **Vitality of farming lifestyle** –As development and economic changes cause a decline in the number of working farms, the preservation of these lands becomes a more important priority. Creating incentives to maintain these lands as Open Space creates an economic safety net.
- **Economic Opportunities** – Open land, pastoral landscapes, scenic vistas and the availability of lands for passive recreation are important to the Town’s quality of life and sense of community, making them an important factor in attracting new residents and economic investment. Visitors from in and out of state come to Shelburne to enjoy our historic sites and picturesque country site.
- **Physical benefit from passive recreational opportunities** – People use open space for a variety of physical activities that do not require transformation of the landscape, such as hiking, biking or canoeing.
- **Psychological benefits of tranquility and stress reduction** -- Nature is an effective stress reducer because it provides a kind of "cognitive quiet," reducing physiological arousal and preventing "information overload". Studies show that direct or vicarious experience with natural areas reduces stress, and anxiety. Even the passive viewing of natural environments has both physiological and psychological benefits. While the quantification of the benefits for open space may be elusive, most people can recount an

experience where time spent in a natural space created a feeling of peace or revitalization.

- **Community cohesion** – The natural and historic landmarks of the Town are a common heritage. They serve as a common ground, acting as a social center and encouraging community cohesion.
- **Education** -- Forests, fields, marshes and other natural areas offer unique opportunities for educational events. These experiences may involve direct interaction with the natural environment or simply serve as the setting for these educational programs. Providing this type of access helps build the understanding and respect that inspires future generations to conserve these resources.

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4.0 INVENTORY OF NATURAL RESOURCES AND THE HUMAN ENVIRONMENT

Open space planning most often begins with an appraisal of open space resources. As noted in Section 2.0 above, open space resources in Shelburne are a component of the natural and human environments. Thus, an important part of the development of this Plan was the creation of natural resource and human environment inventories.

In Shelburne, no comprehensive, Town-wide natural resource inventory has been conducted, but various maps and other data sources have been compiled over the years to describe natural features as well as key elements of the human environment. Field work by individual citizens and organizations like the Shelburne Trackers is another vital element of inventories, helping to identify features of local importance that might be overlooked at other scales. Such efforts have made important contributions to maps for wildlife habitat, viewscales, and other features.

The following paragraphs describe the resources, their functions, where and to what extent they exist in Shelburne. This information is used as the basis for the policy recommendations in section 7.

4.1 *Natural Resources*

A natural resources inventory is a comprehensive summary of an area's physical and biological components and the landscapes that they form. Inventories vary in depth and scope, but they usually catalogue and map the plant and animals species that inhabit a locale and the geological and topographical features that determine the form and pattern of the land. In other words, an inventory describes the features that make a place unique.

Inventories are important at many scales, from the local to the state and national levels, because they help inform the planning and decision-making processes for political, cultural, and scientific institutions. When needs are many and funds limited, conservation initiatives often focus on those segments of the landscape that are critical to ecosystem health and function, such as intact wetlands,

hydrological features with high water quality, and animal corridors. However, rare and exemplary features such as endangered plants and unique natural communities may occur elsewhere on the landscape, meaning that other conservation efforts may be needed to protect these resources. A thorough natural resources inventory is thus a vital prerequisite to identifying and prioritizing conservation goals and developing the financial and political capital on which they depend.

4.1.1 Water Bodies

Water bodies are lakes, ponds, rivers, streams and other tributaries. In Shelburne water quality is an especially important issue because these water bodies eventually drain into Lake Champlain. The Town, and much of the county draws its drinking water from Shelburne Bay.

The benefits provided by water resources are quite diverse. Historically, rivers and streams have served as power sources and routes of transportation. Other values commonly associated with rivers and streams and their corridors include recreation and wildlife habitat. Within limits, rivers and streams can also "clean" surface waters by adding oxygen. Finally, rivers and streams can also help recharge certain types of groundwater aquifers.

Clearly, among the most prominent physical features in Town are its major surface water bodies (Lake Champlain, Shelburne Pond, the LaPlatte River, Monroe Brook, Muddy Brook and McCabe's Brook). These are all shown on the Hydrologic Features Map (Map 1). The Town also contains approximately eighteen miles of Lake Champlain shoreline, much of it undeveloped. The shore along the main expanse of Lake Champlain is largely rocky with clear water while the more sheltered length of Shelburne Bay is silty with high turbidity, especially in spring. As will be discussed elsewhere, the views of and over these shorelines add considerably to the Town's visual richness.

Shelburne Pond is contained entirely within the Town and drains north to the Winooski River. The Pond covers 450 acres and is noted both for its views, unique and fragile plant communities and wildlife habitat, and for its warm water fishery. In addition, some important marshes line its banks. The Pond's

recreational purposes include boating, birdwatching, and hiking. Educationally, the pond is used by the area schools and colleges.

Muddy Brook, located at the northeast corner of Shelburne Pond, runs north into the Winooski River. Only the headwaters of this brook are located in Shelburne. The majority of this brook is located in South Burlington and Willston.

The LaPlatte River, which originates in Hinesburg, flows through Charlotte extending 9.3 miles from the Charlotte town line to its discharge point at Shelburne Bay. This river has a total drainage area of 54 square miles and includes a number of animal corridors, archeological, recreational, ecological and other unique areas along its banks. McCabes Brook discharges into the LaPlatte River just before the LaPlatte enters Shelburne Bay. McCabes Brook is just over 5 miles long and drains an area of approximately five square miles.

Bisecting the Town, the LaPlatte River provides an important corridor for wildlife movement, offers opportunities for a variety of recreation, is rich in ecological diversity and is a visual focal point. The LaPlatte River Greenway Study and Proposed Plan, (Mattei, 1990) established the boundaries of the greenway using a method which considered ecological, recreational and land use aspects of the area surrounding the LaPlatte River. The plan proposes a boundary for the greenway which should be left as undisturbed as possible to maintain the integrity of the river corridor. Included in the study is a map showing this area and identifies the following features: wetlands; lowland meadows; upland fields; transitional woods, mature forests; and floodplain forests. In addition, the Plan depicts existing and proposed trails, access points, rare plant areas, a cave and several parks. Much of the land involved is owned by the Town or The Nature Conservancy and managed as a conservation area.

Monroe Brook drains an area of roughly six square miles and has a length of 6.8 miles, most of which is located in Shelburne. It discharges into Shelburne Bay slightly north of Bay Road.

4.1.2 Wetlands

Wetlands are a vital part of Vermont's ecosystem and perhaps the most biologically productive areas of the state. Wetlands are land areas that are saturated with water at least part of the year. Although precise definitions vary, wetlands are normally identifiable by vegetation, soil type, and/or frequency of ponding. Wetlands include marshes, swamps, and bogs. In addition to providing important wildlife habitat, values (or functions) of wetlands include storing stormwater, purifying surface and groundwater supplies, recharging aquifers, controlling erosion, providing areas for recreation, and serving as education and research areas. It is important to note that loss of wetland storage capacity will not only adversely affect stream behavior but will also increase floods and reduce stream flow during critical low flow periods.

Wetlands are also important for maintenance of water quality and wildlife. They support plants that can help purify water by taking up nutrients and incorporating them into plant materials while releasing oxygen. Migratory birds use wetlands in the area as stops along the Atlantic Flyway. Wetlands also play critical roles in the reproductive cycle of many threatened species.

Wetlands are classified into three categories: Class One, Class Two and Class Three. The state wetland rules contain a list of activities that are allowed within Class One and Two Wetlands and their adjacent buffer zones. All activities not specifically listed are considered conditional uses and require a Conditional Use Determination (CUD) from the state Wetlands Office. The state can issue CUDs only when it is determined that the activity will not adversely impact the protected functions of the wetlands. Wetlands that are not identified on the National Wetlands Inventory Maps and wetlands that have been determined by the Water Resources Board to not provide functions at a significant level are considered Class Three wetlands. (See Map 1.)

Significant wetlands, both forested and non-forested, occur around Shelburne Pond and along the La Platte River, McCabes Brook, and other streams. The most exemplary wetlands area in Shelburne is the LaPlatte River Marsh area owned by The Nature Conservancy (TNC). All of the TNC land is under a conservation easement. The Town of Shelburne owns a parcel adjacent to the

TNC land near Route 7. This property does not currently have a conservation easement on it.

4.1.3 Wildlife Habitats

All wild animals, whether game (i.e., animals legally hunted for food, pelts, or sport) or non-game species, require habitat for nesting, feeding, and cover. Multiple habitat types are often needed to fulfill these requirements for individual species, and the arrangement and spacing of key habitats on the landscape may also be important (e.g., some species may prefer feeding areas adjacent to nesting sites). Wildlife habitats also have a temporal quality; some types may be essential only during certain periods of the year. Shelburne contains a large diversity of habitats, which supports populations of mammals, birds, amphibians, reptiles, and invertebrates. Exemplary features include deeryards, where deer find food and cover in winter, bobcat denning sites, migratory stopover areas for waterfowl, wetlands and vernal pools where amphibians breed, fields where grassland birds nest, and waterbodies supporting fish and other aquatic species. At the landscape level, essential habitats include forested tracts capable of supporting large mammals and wildlife corridors such as streams and windrows that help connect spatially-disjunct habitat areas.

Many habitats essential to animals occur in or near wetlands or open water, emphasizing the ecological importance of these landscape features. For example, several wildlife corridors in Shelburne run along streams and adjacent wetlands; these features permit movement of bobcat and other species that require large areas for foraging. Similarly, deeryards are often located in lowland areas with a coniferous tree canopy, such as cedar swamps. See Map 2. Note that the bobcat corridors and sighting locations depicted in Map 3 are based on the best available information (Shelburne Trackers), but other areas of Town may also provide essential habitat for bobcat, deer, and other species with similar life histories. Also note that many important habitat features in Shelburne have not been comprehensively mapped, meaning that they cannot be adequately summarized in this plan.

The benefits provided by wildlife habitats are numerous. In addition to playing an essential role in the local and regional ecology, they contribute to the economic

vitality of a community by attracting travelers, recreation seekers, and wildlife watchers who purchase goods and services. They also add to the community's character by influencing the "sense of place".

4.1.4 Non-Game and Natural Heritage Program Sites

Vermont's Non-Game and Natural Heritage Program identifies and catalogues many important biological and physical features, including animals and plants considered endangered, threatened, or rare. Endangered and threatened animals and plants are species protected by the Vermont Endangered Species Law (10 V.S.A. Chap. 123) and, in some instances, the Federal Endangered Species Act (P.L. 93-205). The term "rare and uncommon" applies to some but not all of the animal and plant species designated endangered or threatened. Animals and plants considered rare have very particular habitat requirements, are at the edges of their ranges, are vulnerable to disturbance or collection, or have difficulty reproducing for unknown reasons. Species considered uncommon are found in relatively low numbers in Vermont but may be abundant elsewhere.

Map 2 shows the approximate location of rare, threatened, or endangered plants and animals in Shelburne, as identified by the Non-Game and Natural Heritage Program. Many of these sites are located near water bodies or in association with unusual geologic formations. Note that all sites, whether representing rare plants or individual locations where animals have been observed in the past, are depicted by individual points; these points are highly approximate and cannot be used to identify specific locations.

The Non-Game and Natural Heritage Program also maps natural communities, and several notable examples are shown in Map 2. A natural community is an interacting assemblage of organisms, their physical environment, and the natural processes that affect them (Thompson and Sorenson 2000). In other words, it is a characteristic set of plants and animals, occupying a specific area of the landscape, whose habitat is created and modified by the interaction of topography, soils, precipitation, and natural disturbances such as wildfire or high winds. For example, a Silver Maple-Sensitive Fern Riverine Floodplain Forest is a natural community that occurs adjacent to large rivers and is flooded annually, with alluvial silt loam soils and little or no surface organic layer. Green ash, swamp white oak, and American elm occasionally join silver maples in the tree

canopy, but shrubs are usually sparse. Various animals use these floodplains for breeding, foraging, or cover, including birds (e.g., yellow warbler, eastern wood pewee, northern oriole), mammals (e.g., river, mink, beaver), and amphibians (e.g., wood frog, spring peeper, and spotted salamander). An example of this natural community in Shelburne is the LaPlatte River Marsh. Other examples include: Upland Forests and Woodlands (such as the Northern Hardwood Forest Formation and the Oak-Pine-Northern Hardwood Forest Formation); Open Upland Communities; and Open and Shrub Wetland communities (such as Peatlands, Marshes and Sedge Meadows, Wet Shores, Shrub Swamps).

As with rare plants and animals, note that natural communities are depicted as individual points in Map 2. In reality, however, natural communities are landscape elements that cannot be meaningfully simplified to point locations.

4.1.5 Biological Natural Areas

Although much of the data collected by the state is available as point locations, in the early 1990s the Vermont Non-Game and Natural Heritage Program mapped a set of exemplary natural areas in Shelburne as part of an inventory of important sites in Chittenden County (Engstrom 1991). The Natural Heritage Program used the term “Biological Natural Area” to describe these sites, but it generally focused on natural communities as the term is now generally understood: areas with specific landscape features, physical processes, and assemblages of plants and animals. However, the Natural Heritage Program also emphasized the occurrence of rare, threatened, or endangered species when identifying important sites. While the identified areas contain exceptional examples of uncommon natural communities in the Champlain Valley and provide a convenient starting point for assessing conservation priorities, it is essential to note that these sites are not the only locations in Shelburne that contain unique physical and biological features. Other important sites, and other natural communities, occur in Town and should receive consideration in conservation-planning efforts.

As shown in Map 2, the identified sites include Queneska Island, Allen Hill, LaPlatte River Ledges, the LaPlatte River Marsh, Hubbard Woods, Shelburne Pond, and Southeast Hill Swamp. Queneska Island is significant for its shoreline

composed of jagged slate outcrops, as well as other features. Allen Hill, on the east side of Shelburne Point, features two distinctive forest types. The LaPlatte River Ledges contains examples of both floodplain forest and associated wetlands, and dry oak-hickory-hophornbeam forest, while the LaPlatte River Marsh is an extensive wetland complex. Hubbard Woods contains an exceptional example of a limestone flora typical of these rocky carbonate ridges. Shelburne Pond is a large, highly alkaline pond surrounded by a variety of large wetlands, including peatlands. Finally, Southeast Hill Swamp is an excellent example of a red maple-black ash swamp.

4.1.6 Agricultural Soils

The soils in Shelburne result from major geologic forces which formed the Champlain Valley. This includes both the formation and uplifting of bedrock and the deposition of sedimentary matter by glaciers and rivers. In the western part of Town, along the lake shore, soils are characterized as loamy soils formed as glacial till deposited on bedrock in the form of ridges and knolls. A similar formation can be found just east of Shelburne Pond. With the exception of muck and peat deposits around the Pond, most of the land between the loamy glacial till deposits are characterized as silty, clayey soils deposited in old lake plains.

Soils characteristics are important, in that they help determine agricultural productivity as well as suitability for on-site septic systems. The Primary Agricultural Soils Map (Map 4), maps the soils in Shelburne according to agricultural productivity. Since the loamy soils and the clayey soils tend to be very productive, much of the land in Shelburne is shown in the high value groups, a finding consistent with the historical success of farming in the area. "Primary agricultural soils", which include both prime soils and those of statewide importance as shown on Map 4, are defined in Act 250 as those soils which have a potential of growing food and forage crops, are sufficiently well drained to allow for sowing and harvesting with mechanized equipment, are well supplied with plant nutrients or highly responsive to the use of fertilizer and have few limitations for cultivation or limitations which may be easily overcome. Within this general category, prime farmland soils are those soils that have the best combination of physical and chemical characteristics for producing food, feed, forage and fiber crops and are also available for these uses. "Statewide" important soils, while

having good potential for growing crops, have limitations that restrict the choice of crops. These limitations result from such factors as excess slope and erosion hazards, excess wetness or slow permeability, flooding hazards, shallow depths (less than 20 inches) to bedrock, hardpan or other layers that limit the rooting zone and available water capacity, and/or moderately low available water capacity.

4.1.7 Important Geological Features

Landforms and soils are major determinants of the biology (wildlife) of an area. These factors are the province of geological science. The bedrock of Shelburne (Map 5) originated as layered sediments in an ancient sea about 500 million years ago. These sediments were compacted by overlying material and turned to stone. Tectonic forces further compressed these layers, folded and fractured them, and pushed layers over one another (e.g., the Champlain Thrust along the eastern shore of the Shelburne Point). Erosion by water and glaciers sculpted the landscape and produced soils.

Surface exposures of the bedrock occur throughout Shelburne as cliffs and outcroppings. Cliffs or very steep embankments occur at numerous locations: the Lake Champlain shore line; Allen Hill (part of the Champlain Thrust); along the railroad track north of the river to Bay Road; east of the railroad south of Bostwick Road; east of the river in the village; east of Shelburne Pond; and west of Spear Street from the mobile home park north to Shelburne Heights. Other rocky outcrops of lesser gradient are numerous. These areas provide habitat for various plants and animals.

The limestone quarry in eastern Shelburne (originally a source of marble) is the only operating economic geology resource in Town.

Surficial geology is depicted in Map 6.

4.1.8 Threats and Risks to Natural Resources

Shelburne is located in a region “where people continue to benefit from relatively healthy natural communities. However, the effects of three centuries of European settlement have had severe adverse consequences on local ecosystems.” For example, the US Fish and Wildlife Service (FWS) reports that, according to

statewide estimates, “over 35% of Vermont's wetlands have been lost and that 1200 river miles do not fully support designated uses or are not in compliance with water quality standards.”

According to the FWS,

Agricultural, transportation and residential development continue to adversely affect Federal trust fish and wildlife resources dependent on good water quality and available habitat. Of particular note, in the Lake Champlain Basin, phosphorus loading to lake has increased four-fold over the original pre-development levels. Current threats include excessive bank erosion and siltation, loss of natural communities, incremental loss of wetlands, and excessive nutrient inputs, high summer water temperatures, and low oxygen conditions in some river systems.

In addition, relatively recent introductions of invasive plants, e.g. purple loosestrife, water chestnut, have caused significant impairment to wetlands and other natural communities.

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Wetlands

According to the Environmental Protection Agency (EPA), wetlands are threatened by a combination of human activity and natural events. Natural events affecting wetlands include erosion, droughts, hurricanes, and overgrazing by wildlife. Human actions affecting wetlands include urban and suburban development, agriculture, and mining, as described below:

Urban & suburban development -- filling and dredging wetlands for houses, commercial buildings, ports, highways, airports, waste disposal sites, and other construction projects. Paving large areas with asphalt and concrete increases the rate and amount of surface runoff which increases the likelihood of flooding. Development can also cause fragmentation of large wetland systems. For example, road crossings disrupt the continuity of a system and adversely impact wildlife. Numerous, small impacts to wetlands within a watershed can add up to a significant cumulative loss.

Agricultural activities -- ditching, draining, and clearing wetlands for farming.

Pond and lake construction -- diking, excavating, and flooding wetlands for water supply, flood protection, recreation, and other purposes.

Mining -- for peat, coal, sand, gravel, and other products.

Even where wetlands are not destroyed, they can significantly altered. According to the EPA,

Pollution from pesticides, heavy metals, sediments, domestic sewage, and fertilizers discharged from a variety of point sources (e.g., direct discharges from industrial complexes) or nonpoint sources (e.g., runoff carrying road salt from highways) degrade the quality of wetland waters.

And, although there are ways to remove pollutants from water, “they are generally complicated and expensive to implement.”

Water Resources

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Degradation caused by human activities also affects lakes, rivers, and streams. According to the Vermont Agency of Natural Resources (ANR),

The greatest threats to aquatic habitats in Vermont are the human activities that pollute the surface run-off from lawns, farm fields, streets, and parking lots. In addition, aquatic habitats are threatened by excess sediment, shoreline development, dams, fluctuations in water levels, changes to river channels, air pollution, and non-native species.

Phosphorus carried by runoff is one of the biggest threats to Vermont's lakes and ponds, the ANR notes. Excess phosphorous can lead to algae blooms, which in turn can reduce oxygen levels and kill aquatic life. Other chemical also pose threats to the environment. According to the Agency,

Toxic pollutants also have found their way into aquatic life, through both run-off and air pollution. Elevated levels of mercury have been detected in

almost every fish tested from a variety of water bodies in Vermont. Elevated levels of polychlorinated biphenyls (PCBs) and other toxic pollutants come from fossil fuel combustion, especially coal power plants in other states, and industrial machinery and equipment.

The design and maintenance of municipal and individual transportation infrastructure (roads, driveways, parking areas, ditches, etc.) can have a significant impact on the amount of sediment generated and transported to our waterways. As noted by the Agency, “Every road or driveway can become a conduit for rainwater or snowmelt, eroding the road material and introducing it to nearby streams or lakes.” In addition, acid rain and snow cause lakes and rivers to acidify, killing fish, clams, snails, and other life.

Unfortunately, the health of our water resources is also threatened by the increasing number of invasive species locating in the area. Currently, high priority species include water chestnuts, zebra mussels, purple loosestrife, and alewife.

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Land Resources

It is the position of the SNRCC that the most serious risk to our wildlife habitat is widely dispersed human activities. The habitats of both common and rare species are compromised by humans, but rare species are especially at risk. Statewide, human activities and other causes have placed 187 species on the Vermont’s endangered and threatened list, including 34 animals and 153 plants. Eight more species currently are being considered for the endangered or threatened list, and another 586 animals and plants are considered rare or uncommon in Vermont.

Development in sensitive areas also threatens species requiring highly specific habitats. For example, deer need specific wintering areas, bears need special feeding areas in spring and fall, and great blue herons, loons, and owl require certain nesting habitats. Furthermore, natural communities that include rare species are threatened by current human activities.

Finally, as noted in a separate report published by the Vermont Agency of Natural Resources,

A picture of Vermont taken today from a satellite would show a heavily forested state, with the greatest concentration of trees along the mountain ranges running north and south. Aside from the Champlain Valley and the flat ribbons of land following the state's major rivers, the heavy forest cover is only broken by occasional farm fields and villages nestled in the valleys.

The report continues,

A similar image from 1948, if it were available, would reveal noticeably less forest cover across the state. The range and ridge concentrations would still be easy to see, but the areas between would show much less forest cover.

Although the amount of forested land has increased in recent decades, the types of trees present have decreased in number, which makes them vulnerable to attacks by pests. "As our forests contain fewer species, they become susceptible to disease and menacing pests such as thrips, forest tent caterpillars, and the Asian longhorned beetle."

Conclusion

While growth is needed to keep Shelburne a vital, thriving community, that growth should be carefully directed and monitored to reduce the impact on the Town's natural resources. In particular, attention should be given to activities that affect water quality and wildlife habitat. These activities include, but are not limited to:

- Buffer zones around wetlands, streams, rivers and lake front
- Lawn care practices
- Road design, construction and maintenance
- Building envelopes
- Waste disposal systems
- Run-off management systems

- Zoning Designations
- Agricultural Practices

4.2 Human Environment

An essential complement to the natural resources inventory is an inventory of the human environment. This is because the location and extent of developed features on the landscape can affect the health and long-term viability of some natural resources. The distribution of existing conserved lands is likewise an important consideration, since it is vital to know which lands have not already been conserved but could, under appropriate circumstances, add significant resource values to the current network of protected lands.

As part of the inventory of the human environment it is also important to identify features of the landscape that have high cultural/economic and aesthetic value, such as farmland and scenic viewsapes. These human-based values contribute strongly to a sense of place and often rank highly in citizen concern for open-space protection. The following paragraphs present information about some of these features as they are found in Shelburne.

4.2.1 Land Ownership Patterns

Highways provide physical access to land, making it more attractive to development, but also provide visual access to natural and human landscapes providing significant aesthetic benefits. Shelburne is bisected by many developed roadways, most of which are paved. The most heavily traveled road is Route 7. Falls Road, Irish Hill Road, Webster Road, Spear Street, and Dorset Street are also primary thoroughfares. The Major Highways of Shelburne Map (Map 7) shows the location of these important elements of the human environment.

Road patterns provide important information regarding development and conservation in a community. However, additional details about these aspects of the human environment may be found by examining changes in parcel boundaries. Historic and current land ownership patterns in Shelburne are illustrated in Map 8. This map compares and contrasts parcel boundary lines from 1962 and 2002. In outline form, this map shows the cumulative effect of more than 200 years of landscape change in Shelburne.

Based on a review of these maps, it is clear that what was once a largely agricultural Town, with a relatively small number of large parcels, has been subdivided to accommodate residential and commercial growth. The most extensive subdivisions, and hence the smallest, most densely-packed parcels, occur in the historic Town center and elsewhere along the Route 7 corridor. With the decline of farming, however, former agricultural fields have been subdivided in other parts of Town, and the Town's 5-acre zoning requirement has contributed to a pattern of landscape fragmentation in which single homes occur on larger parcels. Nonetheless, various large parcels still exist, especially along Lake Champlain, but also in areas encompassing the Town's few remaining active farms or already conserved lands.

4.2.2 Uses of Land

Shelburne's development patterns become even more apparent when the land use activities taking place on individual parcels are mapped. Data regarding such activities has been compiled by the Chittenden County Regional Planning Commission and utilized as part of this planning effort. As shown in Map 9, residential properties dominate the center of Shelburne, roughly between Route 7 and Dorset Street, while the western and eastern edges of Town contain a higher proportion of agriculture and lands considered natural resources.

This pattern is further confirmed by the location of houses in Shelburne, which have been mapped as part of the state's E911 program. As shown in Map 10, the village center and northern end of the Route 7 corridor have the highest concentration of structures. However, Spear Street, Dorset Street, and their adjacent areas also have numerous house sites.

The Town of Shelburne has experienced a high level of growth in recent years. From 1960 until 2000, population density almost quadrupled, from about 75 people per square mile to 286 people per square mile. This trend will likely continue, given that subdivisions approved by the Planning Commission in recent years will, according to one estimate, result in the construction of a minimum of 23 houses per year from 2003-2010.

Indeed, without changes to Shelburne's land use regulations, the Chittenden County Regional Planning Commission has estimated that close to 1,800 additional housing units could be developed in the Town. In the face of this development pressure, the Town must plan its Open Space needs in a strategic manner in order to ensure balance between development and conservation that meets the vision of the Town's citizens.

4.2.3 Existing Open Space Lands

As shown in Map 11—which depicts the location of open space lands and their juxtaposition to residential areas and other use types—previously-identified open space is distributed throughout Shelburne. It is important to note, however, that the open spaces depicted on this map are not homogenous; lands shown are maintained for a variety of different reasons and have varying levels of legal protection.

Map 11 assigns open spaces to one of six categories:

- **Private Conservation Lands;**
- **Conservation Easement Lands;**
- **Association Lands;**
- **Town, School, and State Lands;**
- **Unprotected Mostly Undeveloped Lands** over 20 acres in size; and
- **Other Lands**, including developed and developing lands.

As used in this Plan, the categories above indicate the level of legal protection afforded individual properties. The first category, **Private Conservation Lands**, has the highest possible level of protection. It includes parcels owned by private conservation organizations that provide specific and permanent legal protection against conversion to a developed use (e.g., properties owned by The Nature Conservancy). The next category, **Conservation Easement Lands**, refers to privately-owned properties that are under easement to a conservation organization. In Shelburne, this category pertains primarily to private lands under agricultural easements, which have already been converted from a natural condition to fields, pastures, and other agricultural uses, but where specific and permanent legal protection is in place to prevent conversion of these properties to developed uses that permanently alter the landscape (e.g., agricultural easements held by the Vermont Land Trust).¹

Association Lands refer primarily to properties under the control of a Homeowner's Association or similar entity, where deed restrictions typically are in place to restrict development of a parcel but the actual level of protection

¹ NOTE: Map 11 also includes certain lands near Shelburne Pond that the Vermont Land Trust and The Nature Conservancy are in the process of conserving.

varies, is often quite limited, and reflects the management objectives of the subdivision developer. However, for mapping purposes, *the category also includes special cases such as the open space portion of Wake Robin and portions of Shelburne Farms not under agricultural easements.*

As might be expected, the category **Town, School, and State Lands** includes properties owned by the Town of Shelburne, the School, or the State of Vermont. Town-owned lands are generally not encumbered by legally-binding measures ensuring that lands will remain in an undeveloped state, and even those properties that are widely considered to be open space (e.g., Shelburne Bay Park, La Platte Nature Park) could theoretically be converted into a different use. However, any such change would be a matter of public debate, so in practice such lands are protected to some degree, even if no specific legal protections exist. It is important to note that some lands in this category are already developed (e.g., school property, cemeteries). Also note that state lands are included in this category because the only example of this type in Shelburne is the Department of Fish and Wildlife Access Area, which has been highly modified to accommodate automobile access and parking. Other types of state lands (e.g., forests, parks), would generally have higher levels of protection.

The final two categories address the remaining land area in the Town. The category **Unprotected Mostly Undeveloped Lands** over 20 acres in size includes undeveloped or largely undeveloped properties of at least 20 acres. These lands are not conserved and, assuming development proposals meet pertinent regulatory requirements, could be converted to other land uses even if they have high value as open space and are used as such by the community. The category **Other lands**, including developed and developing lands, consists of properties that have been or are in the process of being converted to primarily developed uses.

Note that these categories pertain specifically to the open space lands that currently exist in Shelburne; other categories would be necessary if other types of public or private conservation organizations were represented. Additional categories would also depend on the level of protection afforded against conversion to developed uses.

Also note that the current set of open-space categories are based exclusively on assumed protection level and make no inference about public access, which depends exclusively on the policies of individual landowners. Most publicly-owned lands are open to the public, as are certain privately-owned properties (e.g., LaPlatte River Marsh, Shelburne Farms), but other properties are restricted.

Most existing open spaces in Shelburne occur near Lake Champlain or adjacent to Shelburne Pond. Given their high ecological and aesthetic value, these areas have been the historical focus of conservation efforts. However, numerous properties are also maintained as open space along the La Platte River. The Town of Shelburne owns a diverse collection of parcels, but the two most highly regarded for their natural resources value are Shelburne Bay Park and the La Platte Nature Park. The other Town-owned properties generally provide municipal functions such as schools, playing fields, and cemeteries. Association Lands are scattered throughout Town, but predictably they are concentrated along the Route 7 corridor where residential development has been most extensive.

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4.2.4 Scenic Viewsheds

A primary value of some open space is the scenic views it affords. These scenic views provide benefits “on site” as well as “off site.” That is, they may be enjoyed from within the open space itself, as well as from nearby roads or waterways. Scenic views are features of the human environment that provide perhaps the most apparent and widely appreciated impression of a place’s natural resources.

Shelburne’s remaining unspoiled scenic views maintain the Town’s historic rural character and natural beauty. Agricultural fields, both active and abandoned, are especially important to Shelburne’s viewscapes, providing perspectives of distant mountain peaks and the lake views already referenced. They also provide the best foreground for roadside panoramas, including primary views along Route 7, Spear Street, Dorset Street, Pond Road, and Bostwick Road.

An effort to map Shelburne’s scenic views was completed in the summer of 1990. It identified 85 “significant views,” focusing on the most widely

recognized ones—landscape views from public roads and those to and from other significant vantage points such as Lake Champlain. Of these 85 identified views, fifteen are from points on Lake Champlain looking onto the Town, and the remaining 70 are from points along public roads. As might be expected, many of the identified significant views are from higher elevations overlooking the lake and/or broad meadows or fields. Some are general panoramas with very wide viewing angles; others are directed towards specific focal points, either natural or man-made. They frequently overlap with existing conserved spaces.

To understand the scenery's spatial composition (that is, the actual land area included in a particular scene), the mapping process broke each view was broken into three distinct spatial components (foreground, middleground, and background); focal points were identified within each view area. Each spatial area with its focal point generally has its own characteristic qualities and is subject to specific types of threat by encroachment or development.

FOREGROUND is generally composed of open land adjacent to the road or other vantage point and framed by woodlands, hedgerows, or topographic relief. This area is usually the most critical view component because it is, in effect, the community's "window" to the larger view and is thus usually highly vulnerable to degradation by development. Although usually comprising the largest area of the viewing field, it is always quite small and easily identified in actual ground area compared to the middleground and background.

MIDDLEGROUND is usually a more complex composition of receding woodlands, field, hillsides and focal points such as farm clusters or villages. Lake Champlain is often a component of the middleground as well. Due to its much larger area, high percentage of wooded lands, distance from the viewer and diverse character, the middleground tends to be much less vulnerable to degradation from development. Exceptions would include development in open fields that are important as visual focal points or development that would break the horizon line.

BACKGROUND is composed of layers of distant hillsides and mountains that rise up behind the middleground and enclose the view. While these areas are usually protected from development by virtue of their elevation and steep terrain, they are potentially subject to degradation by "skyline" development that breaks the horizon line. In Shelburne, due to its gently rolling terrain, the background to almost all views consists of lands beyond the town boundary. They include the hillsides of neighboring towns and the ridgelines of the Green Mountains to the east and the striking Adirondack range across the lake in New York to the West.

FOCAL POINTS are elements in a view that tend to draw or grab the eye because of their strong contrast and/or unique form. They can include prominent cultural features such as farmstead clusters or church steeples or distinct natural features such as mountain peaks, hilltops, great trees or rock outcrops. Focal points are most threatened by development or activity that hides, impinges upon or alters them.

In the mapping process, an inventory of photographed views was reviewed by the members of the Natural Resources and Conservation Committee and other citizens. The views were prioritized and the specific foreground of each view was mapped using the field photographs, 1:50000 ortho-photo base maps and 1:24000 USGS topographic maps. Vantage points, direction of view, general middleground areas, and focal points were also mapped. Map 12, the Significant Views Map, shows some of the Shelburne areas which are considered visually sensitive lands.

4.2.5 Human Environment Summary

There are approximately 1,310 acres of wetland in the Town, as well as roughly 4170 acres of land within stream buffers (some of which overlap wetland areas). In terms of wildlife resources, approximately 5,425 acres of land in Shelburne lie within mapped deeryards and/or wildlife corridors, while approximately 1,875 acres, some overlapping, fall within significant natural community areas.

Consistent with the Town's long agricultural heritage, there are approximately 3,200 acres of prime agricultural soils. An area roughly twice that size has some recent history in agricultural land use. Also present in the Town are approximately 7,500 acres within significant viewsheds. Much of the area recognized as scenic, although certainly not all of it, corresponds with areas currently or recently used for agricultural purposes.

Already-conserved lands are a manifestation of the high regard in which Shelburne's citizens hold natural resources and open space. However, as the built environment continues to expand in Shelburne, the Town's natural resources are being modified and additional demands are being placed on those lands already conserved. These changes will inevitably affect not only the ecological value of natural resources but also the human-centered values that citizens assign them. Consequently, it is imperative that Shelburne consider how the Town is changing and work to protect those values that make it a unique, vibrant, and livable community.

5.0 Land Conservation Prioritization Tool

Over the years a variety of “tools” have been used to assess and prioritize open space resources, from simple maps to the current state of the art, GIS technology. GIS stands for “Geographic Information System”, and refers to a system of computerized data and supporting software programs that help organize, analyze and present information that is tied to a specific geographic location. It can help policy makers develop more informed and effective decisions by relating many types of data to a particular area. The types of data that can be incorporated into the GIS tool include many land features of interest to Shelburne residents including; deer wintering areas, wetlands, important natural communities, agricultural sites, proximity to conserved lands and many others.

GIS technology has been used by the SNRCC in two primary ways in the course of preparing the Plan. With the help of a consultant, committee members created the numerous maps contained in the Plan, and developed a system for identifying and ranking specific parcels with high natural resource and related values. This section of the Plan briefly outlines the process that was used to develop an open space prioritization tool for Shelburne.

5.1 Need/goals

According to the By-laws of the SNRCC (approved by the Shelburne Selectboard in 1979), one of key duties of the Committee is to “recommend to the Selectboard the purchase or receipt of gifts of land or rights thereto.” Given that financial resources for acquiring open space are limited, the Town must act prudently when conserving properties. Thus, it has been the practice of the SNRCC to recommend protection of parcels that provide significant resource values and other benefits.

Identification of high-value parcels can be a complex undertaking, however. Different resources provide different benefits, and measuring and weighing these benefits requires careful consideration. The SNRCC decided that GIS could be used to assist in the identification of parcels deserving protection using limited local funds and to identify areas where other conservation measures might be appropriate.

5.2 Components

Before settling on the components of an open space prioritization system, members of the SNRCC agreed that any tool developed would have to be capable of reflecting priorities expressed at public meetings concerning the Open Space plan. The tool would also have to be straightforward to apply as well as flexible. Results would be parcel-based, to reflect the manner in which the majority of property is sold or transferred.

Working with Sean Murphy of Heindel & Noyes and Dean Pierce, Shelburne Town Planner, the SNRCC used GIS to dynamically assign numeric values to parcels based on key resource indicators. The following paragraphs describe the primary components of the open space prioritization system, including the data inputs and weighting it employs, the outputs it provides, and applications for which it is most suited.

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5.2.1 Inputs

At its core, the open space prioritization system is able to calculate the number of acres of a resource, and/or the number of resource features of a given type, falling within each parcel in the Town. Resources evaluated by the system fall within three primary areas: water resources, wildlife habitat, and scenic resources and agriculture. The specific data inputs used by the prioritization system—selected based on priorities expressed at public meetings, availability, and utility—are identified in the following table (Table 1). The SNRCC recognizes, however, that as better data becomes available, it should be used.

Table 1. Data Used in Town of Shelburne Open Space Prioritization System

| Feature | Description | Data Source |
|----------------------------------|---|---|
| Wetlands | Lands occupied by wetlands identified by the National Wetlands Inventory, as modified by the Vermont Water Resources Board | Vermont Center for Geographic Information |
| Adjacent area stream buffers | Lands within 100 feet of all mapped streams | Stream information from Vermont Center for Geographic Information |
| Non adjacent area Stream buffers | Lands between 100 and 250 feet from all mapped streams | Stream information from Vermont Center for Geographic Information |
| LaPlatte River | Land in parcels with boundaries along main stem of LaPlatte River | Vermont Center for Geographic Information |
| Natural Communities | Lands within areas identified as significant natural communities in county/statewide survey of significant natural communities | Vermont Center for Geographic Information |
| Natural Heritage buffers | Lands within buffer of Natural Heritage sites, as mapped by Vermont Natural Heritage program, | Vermont Center for Geographic Information |
| Mapped Deer wintering area | Lands within deer wintering areas mapped by Vermont Department of Fish and Wildlife | Vermont Center for Geographic Information |
| Wildlife corridors | Lands within mapped wildlife corridors | Addison County Regional Planning Commission |
| Forest Land cover | Using satellite imagery, areas identified as being occupied by forest | Vermont Center for Geographic Information |
| Adjacent to Conserved lands | Land in parcels located adjacent to lands with permanent, high level conservation protections and Town open space | Town of Shelburne Planning office |
| Natural Heritage sites | Number of Natural Heritage sites, as mapped by Vermont Natural Heritage program, falling within a parcel | Vermont Center for Geographic Information |
| Foreground View area | Lands falling within Foreground View as identified in Town Significant View study | Town of Shelburne Planning office |
| Middleground View area | Lands falling within Middleground View as identified in Town Significant View study | Town of Shelburne Planning office |
| Agricultural Land cover | Using satellite imagery, areas identified as being occupied by agricultural land | Vermont Center for Geographic Information |
| Prime agricultural soils | Lands occupied by prime agricultural soils, as identified by the Natural Resource Conservation Service (formerly Soil Conservation Service) | Vermont Center for Geographic Information |

5.2.2 Weighting and Cut-Off Points

When the open space prioritization system is applied, users supply numbers that establish the relative weight, or importance, of each resource feature. The prioritization system then tabulates results and assigns each parcel to a 'weighted priority' category. As part of the development of this Plan, residents were informally polled for input regarding open space priorities (see Appendix 2 for a description of process). Results of this polling, which underscored the importance of protecting water quality, scenic vistas, and wildlife habitat, served as a basis for weights used in initial runs of the open space prioritization system.

During the development of the system, the SNRCC also established these "cut-off" points that differentiate between relatively low priority parcels, medium priority parcels, high priority parcels, and very high priority parcels. Cutoff points were chosen to reflect consensus opinions regarding appropriate intervals or categories on a scale of 0 to 100.

Parcels with the highest priority, which typically include relatively large areas of more than one important resource, have been classified by the SNRCC as Gems. Parcels with the second highest priority are identified as having High priority, while parcels with the third highest priority are identified as having medium priority.

It must be noted that rankings from the planning tool will be different with different resource criteria. Therefore results should be used as a starting point for discussion rather than as a definitive measure of significance. For example, one instance in which the tool is used might rank a parcel as a high priority if it contains more than 5 acres of wetland or riparian zone, more than 6 acres of important wildlife habitat (e.g., bobcat corridors, deer wintering areas, natural communities), or more than 10 acres of land with significant viewscales. A parcel with 2 or more rare species locations might also be ranked as high priority, as may a parcel that has more than 10 acres of land with prime agricultural soils. In contrast, parcels that do not meet any of these thresholds would be classified into the middle- or low-priority categories.

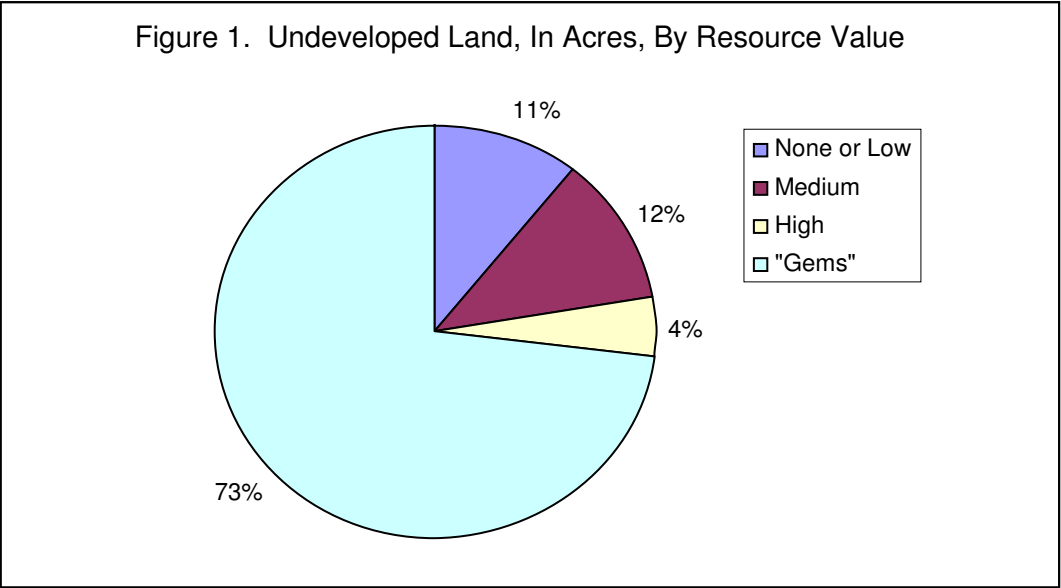
The threshold criteria can and should be changed by the user to determine how the pattern of high-priority parcels changes with different assumptions about resource value. Experience to date indicates that similar patterns are generally obtained with multiple iterations, but it is important to remember that the program is indeed just a tool; it can provide no simple answer to conservation questions, and it cannot be used as a substitute for informed judgment. Nonetheless, it should provide valuable information by identifying patterns that might otherwise be overlooked and lending quantitative support to conservation-planning efforts.

5.2.3 Outputs

The main role of the open space prioritization system is to synthesize information about important resources across the community. To evaluate values associated with individual land holdings, the prioritization system provides results on a parcel by parcel basis. However, in recognition of the sensitive nature of such information and the dynamic nature of data inputs, no detailed, individual parcel ratings will be reported in this Plan. Instead, the results reported are aggregated (by level of importance) and apply only to that portion of the Town classified as undeveloped (including some parcels containing several acres of undisturbed land).

Based on the prioritization system, it is clear Shelburne contains large areas of land that are worthy of protection as open space. According to one set of calculations developed using the system, approximately 6,900 (73%) of the undeveloped acres within the Town are considered Gems, or lands with the highest level of significance recognized by the SNRCC. Another 400 acres (4%) are designated as having a 'high' level of priority, while another 1,100 acres qualify for a 'medium' level of priority (12%)². See Figure 1.

² It should be noted that the figures contained in this paragraph and in the following figure are not derived from the specific categorization depicted in Map 11. Instead, the figures in this section are based on a similar categorization and dataset created with the assistance of the consultant who developed the Open Space Prioritization system.



An analysis of the results summarized above reveals that lands designated as gems include several large parcels located near water bodies which also support wildlife habitat. Lower rated parcels tend to be small and in closer proximity to residential development. It should be noted that there is nothing inherently wrong with smaller parcels (and, indeed, to the contrary they provide important resource values to residents who live adjacent to them). However, compared to other conserved lands in Shelburne, these properties encompass fewer natural resources with less overall value.

5.2.4 Applications and Limitations

Reflecting the SNRCC’s bylaws, the Open Space Prioritization tool will be used to assess the comparative merits of possible conservation projects. When a parcel is considered for conservation, many questions arise:

- How does it compare to other properties and already conserved lands?
- Does it maximize the natural resources that the Town considers important?
- Are its important features commensurate with price?

- Considering its natural resources value and estimated priority ranking, will other organizations participate in a collaborative effort to conserve the property?

It is the recommendation of the SNRCC that, in the future, all conservation projects potentially involving the use of Town open space funds be evaluated using a committee-developed application form. Information regarding a parcel's rating under the open space prioritization system will be required in a portion of this form. At present, the overall impact of the open space rating has not been determined.

Additionally, it is the position of the SNRCC that the Open Space Prioritization tool would be of assistance to the Shelburne Planning Commission as it evaluates applications for development. For example, when a parcel is proposed for subdivision, the tool could be used to identify important combinations of natural resources in or near the parcel, and it may serve to highlight features that require further study.

Despite the many benefits provided, the limitations of the Open Space Prioritization tool must also be acknowledged. For example, because the tool is parcel-based, it is necessarily biased according to property size. Thus, large parcels tend to have higher priority ranks because they usually contain more of the resource features that are considered valuable. There is also a higher probability that rare or unique features will occur in large parcels, especially considering that most small parcels have developed land uses (i.e., significant natural features may have been lost). However, this bias is neither unexpected nor unwanted; conservation projects that focus on larger parcels tend to be more effective in protecting natural resources and maximizing available funds.

Small parcels thus tend to score poorly in the planning tool, and for such properties other criteria will inform the decision-making process. For example, some small parcels may contain species that are quite rare or have high strategic value (e.g., highly visible or symbolic features, access to adjacent conserved lands, etc.). It is important to reiterate that all potential conservation projects will be evaluated on a case-by-case basis, and the totality of evidence and opinion will be the final arbiter of value.

6.0 PRIORITIES FOR ACQUISITION

As noted above, a significant portion of the land in Shelburne has been conserved in some fashion. This section of the Plan provides additional details regarding conserved lands in Shelburne. In particular, it examines the relationship between conservation status and resource value. By comparing the amount and location of already-conserved resources to unprotected lands with high resource value, the SNRCC developed its “Priorities for Open Space Conservation,” which are presented at the end of this section.

6.1 Protection Categories

In this Plan, lands at risk of being permanently converted to developed uses are considered to be ***unprotected***. This plan also recognizes that the actual degree of protection afforded individual properties varies widely. For example, some lands are protected in ways that prohibit all forms of development, while others may be developed for selected uses such as recreation or agriculture, including the construction of buildings. Similarly, some lands may be protected on a permanent basis (i.e., in perpetuity); others are protected only for set periods of time or until changes are approved by a public body such as the Selectboard or Planning Commission. The SNRCC believes that open-space planning efforts are advanced more when resource-rich lands has high levels of protection in perpetuity than when the same lands has lower levels of protection or when such protection exists for only a limited period.

As noted previously in this document, to facilitate planning for open space in Shelburne, the SNRCC has identified six primary categories relating to levels of open space protection:

- **Private Conservation Lands;**
- **Conservation Easement Lands;**
- **Association Lands;**
- **Town, School, and State Lands;**
- **Unprotected Mostly Undeveloped Lands Over 20 acres in Size; and**
- **Other lands, including Developed and Developing Lands.**

See Section 4.2.3 for descriptions of these categories and Map 11 for their current distribution in Shelburne.

6.2 Protection Categories vs. Resource Values

According to an analysis developed in tandem with creation of the open-space prioritization system, approximately 1,250 acres of Shelburne fall into the category **Private Conservation Lands**. Another 2,450 acres have levels of protection consistent with the **Conservation Easement Lands** and **Associations Lands** categories. More than 400 additional occur in the **Town Lands** category. All told, using various conservation strategies, protected lands represent approximately 30 percent of the total land area of the Town.³

As shown in Table 2 below, which analyzes the distribution of currently undeveloped lands in the community, approximately 3,400 acres of the highest value lands within the Town may be considered unprotected using the SNRCC's classification system. The vast majority of lands with high and medium resource values likewise are unprotected. As is detailed below, it is a key recommendation of this Open Space Plan that high value-low protection properties be the focus of Town conservation efforts and/or discussion.

Table 2. Undeveloped Land, in Acres, By Protection Category and Resource Value, January 2004

| <i>Protection Category</i> | <i>Level of Open Space/ Resource Value</i> | | | | |
|--|--|-----|--------|------|--------|
| | None | Low | Medium | High | "Gems" |
| Private Conservation Lands | 0 | 83 | 52 | 200 | 902 |
| Conservation Easement Lands | 0 | 124 | 132 | 0 | 2183 |
| Association Lands | 0 | 80 | 74 | 0 | 144 |
| Town and School Lands* | 5 | 160 | 0 | 3 | 239 |
| Other lands, including Other Unprotected Lands | 566 | 0 | 846 | 196 | 3404 |

*Limited area of Town lands included in these values; no state land included

The SNRCC believes that two related issues are highlighted by this analysis. The first is that conserved lands in Shelburne are not created equal—in other words, they do not all share similar levels of resource significance. (All

³ The figures contained in this paragraph and in Table 2 are not derived from the specific categorization depicted in Map 11. Instead, the figures in this section are based on a similar categorization and dataset created with the assistance of the consultant who developed the Open Space Prioritization system.

conserved lands have some value, but some parcels have higher ecological and human-centered values.) The second is that open space may not remain in its current condition unless an easement or another conservation measure is enacted to permanently protect it. Both of these issues should be carefully considered when the Town prioritizes future conservation efforts and plans for the long-term management of open space lands.

6.3 Cost of Conserving “Gems”

The cost of conserving open space varies according to many factors, including fair market value of the property being conserved, the level of protection being sought (e.g., fee ownership or easement), and related subjects such as taxes. Land values in Shelburne, which are high relative to many locations within Chittenden County and the rest of Vermont, cost per acre can exceed \$3,500 for open land even on large parcels. The cost of obtaining easements on property in Shelburne is believed to range from between 70 percent of market value and 90 percent of market value.

According to preliminary sketch analysis by the Shelburne Planning office, the financial value of Gem properties (excluding buildings) that do not enjoy protection other than zoning and subdivision regulations is in excess of \$50 million (based on 2003 grand list). Assuming these lands were to be conserved using easements as opposed to purchase in fee, and further assuming that the cost of easements averages 80 percent of fair market value, the cost of conserving these lands would easily exceed \$40 million. It should be noted that this estimate does not include associated project costs, such as legal fees, stewardship fees, etc.

6.4 Priorities for Conservation and Planning

The comparison of current open space lands and remaining undeveloped, unprotected lands in Shelburne suggests that more 4000 acres of high value open space could be considered for conservation in future years. For many reasons, however—including the intensity of development pressures in Town, high property values, and limited funds for conservation—only a fraction of those acres will likely be conserved.

It is imperative, therefore, that Shelburne develop a list of basic conservation priorities that will help guide acquisition efforts and the allocation of funds. Upon careful consideration of the natural resources inventory, preliminary runs of the open space prioritization system, and analysis of current open space lands, the SNRCC hereby recommends that the Town subscribe to the following conservation priorities:

- Shelburne Pond
- Riparian zones (e.g., La Platte River and adjacent lands)
- Wetlands
- Lake Champlain shoreline
- Large, contiguous sections of undeveloped land
- Remaining forest patches
- Remaining farms
- Exceptional views
- Rare or unique features

Although each prospective conservation project should adhere generally to these principles, specific goals will be formulated on an individual basis; as always, each project will be evaluated on its own merit using all available quantitative data and the weight of opinion.

An additional priority of the SNRRC and this Plan is extension of the Town's existing natural resources inventory. Analyses such as those contained in this Plan would be improved by expanding some data sources and developing new ones. An improved land-cover map, one that is more accurate and contains additional cover-type categories, would be particularly useful, as would maps identifying natural communities and of areas with high biological diversity.

Although the distribution of plants and animals is generally known in the Lake Champlain Valley, Shelburne-specific species lists for birds, mammals, amphibians, reptiles, invertebrates, and plants are also needed, which would facilitate assessment of biological diversity and possibly identify additional locations of rare, threatened, or endangered species. Finally, all inventories should be updated on a regular basis to ensure that the best available information is used to guide conservation planning efforts.

7.0 RECOMMENDATIONS

Acquisition of conservation easements or land is one of many tools for achieving our natural resource conservation goals. There are many other options available to the community, including regulatory measures and improved information, planning, and outreach. This Plan recommends that the full spectrum of approaches be applied to conserve land in Shelburne. In so doing, the Town will enjoy greater flexibility and effectiveness in its efforts to conserve open space.

This plan recommends that the Town take the following steps:

- Expand resource mapping;
- Formalize Process For Use of Town Conservation Fund;
- Create and Maintain Management Plans;
- Create Property Tax Incentives;
- Enact Regulatory Protections
- Other Actions
- Authorize Regular Updates to Open Space and Natural Resource Conservation Plan

Additional details regarding these initiatives is provided below.

7.1 Expand Resource Mapping

Advances in mapping technology have expanded the planning capabilities of communities such as Shelburne. Residents and officials can now see the interrelationships between features on the landscape, in order to better understand how changes could affect the character of the community. However, this technology relies on having an accurate and complete digital library of spatial coverages.

Several maps were identified during this Plan's development as being critical for Open Space Planning. While some of these maps have remained essentially unchanged (e.g. Primary Agricultural Soils, National Wetland Inventory,

Hydrological features, FEMA 100-year Floodplains), others need to be created or updated through field work activities. Such maps include the following:

- Recreational areas, including trail network (current and proposed)
- Natural Features
- Significant Views
- Wildlife core habitat and corridors
- Ridge lines
- Significant geological features
- Biological Diversity
- Landscape Diversity

This Plan also recommends that the Town Planner, the Shelburne Natural Resources and Conservation Committee, and the Planning Commission collectively identify all maps that would assist in their respective missions. They should then estimate a capital budget to complete these maps and work with the Selectboard to cover the gaps identified.

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7.2 Formalize Process For Use of Town Conservation Fund

Residents of Shelburne have demonstrated strong support for the Town's Natural Resources / Conservation Land Preservation Fund ("Conservation Fund"). Since its creation 15 years ago, requests to capitalize the fund have been approved with the support of an average of 70% of voters casting ballots. The Conservation Fund has been used to purchase properties and conservation easements in the Town. Typically, this fund has been used to leverage significant amounts money from state agencies and non-profit land conservation groups. However, it is uncertain whether the Town will be able to maintain the high levels of leveraging achieved in the past.

Until now, the review process for using the Fund for purchases and easements has been relatively informal: the SNRCC screened potential properties against a set of qualitative criteria, including gateways, waterways, viewsapes, agricultural lands, and critical wildlife habit. The Committee then submitted its proposal to the Shelburne Selectboard for approval.

While this informal process worked reasonably well, there is a need for more formal policies and procedures for reviewing and approving these proposals. There is also a perceived need for more coordination between the different entities within Town government that are concerned with planning initiatives to ensure that important lands are conserved. Standardizing this process will:

- provide clarity and guidance to residents and developers,
- ensure equal treatment of proposals,
- facilitate the development review process,
- ensure coordination among Town committees and commissions; and
- add accountability regarding the use of the Fund.

To formalize the application and review process, this Plan recommends establishment of the following process.

7.2.1 Direct Conservation Funds to High Value Parcels

Only those parcels that have a high natural resource value, are working landscapes, provide residents with passive recreation opportunities, and/or have a high scenic viewscape value, as described in this Plan, should qualify for use of the Conservation Fund. This includes purchasing properties without these values that will ultimately be exchanged for properties with these values.

Any proposed expenditure of Conservation Funds shall only be a result of a recommendation from the SNRCC to the Selectboard. Final decision for use of the Conservation Fund shall rest with the Shelburne Selectboard. The SNRCC and the Selectboard will seek public input whenever possible.

7.2.2 Review Applications and Screening Process

The SNRCC shall be charged with developing an application and screening process to determine the suitability of a parcel put forward for consideration. This process would involve, at a minimum, the following steps:

Submission of Application Form: Completion of an application form will allow residents and other concerned parties to nominate parcels for conservation

through acquisition, easement or donation. The form should provide critical management information (location, price, proximity to other conserved lands) as well as details about its natural resource values and unique features.

Preliminary Analysis: Available natural resource maps and information will be queried using ArcView GIS software or other means to screen how well a property matches the community priorities as described in this Plan. For example, the SNRCC or Town Planner shall check to see if the parcel has any of the following features:

- Lakes, rivers, or stream;
- Mapped wetlands or floodways;
- Habitat for locally significant or threatened species;
- Significant vistas or landscape features; or
- Productive agricultural soils.

On-Site Evaluation: Members of SNRCC shall conduct an inspection to determine a property's suitability for conservation. The committee may elect to have one or more experts or representatives of other Town committees on this visit.

Solicit Input from Town Staff and Committees: SNRCC shall contact Town committees and Town departments, as appropriate, for input. These contacts should include, but not be limited to, Planning, Zoning, Town Manager, and the Paths, Recreation and Historical Review committees.

Notify Selectboard: The SNRCC will notify the Selectboard in writing when the screening process has begun for any parcel. Periodic written notice will be given throughout the process culminating in a written final recommendation regarding use of Conservation Funds. If an application is denied by the Selectboard, the Selectboard will provide a written response outlining the reasons for its decision.

7.2.3 Conservation Fund Principles

The following principles should guide the actions of the SNRCC with regard to any activities related to land conservation.

- The acquisition or protection of land shall be accomplished only in cooperation with willing landowners.
- The SNRCC shall consider the full spectrum of approaches for acquiring properties or rights in those properties with high conservation value.
- Parcels will be considered using the definitions and priorities set forth in this Plan.
- The SNRCC shall serve as the initial contact and negotiating body for applications, purchases, and donations of open space. All final contracts would be subject to approval by the Selectboard, which would provide written explanations for any rejections or changes to the SNRCC's written recommendations.
- When possible, the Conservation Fund should be used to leverage other sources of funds.
- Conservation Funds shall be used for obtaining fee simple ownership, easements, rights of first refusal, and costs related to donating a property or conservation easement, preparation of management plans, and stewardship.
- All real estate transactions shall include either language that permanently limits development on the property, in accordance with an established management plan, or transfers development rights to a third party land trust organization.
- No change/addition to the property can be made until a management plan or transfer of development rights has been established.
- All real estate transactions shall include language that requires land owners to use land management practices that protect water, air and light quality. This includes farming practices that adhere to the Accepted Agricultural Practices.
- Members of the SNRCC will recuse themselves when deliberations are occurring for properties in which they or their family have a financial interest.
- A simple majority of the members of the SNRCC will decide by vote whether to recommend to the Selectboard that Conservation Funds be used for a parcel.

7.3 Create and Maintain Management Plans

Management plans shall be developed or updated for parcels that are owned by the Town and have significant resource value. This list would include but not be limited to: Shelburne Bay Park, the LaPlatte Nature Park, the Fishing Access Point, the Green Meadows property and Town forests. For new parcels, management plans shall be developed within six months of acquisition. Until such time as a Management Plan is approved, no development and only minimal alterations of any type shall occur.

The SNRCC shall be charged with overseeing the development of each management plan. Work on management plans could be supported via appropriations from the Conservation Fund or, preferably, other sources. The Selectboard shall approve the management plan following public hearing. Changes to these management plans should occur only after the Selectboard hosts two public meetings.

Once a parcel has a management plan, the Selectboard shall work with the SNRCC to appoint one or more individuals to be Stewardship Coordinator (s) for these lands. This position would require one or more visits each year to the property to ensure that the principles of the management plan are being achieved. Stewardship Coordinators should report to the SNRCC at least quarterly. The SNRCC would recommend appropriate actions to the Town Manager and/or Selectboard, as needed.

7.4 Create Property Tax Incentives

Under Vermont State Law (Title 4, Chapter 75), the Selectboard has the authority to set the value of property and to set the tax rate or amount of annual taxes to be paid for a particular property for a period of up to ten years. These tools can help provide an incentive for property owners to provide conservation easements or donate property to the Town. Where appropriate, the Selectboard may implement tax holidays and/or lower tax rates as an incentive for conservation.

Other incentive structures should also be explored.

7.5 Enact Regulatory Protections

Land use planning regulations in Shelburne create a blueprint for development activities within the community. The Town's Comprehensive Plan sets forth a vision for future development activities. The zoning bylaw separates incompatible uses, and the subdivision bylaw establishes standards for the improvements to be made when land in the Town is split into parcels. There are, however, very few regulations that specifically address how to conserve the quantity, quality and configuration of lands with important natural, scenic, or recreational features. Therefore, this Plan recommends that the following series of regulatory provisions benefiting open space be enacted.

7.5.1 Use of Resource Maps in Development Review

While the current Shelburne Comprehensive Plan calls for the use of resource maps in the course of development review, there is currently no formal requirement stating how this will occur. In addition, the maps referred to in the Plan do not represent the full range of features of importance to Shelburne Residents. Therefore, it is the recommendation of this Open Space Plan that

- All staff reports pertaining to development proposal shall specifically note when a project falls in or within 500 feet of an identified resource area;
- Planning Commission members shall be provided with copies of applicable maps cited in staff reports;
- The Town Planner shall be authorized to present the Planning Commission or Zoning Board with other maps or resources identified as critical by the Selectboard, Planning Commission, or the SNRCC;
- To facilitate this process, applicants should submit documentation in digital form to the Town Planner whenever possible.

7.5.2 Use of Management Plans in Development Review

All development activities on or adjacent to conserved lands shall not conflict with the goals and objectives and restrictions of the pertinent management plans. No development shall be allowed that alters or diminishes these resources.

Mitigation of impacts may be achieved through a number of approaches, including buffering, limiting of scale, and consideration “no project” alternative.

7.5.3 Expand Resource Protection Measures Used In Development Review

If a property under consideration for development contains or is bounded by two or more significant resources (which shall include but not be limited to the features shown on Maps 1 - 6, 11, 12 and such other maps as are prepared to implement this plan), or, if more than twenty percent of a property encompasses one of these resources, the appropriate development review body shall require:

- The developer shall establish a Planned Residential Development (PRD) / Planned Unit Development (PUD). Such PRD/PUD shall require a design which:
 - defines a Project Development Envelope (PDE) in a designated portion of the property that has the least impact on the resources defined above and within which all individual building envelopes shall be defined;
 - shall not permit portions of the significant resource to be within the PDE, unless recommended by the SNRCC;
 - shall ensure that the configuration of the property remaining outside the PDE maximizes conservation impact and keeps intact the resource that is being protected.
- The Planning Commission shall require the developer to design the proposal so to insure that the project development envelope is separated from sensitive areas and minimizes all impact upon them. The Planning Commission shall also set minimum requirements as to the acreage and configuration of lands to be conserved on the parcel

7.5.4 Define Density Bonuses

Shelburne’s land use regulations currently allow the Planning Commission to provide density bonuses to developers whose projects exhibit design features

such as clustering and the retention and consolidation of open space. These regulations currently calculate density bonuses only on the basis of the percentage of land that will remain undeveloped. The regulations currently do not clearly define "open" space as defined in this plan. Nor do the regulations give guidance as to the dimensions of the open space in relationship to the situation of the developed portion of the project. In practical terms this means that remaining open space adjacent to newly developed lands often end up having low natural resource value.

The SNRCC believes that this method of calculating density bonuses does not adequately promote the preservation of the rural landscape and visual resources of Shelburne. Therefore, this Plan recommends that:

- An application be developed for this process(DEAN?)
- Developers be required to define a PDE for lands put forward for development using density bonus status;
- the Planning Commission shall have the authority to require that such PDE meet the following requirements;
 - lands that fall within a building lot, even though they may be outside the building envelope, shall not count toward the total percentage of open land considered for the density bonus;
 - lands to remain "open" in consideration of a density bonus shall meet the intent of maintaining the rural aspect and the natural and visual resources of Shelburne, even when such lands may not in themselves be highly prioritized natural or visual resources or "gems."

For example, a long, narrow perimeter bordering the back edge of a development would not meet this intent. Clustering the same number of homes on smaller lots in a community-neighborhood configuration, the remaining land left open would be more likely to do so. This would better conserve the viewscape resource or natural resource in question.

The Planning Commission should require that portions of land set aside to remain open as part of a density bonus shall have a management plan.

7.5.5 Require Open Space Management Plans

The Planning Commission should require that a management plan be provided for all land being donated or placed into a protected status as part of a larger development project. These plans will outline how the lands would be maintained and what activities will be allowed, and who will be responsibility for carrying out the plan. For larger parcels with sensitive areas, as determined by the SNRCC, the Planning Commission shall require that the development rights for the portion of the parcel be transferred to a land trust or other appropriate third party.

7.5.6 Establish Agricultural Buffer Zones

Development projects should be separated by an appropriate distance from farming operations whenever possible. In particular, limiting the number and scope of residential projects that are near agricultural areas will reduce the likelihood of neighborhood conflicts. This recommendation could be effected by increasing the Planned Residential Development (PRD) buffer in the current Rural 1 Zoning District. In addition, amendment of the zoning regulations in the Rural 1 District should address the application of substances to lots, lawns, gardens, or homes that might migrate to and adversely affect the organic status or other viability of the agricultural enterprise.

7.5.7 Establish Water Quality Buffer Zones

Buffers of 200 feet should be maintained around any feature identified on the Hydrological and Wetland Features maps. These buffer zones shall be left undisturbed. In areas where conditions (e.g., topography, hydrology) suggest water quality will be affected from areas greater than 200 feet, the buffer zone should be extended by the Planning Commission. In certain parts of the Town, this expansion should be based on the results of the planned LaPlatte River geomorphological study.

7.5.Implements Stormwater Management and Erosion Control Measures

To protect and improve surface water quality, the Town of Shelburne should enact an ordinance to regulate and prohibit illicit discharges. This ordinance might include:

- Prohibitions on illegal dumping or discharges to the storm drainage system;
- Prohibitions on illicit connections from sanitary sewers to the storm drainage system;
- Authority to inspect properties for illicit discharges; and/or
- Penalties and enforcement options.

The Town of Shelburne also should develop and adopt an erosion and sediment control mechanism in compliance with stormwater permit requirements. The jurisdiction of these new local regulations should include all land development activities subject to local land use regulatory review.

This mechanism should include procedures to identify construction activities meeting the one-acre and five-acre regulatory thresholds and to report such activities to the Agency of Natural Resources to assure that all such projects are properly permitted.

The Town should also evaluate, and where necessary amend erosion control requirements (in the current zoning bylaw, subdivision bylaw, and public works standards) that would pertain to land development not subject to state or federal erosion control requirements. One example of a possible change is a requirement for applicants to prepare a stormwater pollution prevention plan for construction sites.

The Town also should adopt a post-construction stormwater runoff ordinance or amending the Shelburne Zoning, Shelburne Subdivision Bylaws, and/or Shelburne Public Works standards to address the requirements of this section.

7.5.9 Employ Watershed Modeling

The Town should develop a water quality modeling program to evaluate the effects of different development and policy proposals in terms of their cumulative impact on watersheds. As an interim measure, the Town could employ the watershed modeling tools contained in the Decision Support System developed

by the CCRPC and CCMPO. The Town Planner's staff report for proposed development should use this information in the development review process. (This recommendation is intended to be consistent with the Town's direction in terms of storm water management.)

7.5.10 Implement Water Quality Plans and Protection

The Town should develop a water quality improvement plan and implement the plan using regulatory measures. As part of this process, the Town should review all substances used by Town Departments in maintaining Town lands and infrastructure to determine the environmental impact such substances incur. Following this review the Town should make every effort to reduce the use of toxic or polluting products in favor of more environmentally friendly products. (This recommendation is intended to be consistent with the Town's obligations under the federal "Multi-sector General Permit".)

To address water quality problems, land use regulations should be reviewed and amended to require environmentally friendly land management practices. As an adjunct to this activity, the SNRCC will encourage landowners to adopt environmentally friendly practices and will embark on an educational campaign to encourage agricultural and forestry enterprises to implement appropriate Accepted Practices.

7.5.11 Enact Regulations for Transmission Lines and Other Utilities

In order to conform with the Town Plan objective that "There shall be no development which would cause alterations to the Town's open lands, shorelines, ridgelines, or roadside views in such a way that would intrude upon or diminish the scenic beauty of Shelburne", all new utilities, expansion, and rewiring of present utilities should be required to be undergrounded. This policy is also supported by the Chittenden County Regional Planning Commission Plan in Policy 2. Placing utilities underground reduces their negative impact to the landscape. Any adverse impacts to the natural environment (agricultural, forested timber lands, wetlands and critical habitat areas as well as historic, archaeological and cultural sites), visual/aesthetic view sheds, designated open space areas, Town-planned designation for surrounding areas, property values,

and the health and safety Town residents, will be greatly reduced by requiring that all utilities be undergrounded.

This requirement should be applied to private development as well as public projects. New utility or transmission line infrastructure shall be located within existing rights-of-way if possible and shall be compatible with the natural constraints of slope, soil, geology, vegetation, wildlife habitat and drainage. When adverse impacts to the environment are considered likely as a result of a utility project, the Town shall use an appropriate mitigation measure.

7.5.12 Require Energy Efficient Alternatives

The Town shall require that new developments and building meet energy conservation and efficiency standards. The Town shall consider and facilitate the conversion to cost effective and environmentally sensitive alternative technologies and energy sources.

7.5.13 Enact regulations to reduce light pollution

As Shelburne has grown there has been a considerable increase in light pollution, which includes light trespass, sky glow, and glare. This pollution is caused by poorly directed lighting and over-lighting. Inefficient and inappropriate lighting wastes energy, spoils the view of the night sky, damages the character of the countryside. In addition, it can affect wildlife, human health and amenity. Downward-directed, low-wattage lighting could both reduce light pollution and provide substantial energy savings. (See Appendix for more information on light pollution.) Therefore, this Plan recommends that all new development be carefully evaluated to limit off-site lighting impacts, including impacts on the sky above the development.

Further, it is recommended that the Town adopt the use of full cut-off luminaires for all new highway lighting and enforce the phasing-out of unshielded lighting along existing Town/state roads. In addition, the Town should allow for other non-light polluting alternatives such as light emitting diodes in rural area and consider a long term phase-in program to retrofit existing lighting with either shields to minimize glare and improve safety and security, or with more efficient sharp cut-off luminaires to reduce operating and maintenance costs.

7.6 Other Actions

Well-developed land conservation programs rely on educational campaigns to insure that residents are aware of the benefits of conserved lands. These initiatives help promote good stewardship as well as voluntary efforts. This Plan recommends the following educational efforts be supported.

7.6.1 Initiate Owner Outreach

Owners of properties with significant resources may be offered information regarding actions that they could take to maintain or enhance these assets. These options could range from limiting development on the property (easement, transfer of development rights) to preserving a buffer space around sensitive areas or educating landowners about the impacts of mowing or “brush-hogging” on grassland birds. These owners may also be made aware of the opportunities provided by the Town’s Conservation Fund. Funding for these activities should be built into the annual work plan budget submitted by the Natural Resources and Conservation Committee to the Selectboard.

7.6.2 Assist with Agricultural Management Plans

Shelburne may alert farmers to state and regional bodies that can assist with plans to minimize / improve nutrient and sediment discharge. Many farms in Chittenden County are provided with government funds to implement best management practices, and farmers should be encouraged to maintain these activities.

7.6.3 Support Neighborhood Initiatives

Neighborhood groups should be encouraged to develop plans to protect significant resources, through purchase, neighborhood covenants, or non-binding agreements.

7.6.4 Promote Access to Agricultural Lands

The Town should promote the appropriate agricultural use of conserved lands with prime agricultural soils.

7.7 Authorize Regular Updates to Open Space and Natural Resource Conservation Plan

This Plan shall be updated every five years in conjunction with revisions to the Town's Comprehensive Plan. This will allow it to continue to reflect the vision and needs of the Town and community as they change over time.

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BIBLIOGRAPHY

Brighton, Deb and Brenda Hausauer. The Land Use – Property Tax Connection. Vermont League of Cities and Towns (VLCT) and Vermont Natural Resources Council (VNRC), 2002.

Engstrom, Brett. Biological Natural Areas of Chittenden County. Vermont Agency of Natural Resources, Non-Game and Natural Heritage Program. 1991.

Mattei, Laura. LaPlatte River Greenway Study and Proposed Plan: Town of Shelburne, Vermont. October, 1990.

Shelburne Conservation and Natural Resources Committee. Shelburne Quality Environment Plan. January, 1973.

Shelburne Natural Resources and Conservation Committee. Shelburne Agricultural Lands Survey. February 8, 1993.

Solnit, Albert. Job of the Practicing Planner. American Planning Association Planners Book Service, Chicago, IL. 1988

Thompson, Elizabeth H., and Eric R. Sorenson. Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont. University Press of New England. 2000.

Town of Shelburne. Recreation / Conservation Plan. September 10, 1986

Town of Shelburne. Shelburne Visual Resources Inventory. October 10, 1990.

APPENDICES

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APPENDIX 1: OVERVIEW OF DEVELOPMENT OF THE OPEN SPACE PLAN

The Shelburne Selectboard charged the Shelburne Natural Resources and Conservation Committee (SNRCC) with overseeing the development of this Open Space Plan (OSP). In authorizing the scope of work for this document, the Selectboard stated the Town “must be more proactive and systematic in the protection of natural areas and significant Open Spaces”. Hence, it was hoped the Planning Commission would adopt the major proposals of the OSP into the revised Comprehensive Plan for the Town. It was also expected that this document would serve as a starting point for deciding how land conservation resources, such as the Town’s Conservation Fund, should be spent.

As the Committee met, it became apparent that the Plan needed to have the following components:

- A definition of what is and is not Open Space within the context of this Plan;
- An identification of what constitutes a significant parcel of land in terms of Open Space, and
- A discussion of the various tools available to promote land conservation.

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The SNRCC met from October 2002 through July 2004. These gatherings included five weekend retreats, special meetings and its regular monthly SNRCC meetings. A professional environmental planner was engaged to provide technical support for the Committee’s efforts.

As part of its activities prior to the March 2003 vote on the Town’s Open Space Fund, SNRCC members spoke with more than 300 Shelburne residents to garner their views on conservation issues. The Committee also sponsored three public group meetings in the Spring of 2003 on issues related to Open Space. These meetings were moderated by a professional facilitator, with approximately fifty residents contributing. The Committee also sponsored the educational PLACE program, which helped provide background information on the Town’s natural and cultural history. In addition, residents provided comments during the process of the Plan’s development via letters and conversations.

APPENDIX 2: DEVELOPMENT OF PRIORITIES FOR CONSERVATION

Given the range of properties in the Town that might be suitable for conservation, a community must decide which features are the most critical. For instance, one parcel of land may offer habitat for a rare species while another supports a large variety of plants and animals. Or, a parcel may have a dirt trail that is regularly used by a small number of residents for hiking. How should this be evaluated against another property that might be used more infrequently but by a larger percentage of the population? How does a community assess and value these differences? Management issues, including the cost of acquiring land and subsequent stewardship expenses, also need to be factored into the evaluation.

To begin the process of establishing open space priorities, the Committee first conducted a literature review to identify potential criteria, looking at Open Space Plans produced by other communities, articles in conservation journals, and informational materials provided by land trusts. The Committee developed a set of initial criteria, presented in Table 1 below. These criteria are divided into three categories: **Land Use Types** describe a parcel's current or potential use; **Management Issues** refer to those aspects of a parcel that affect its acquisition and maintenance; and **Features** are characteristics of a parcel of land. These include both quantifiable traits, such as the acreage of wetlands or steepness of slopes, and qualitative ones, such as a site's historic or cultural importance to the community.

TABLE 1: Initial Criteria for Site Evaluation

| LAND USE TYPES | MANAGEMENT ISSUES | FEATURES |
|----------------------|--------------------------------------|------------------------------------|
| Agriculture | Price | Drinking Water Supply |
| Silviculture | Adjacent to publicly owned lands | Prime Agricultural Soils |
| Recreation – Passive | Easement Potential | Recreational Utility |
| Recreation – Active | Acquisition Potential | Viewscape Value |
| Housing | Access (e.g. boat ramp) | Scenic Vistas |
| Undeveloped | Acreage | Steep Slopes |
| | Costs for Stewardship | Forested Areas |
| | Potential for access fees | Species Richness |
| | Connection to existing trails, paths | Core Habitat Area |
| | Acreage | Wildlife Corridor |
| | | Locally Significant Species |
| | | Threatened/Endangered/Rare Species |
| | | Wetlands |
| | | Hunting/Fishing Opportunities |
| | | Lakeside |
| | | Riverside |
| | | Floodplains |
| | | Historic/Cultural Significance |

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On April 28th, 2003, the SNRCC convened a public meeting to discuss issues related to the identification and prioritization of open space lands suitable for conservation. This meeting employed methods for soliciting values from participants, using the criteria mentioned above as well as additional criteria suggested by Town residents. SNRCC members facilitated group meetings and provided notes from these discussions. The overall priorities of the participants are presented in the table below.

The order in which a criterion appears represents its overall ranking for that class. Price was given the third highest priority rating for Management Issues and Scenic Vistas the second highest score in the Features category. If a criterion does not appear in the table, it did not receive a sufficient support to warrant inclusion. Criteria were assigned into priority classes based on groupings of scores. For example, there was a natural break between the first two criteria for Management Issues and the next three.

TABLE 2: Priority Criteria

| | LAND USE TYPES | MANAGEMENT ISSUES | FEATURES |
|-----------------------------|--|---|---|
| Level 1 Priority | <ul style="list-style-type: none"> • Passive Recreation • Undeveloped Land | <ul style="list-style-type: none"> • Access to Natural Resources • Adjacent to Public Lands | <ul style="list-style-type: none"> • Water Quality Protection • Scenic Vistas • Wildlife Habitat |
| Level 2 Priority | <ul style="list-style-type: none"> • Traditional Agriculture • Non-Traditional Agriculture • Wilderness | <ul style="list-style-type: none"> • Acreage • Price | <ul style="list-style-type: none"> • Ensure benefits of acquisition distributed throughout community |
| Level 3 Priority | | <ul style="list-style-type: none"> • Possibility of Easement | <ul style="list-style-type: none"> • Prime Agricultural Soils |

It should be noted that the highest Feature priorities are a composite of several of the initial Feature criteria. In evaluating the comments provided, it became clear that residents endorsed broader definitions of Features than were provided. For example, “Drinking Water Supply” was consistently given high priority ratings by participants. However, in group conversations residents indicated they were using this category to serve as a “catch all” or surrogate for a host of water quality issues, including wetlands, floodplains, and buffers around water bodies. Similarly, residents expressed a strong desire to protect wildlife habitat but selected different criteria to represent this value. Accordingly, the Committee created new criteria to signify these preferences.

There was support for considering the location of previous conservation efforts when considering a new project. The goal would be to see that the benefits of acquisitions and other protection efforts are distributed throughout the community. A related goal is to facilitate access to these lands by different segments of the population. However, there was consensus that these considerations should be secondary to the primary objectives of the Town’s conservation efforts, which are Water Quality Protection, Scenic Vistas, and Wildlife Habitat.

APPENDIX 3: LIGHT POLLUTION

Proper outdoor lighting enhances the safety of citizens and increases the security of property. Outdoor lighting is used to illuminate roadways, parking lots, yards, sidewalks, public meeting areas, work sites, home and building exteriors. Good lighting increases the visibility of hazards, improves the safety of citizens and provides a sense of security in the community. However, a majority of outdoor lights are unnecessarily bright and are not properly shielded, causing unwanted, unsafe and expensive light trespass and glare. Very few highways or streets need to be lit with expensive streetlights (intersections and walkway crossings are the important places to have good lighting); it is far better to have bright, well painted roadway lines and good, clear signage. Roadside business and residential lighting also needs to be shielded (and low-intensity lights employed) so as to promote the safety of motorists from potentially fatal glare. And most parking-lot lights can and should be turned off "after hours".

Some benefits from well-designed lighting are: minimized energy use; reduced operating and maintenance costs; increased safety of citizens; improved security of property by illuminating potential hazards; and enhanced property values.

Poor lighting gives rise to the following issues:

Glare - Poorly selected and installed lighting causes a glare that can severely hamper the vision of drivers, pedestrians and cyclists, thereby reducing the overall safety of citizens. Glare occurs when the bulb is viewed directly, making our eyes less sensitive to the lower illumination levels around the source.

Light Trespass - Poor lighting can shine onto neighboring properties and into windows. This reduces privacy, it can hinder sleep and it creates an unattractive neighborhood.

Sky Glow - Up to 30% of the light from unshielded luminaries is directed upwards creating adverse effects over our cities and towns. It affects the behavior of nocturnal animals and birds. Sky glow symbolizes wasted energy and it washes out our view of the night sky, resulting in the loss to the viewer of such natural wonders as the stars and the Milky Way.

Energy Waste - Poor lighting wastes energy, thus unnecessarily inflating operating costs and environmental pollution from extra transmission lines and power plants. American studies have identified over a billion dollars worth of wasted energy each year because of the light that shines into the night sky. On the local level, a smaller community, with a lower tax base, can have significant savings if efficient lighting is properly installed.

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