

# **TOWN OF DEERFIELD, NEW HAMPSHIRE**



## **Open Space Plan**

# **Town of Deerfield, New Hampshire**

## **Open Space Plan**

Prepared by the  
Southern New Hampshire Planning Commission

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# Deerfield Open Space Plan

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## Overview

Open space planning in New Hampshire is an ongoing activity led mainly by conservation commissions and planning boards. Volunteers from the Town of Deerfield have created this Open Space Plan:

- To outline the benefits of open space,
- To explain the need for both land protection and changes in land use practices,
- To prioritize its criteria for land preservation, and
- To identify voluntary and regulatory strategies to maintain healthy and functional open space as the town continues to grow.

Between 1990 and 2003, Deerfield has grown from a population of 3,124 to 4,151, an increase of 33%. The population is projected to increase to 5,204 by 2015, an increase of 25% (NH OEP). This does not incorporate additional growth resulting from the widening of Interstate 93.

The development associated with this growth threatens the rural character and the open space of the town. Open space has economic, social, health, and environmental benefits; and this plan will help to maximize those benefits while helping to shape growth.

Open space provides many benefits for Deerfield citizens, including:

- **Economic:** Cost of community services studies, including one specific to Deerfield completed by Phil Auger of the UNH cooperative extension, show that towns that maintain open land and manage growth save hundreds of dollars per family in infrastructure costs for roads, safety services, and other municipal expenses.
- **Health:** Open space lands, particularly in the form of forested areas and aquatic buffers, filter pollutants out of the air, and provide the water supply that allows for continued growth and development.
- **Rural character:** Deerfield, a town that prides itself on its rural qualities, adds aesthetic and social value through open space lands.
- **Recreation:** Deerfield residents can benefit from a host of recreational opportunities afforded through open space.
- **Ecology:** Open space lands support and preserve the unique biodiversity and wildlife habitats contained in Deerfield.

The open space priorities are determined through a social and environmental inventory, determining the needs of the town for recreation, affordability, health, aesthetic value, and wildlife habitats. The environmental inventory includes water, soils, habitat, forests, and a number of other elements. When these elements are layered on each other the areas with the highest value for open space protection become evident.

A series of Geographic Information Systems (GIS) maps based upon data prepared through GRANIT, Bear-Paw Regional Greenways, and the Society for the Protection of New Hampshire Forests has been developed to provide an inventory of all the critical area overlays in Deerfield (see Appendix A). The maps show the known locations of open space resources. The basis of this plan is formed by the recognized need to protect the pattern of resources, particularly where several resource characteristics overlap. Areas having a

concentration of open space values represent resource lands that should remain in their natural condition to preserve water quality, wildlife habitat, recreation opportunities, sustainable timber resources, historic settings, potential greenways, and the scenic quality of the Town. Protecting these resource areas from development contributes to the quality of life in Deerfield while also helping the tax base. The natural areas within Deerfield that should be considered for protection from development include remaining large areas that have no or minimal roads and homes, hydric soils and wetlands, aquifers, floodplains, prime agricultural soils, steep slopes, forested lands, wildlife habitats, and important connectors between the unbroken large areas of undeveloped lands.

The Open Space Plan outlines a clear implementation procedure with a timeline for introducing zoning changes to allow for more sustainable open space and development practices and taking specific actions on open space priorities. The plan answers potential questions on actions and management strategies, such as conservation easements, conservation subdivisions, and taxes on open space lands.

The Open Space Plan is a guide for the community to document the need and suggest strategies for maintaining a functioning network of open lands. The two main avenues to do so are (a) land protection, and (b) changes in land use practices. For over a century, New Hampshire has been a leader in land protection, beginning with the creation of the White Mountain National Forest in 1901. Over the past few decades, thousands of cities and towns across the state and country have voted to spend millions of dollars to protect lands. Recently, a number of communities within the Southern New Hampshire Planning Region, including Auburn, Londonderry, Bedford and Chester have all enacted bond issues of over a million dollars each for land protection. The primary needs in these communities are to preserve key open space areas in order to manage development, protect natural resources, and maintain the community's character, while managing growth and stabilizing the tax rate. Within the last few years, natural resource scientists and land use experts in New Hampshire have started to work together to change land use practices within zoning and subdivision ordinances, recognizing that current development practices create suburban, rather than healthy rural, communities.

The intent of this Open Space Plan also is to help to identify, prioritize, and protect the Town's remaining open spaces. The Deerfield Open Space Committee will continue to explore options for protecting key properties possessing qualities that define the character of the community, including well-managed forests and tree farms, as well as unique habitats that provide shelter for rare plants and exemplary animal communities, and groundwater protection areas.

## **Town of Deerfield, New Hampshire Goals and Key Actions for Deerfield's Open Space Plan**

The Deerfield Open Space Committee will be considering the following suggested goals and key actions for this Open Space Plan. The goals are intended to serve as guiding principles for open space planning in the Town of Deerfield. These items should be reviewed on an annual basis in order to keep them current with the Town's strategies for open space planning.

Key actions indicate specific courses of action, aimed at the achievement of the broader goal. Generally, the key actions are attainable and measureable. They identify the types of things that should be done by local officials, boards, Town departments and the voters to help achieve the goals. Active citizen participation is a key element of this plan, in order to achieve the results of open space conservation and protection.

***The following Vision, Goals and Key Actions are recommended as an integral part of this Plan:***

### Vision Statement:

*“A Deerfield with sustaining rural character, where homes and businesses, services and recreational opportunities are set within a functioning network of wild lands, managed forests, and working farms.”*

From the Deerfield Open Space Committee, Initial Meetings, February 2002 and updated at the Deerfield Open Space Committee Meeting of July-September 2005.

### Goals:

1. Implement COST-EFFECTIVE means to preserve land to have the greatest overall tax and revenue benefits for Deerfield citizens.
  - 1.1 Recognize open space as an important component of a smart growth program to curb sprawl.
  - 1.2 Identify means of land protection to best utilize available funding and tax benefits offered by state, federal, and non-profit agencies.
  - 1.3 Clarify the relationship between open space lands and tax revenues for the Town of Deerfield.
2. Establish development and subdivision zoning REGULATIONS AND ORDINANCES for Deerfield to encourage smart growth, preserve open space, and make the Town economically sustainable.
  - 2.1 Adopt the Open Space Plan as an official part of the Town's Master Plan.
  - 2.2 Amend the Town's Open Space Development Regulations to tie individual projects within the overall functioning network of open space as presented in the Open Space Plan. Also consider adding new practices and techniques to the regulations that can help preserve the community's rural character and protect sensitive environmental features.

- 2.3 Explore mechanisms such as a Rural Features Overlay District, a Density Credit Overlay District, and/or the Transfer of Development Rights which allows increased density (i.e. above and beyond that permitted by current zoning) in exchange for protecting specific rural features and open space such as undeveloped road frontage, view points, viewsheds, fields and pastures, steep slopes, vegetated stream corridors, etc.
- 2.4 Develop performance regulations to zone land according to the performance of the site and the impact its activities have upon surrounding areas, such as noise, pollution, light, and traffic flow.
- 3 Prioritize the CRITERIA the Conservation Committee/Town of Deerfield/Planning Board will use when considering potential lands for open space preservation.
  - 3.1 Protect Deerfield's most sensitive natural areas, including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats (including wildlife corridors), old forest stands, and agricultural soils to protect the environment and to balance growth and development with quality of life.
  - 3.2 Connect un-fragmented areas with guidance from local knowledge and Bear Paw Regional Greenways.
  - 3.3 Preserve the natural and cultural resources provided by Deerfield's scenic views, Class VI Road system, trails, and culturally and historically significant lands.
  - 3.4 Continue to work with Bear Paw Regional Greenway and other land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Book State Park, Pawtuckaway State Park and Northwood Meadows State Park.
  - 3.5 Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to establish priorities for preservation.
- 4 EDUCATE the residents of Deerfield of the multiple economic, health, ecological, and recreational benefits of Open Space.
  - 4.1 Define "rural" and establish open space as a significant component of rural character.
  - 4.2 Identify the economic benefits of open space to the town's tax base and land values.
  - 4.3 Identify the health hazards that can arise from nonpoint pollution sources in groundwater and air and recognize the role of open space in clean water and good air quality.
  - 4.4 Outline the recreational potential of open space lands through Class VI roads, trails, and parks.
  - 4.5 Demonstrate the importance of open space for wildlife habitat.



## Section 1: Open Space—Benefit or Burden?

While open space offers many economic, social, and environmental benefits, many myths abound over the societal costs of open space preservation. Using current academic and industry studies on the effects of open space on property values, tax rates, growth rates, and density, this section seeks to uproot misconceptions about open space maintained through either land protection or development practices.

**Land Protection:** New Hampshire has a 100+ year history of land protection initiatives, starting with the White Mountain National Forest in 1901. The answers to the questions below come from a century of experience and data.

*Doesn't the cost of land protection eventually come back to the taxpayers?*

The costs of open space land are rarely attributable to a single source, but taxpayers rarely see increases due to open space protection and the increases that they do see are negligible. There are three costs associated with open space land, purchase/acquisition, taxes, and maintenance; each varies depending on the open space arrangement.

Town purchase/easement: The Town of Deerfield has committed a portion of its land change tax to go towards land protection, at the discretion of the Conservation Commission. From 2001 until 2005, 100% of the tax went to land protection. Starting in 2005, 25% of the land change tax will go to land protection until a cap of \$500,000 is reached. These funds can be used towards conservation easements or direct purchase of land. In the case of conservation easements, the most popular form of conservation, the land owner continues to pay current use taxes on the land, resulting in no loss of taxes. If the town purchases the land, the land is removed from the tax rolls, so that is not the preferred choice. There are several state programs to help defer the tax losses of these purchases (for more information, please see Section 4). In some cases, very small, short-term tax increases are passed on to the residents.

Private Land Trust: The Town often works with Bear Paw Regional Greenways to acquire easements on conservation lands. Easements may be donated or purchased with funds from towns and other grants. Bear Paw maintains stewardship over the land, and the land owner continues to pay taxes.

Conservation subdivision: Implemented through regulatory measures, this method costs the least to implement in that the developer purchases the land, retains at least 50% as open space, and sells the remaining land as house lots. In most cases, the open space land is owned by a Homeowner's Association, consisting of all residents of the subdivision. The members are required to pay dues, which go towards taxes on the land, monitoring, and maintenance costs.

*Doesn't more development lead to more taxpayers and therefore lower taxes?*

The additional services required by new residential taxpayers outweigh the additional tax income. Expanding residential development costs towns more than the tax revenue it acquires. A UNH Cooperative Extension study found that Deerfield spent \$1.15 for every dollar generated through residential property taxes. Contrastingly, open space land cost the town only \$0.35 for every dollar of tax revenue.

*What are the tax benefits associated with land protection?*

Landowners who donate development rights or offer a bargain sale of their land to a municipality or land trust can enjoy an array of tax benefits that can, in some cases, equal or exceed the financial benefits of selling the land. Additionally, the sale of conservation easements can significantly lessen the financial burden for heirs (see Appendix D). For town residents, open space land does not increase (and in many cases may decrease) residents' taxes based on infrastructure savings and improved property values.<sup>1</sup>

**Development Practices:** In many areas of southern New Hampshire, land prices have at least doubled in the seven years from 1997-2004, making land protection increasingly expensive. Therefore, changing land use practices has become another very cost effective way to maintain open space, as the answers below indicate.

*Isn't the three-acre minimum lot size currently required in Deerfield an important measure for maintaining rural character and open space?*

Hypothetically, a 3,000-acre town with a three-acre lot minimum could have 1,000 homes distributed evenly throughout the town, forcing the town to build roads, and provide police, fire, rescue, and school bus services to all reaches of the community. In some municipalities, the cost of providing services to a large -ot residence located at the fringe of the community can be \$10,000 more than one located in a more urban core.<sup>2</sup> Furthermore, the town has no open space greater than 2.5 acre lots, wiping out the health, recreational, social, and economic benefits that accompany larger tracts of open space. In the alternate hypothetical situation, the same town has 1,000 homes located on 1,000 or fewer acres, clustered into conservation subdivisions, each containing large tracts of open space land. The town provides concentrated services to these areas, which results in considerable savings, and 2/3 or more of the town remains as open space lands.

*Do conservation or open space subdivisions cost more for the town?*

Development and town design oriented around open space is actually a cost-saving mechanism on two levels. First, these developments are planned according to specific regulations regarding lot location, land preservation, and construction of infrastructure. As these developments avoid sprawl and as no infrastructure is required on the open space land, it costs less to implement water, sewer, and roads. Second, houses located near open space or in conservation subdivisions have higher property values and are more desirable than similar houses not located near open space.<sup>3</sup> This means that the tax revenue that the town gains from conservation subdivisions will exceed that of a subdivision of equal population without conservation land, resulting in a higher tax base for Deerfield.

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<sup>1</sup> Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, [http://www.tpl.org/content\\_documents/nh\\_managing\\_growth\\_report.pdf](http://www.tpl.org/content_documents/nh_managing_growth_report.pdf).

<sup>2</sup> International City/County Management Association, *Why Smart Growth: A Primer*. (Washington, D.C.: Author, 1998).

<sup>3</sup> David J. O'Neill, *The Smart Growth Tool Kit* and PFK Consulting, *Analysis of Economic Impacts of the Northern Central Rail Trail* (Annapolis, Maryland: report prepared for Maryland Greenways Commission, Maryland Department of Natural Resources, 1994).

*Why would the rural town of Deerfield be concerned about losing open space?*

New Hampshire is the fastest growing state in New England, with annual population increases of 13,000 expected to continue throughout the next two decades. With the expansion of I-93, more of this growth will be directed to the towns surrounding the I-93 corridor, including Deerfield. The New Hampshire Office of Energy and Planning predicts a 30% population increase for Deerfield from 2000 to 2010, meaning that Deerfield will see many new residential developments taking over its current wealth of undeveloped land.

## **Section 2: Background and Introduction**

The Town of Deerfield has a history of appreciation for the protection of open space within its community. Deerfield has been working on local protection initiatives since 1987. Formed in 2002, the Deerfield Open Space Committee (DOSC) has collaborated with the Planning Board, the Select Board, the Conservation Commission, the Forestry Commission, the Heritage Commission and Bear Paw Regional Greenways to work towards open space protection - representing varied interests with a common goal.

Although Deerfield was a very successful participant in the Land Conservation Investment Program (LCIP) in the early 1990's, the successor Land and Community Heritage Investment Program (LCHIP) has not been adequately funded. In 2005, however, New Hampshire Department of Transportation began an innovative, multi-year, \$3.5 million Community Technical Assistance Program (CTAP) for the 26 towns in the I-93 corridor most directly impacted by the proposed highway widening from four lanes to eight. Deerfield has the opportunity to benefit from assistance through CTAP and its related initiatives, including the regional Conservation Framework currently being defined by the leading statewide conservation organizations. The Conservation Framework is expected to provide a vision to guide significant land protection opportunities and local land development practices by 2006.

The overarching goal of this document is to inform the residents of Deerfield of the importance of Open Space preservation, not only for the ecological health of the community but also for the economic sustainability and quality of life improvements that it will bring to the entire town. In addition to identifying the benefits of open space preservation, the plan also outlines the priorities for land preservation so that potential parcels for acquisition can be evaluated to provide maximum and multiple benefits for any expenditure of local, state, or federal funds. The plan also identifies potential changes to land use practices for zoning and subdivision that will help maintain rural character as Deerfield continues to grow. Protection of rural character is a major goal of Deerfield residents, consistently identified in the Town's master planning.

With this plan as a guide, both the Conservation Commission and other Town Boards can continue to work on identifying and protecting the most important open space, while helping to change practices for new development within the Town.

### **Defining Rural Character**

Residents of the Town of Deerfield see open space as a significant component of rural character. The question of what is rural versus urban is one that challenges towns across the nation. At least two approaches to defining that rural character, are: quantitative and qualitative, and are briefly summarized below.

**Quantitative:** The Center for Rural Pennsylvania formerly defined rural based on the U.S. Census definition. However, the 2000 Census offered an altered and more complex definition of urban and rural. Therefore, in 2000 the Center created a new rural

definition, based upon the state population density and the U.S. Census definition of urban. Using a modification of this definition for the state of New Hampshire, the quantitative definition of rural could be described as follows:

A municipality is considered rural when the population density within the municipality is less than 145 persons per square mile (US Census 2004) or the municipality's total population is less than 2,500, unless more than 50 percent of the population lives in an urbanized area, as defined by the U.S. Census Bureau. All other municipalities are considered urban.

Deerfield has a population density of 77.1 persons per square mile, according to the most recent population figures available (US Census 2003), placing it well below Pennsylvania's chosen population density of 145 persons per square mile. Deerfield also did not contain any urbanized areas in the 2000 Census, with urbanized areas defined as containing census blocks or block groups with at least 1,000 people per square mile and contiguous with other blocks or block groups of at least 500 people per square mile. Therefore, Deerfield meets Pennsylvania's quantitative definition of rural.

In 2003, a collaborative study by The Jordan Institute and Audubon Society of New Hampshire analyzed all 259 municipalities and unincorporated places in New Hampshire, categorizing them by number of housing units and whether there was municipal water service. Deerfield was among the 41% (or 106) of communities defined as "rural."

In 2005, the Society for the Protection of New Hampshire Forests updated their 1999 *New Hampshire's Changing Landscape* report. In that report, they chose the following densities to define community character:

Rural = less than 36 persons/sq mile  
Exurban = 36-144 persons/sq mile  
Suburban = 145-1,000 persons/sq mile  
Urban = more than 1,000 persons/sq mile

By that definition, Deerfield, with 77.1 persons per square mile, is in the middle of the "exurban" range, and projected to remain there through 2025

**Qualitative:** A qualitative rural definition often embodies what residents see and feel, fitting less with a rigid, qualified statement. Some members of the Deerfield Open Space Committee associate rural character with the definition provided by the Center for Rural America: "Relationship to nature is a key determinant of what is rural. When development destroys or seriously degrades the natural environment, it destroys the core basis for ruralness."<sup>4</sup> Rockingham Planning Commission land use planner, Jill Robinson, defines rural as involving working landscapes including forestry and agriculture where ways of life and livelihood are connected to stewardship of the land. Rural areas include a mix of different settlement densities interspersed with unmanaged areas and economic uses such as tree farms, managed forests, and active agriculture.

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<sup>4</sup> Karl N. Stauber, PhD. *Economic Review*, 2<sup>nd</sup> Quarter, 2001, p 36-37

Agricultural endeavors are encouraged and businesses meet the needs of the community. As opposed to suburbs, rural towns include mixed land uses, mixed incomes, and mixed ages. The DOSC also discussed what rural is *not*; rural communities do not have traffic congestion, traffic lights, or wide, straight, paved roads abutting posted land. Above all, the natural landscape and areas of open space predominate over the built environment and the town maintains a sense of community facilitated through many places, events, and opportunities for citizens to meet and interact.

### **Determining Future Character**

As evidenced by these comments, open space is an important component of rural character. Residents move to Deerfield because its layout contrasts that of more densely developed cities and suburbs. Large tracts of open space and open spaces between developed places are important characteristics of rural communities that set them apart from other types of communities. By both quantitative and qualitative definitions, Deerfield today is rural. But, what will the future character be as Deerfield grows? It could remain rural, or change character to become a village, small town, or suburb. According to the master plan, maintaining open spaces and a variety of land uses is a priority for the Town of Deerfield as it grows.

### **Functions of Open Space**

In addition to its contribution to the rural character in Deerfield, open space benefits the quality of life of town residents through its social, environmental, and economic effects. The body of this plan will illustrate the necessity of open space to maintain a vibrant, functioning town.

While open space is commonly misconceived as a burdensome expense to the community, residents in towns with open space preservation often pay fewer taxes than towns with greater development. Open space lands cost towns very little in services as compared to residential developments. In the long term, open space is a financial positive for a town, and there are many strategies to address short-term costs such that there is little or no impact to taxpayers.

### **Deerfield's Regional Setting**

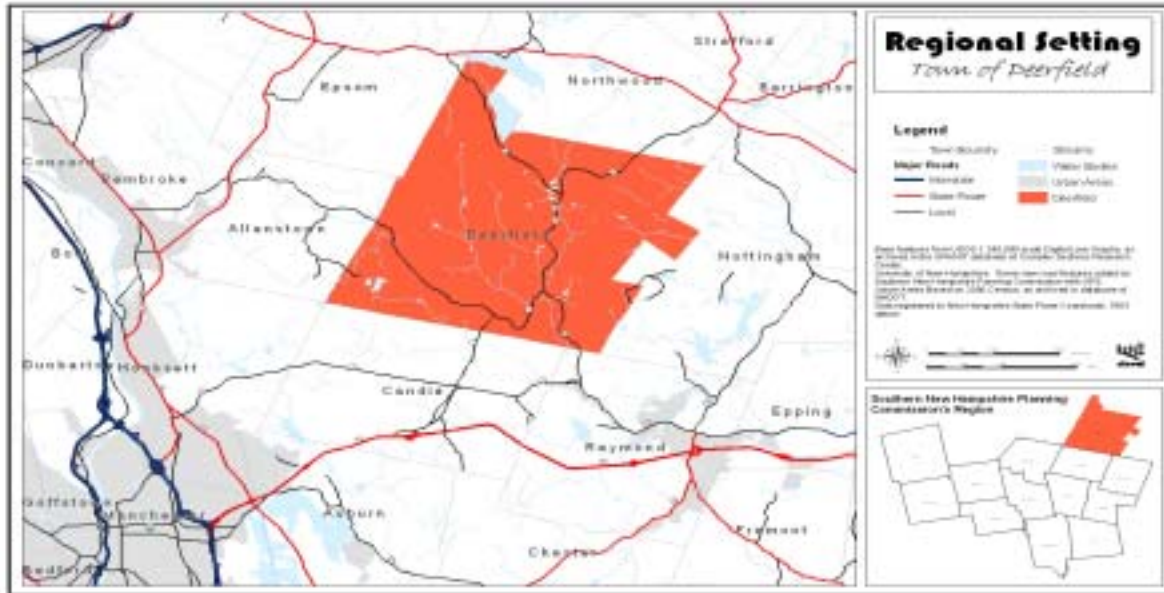
Located in the northwest portion of Rockingham County, Deerfield is bounded by the Towns of Hooksett, Allenstown, and Epsom in Merrimack County; and by Nottingham, Northwood, Candia, and Raymond in Rockingham County (see following *Regional Setting Map*). Deerfield consists of 52.1 square miles, and is linked to other parts of the region by NH Routes 43 and 107. Much of the development in town is located along the major and minor roadways, which cross through the community.

Deerfield is bordered on the west by Bear Brook and east by Pawtuckaway State Parks, and to the north by Saddleback Mountain, where large amounts of land are owned by UNH and NH Fish and Game Department, abutting Northwood Meadows State Park. These three areas are the largest remaining tracts of undeveloped land in southeastern New Hampshire.

Deerfield is a member of the Southern New Hampshire Planning Commission that is composed of 13 communities, containing approximately 500 square miles in portions of Hillsborough,

Merrimack and Rockingham Counties. Figure 1 below shows the location of Deerfield in relation to its neighboring towns.

**Figure 1**



### **A Brief History of Deerfield**

The Town of Deerfield received independent town status from the town of Nottingham in 1766. Deerfield was settled in the late 1730s, and as it lay along the main route between Concord and Portsmouth, it became an active center of trade and commerce. The residents erected the Meeting House on Chase Hill soon after the town's incorporation, and this area became known as the Old Center. The Deerfield Parade, along the Concord/Portsmouth route, contained an inn for travelers, a store, and an academy to educate the children of the town's prominent citizens. Leavitt's Hill and South Road also became areas of trade and hospitality.

Education has been a priority of Deerfield citizens from its earliest days. The establishment of a grammar school was one of the top priorities of early citizens, along with the Meeting House and a church. From the first one-room school house, the Town's education system contained 15 school districts and 13 school buildings by the mid-19<sup>th</sup> century.

The earliest citizens cleared the forests, settled the land, and built houses and important municipal buildings. The population in 1773 was 911. The hundred years witnessed an explosion of hospitality and trade, with taverns, water-powered manufacturing, and craftsmen of all varieties occupying the Town. Farming remained the most important occupation, with land being passed down along family lines for centuries. The population in 1820 had reached 2,133.

After 1850, Deerfield experienced a period of population decline due to the unprofitability of farming and the advent of railroads to the area, which eliminated travelers and freighters. During this period, some old farms became summer vacation destinations for tourists. This led to some development as a modest summer community, yet by 1930 only 635 year-round residents of Deerfield remained. This trend reversed gradually after World War II as workers commuting to outside cities bought homes in Deerfield, which led to the construction of a central school, the George B. White School. The 1970s and 1980s saw extreme population growth, with the population growing from 1,178 in 1970 to 3,300 in 1990. More forest land was cleared to build housing. Deerfield recognizes the need for growth but hopes to maintain the Town's heritage as the town grows.

As provided in the Deerfield Official Website ([www.ci.deerfield-nh.us/townhistory.htm](http://www.ci.deerfield-nh.us/townhistory.htm)).

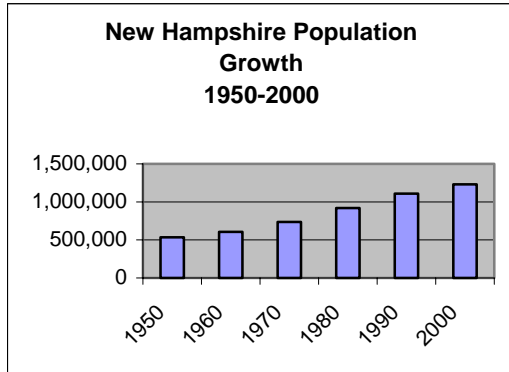
### **History of Deerfield land protection and DOSC**

Deerfield community members have worked collectively towards local land protection for several decades. The Conservation Commission has worked closely with the Planning Board, the Select Board, and the Historical Society on local protection initiatives since 1987. In 1992, through funding support from six landowners, the Town, and the statewide Land Conservation Investment Program (LCIP), 700 acres along the Great Brook Corridor were permanently protected. Through that experience, local volunteers formulated a process for Deerfield through which to communicate with landowners and citizens to support such initiatives.

In 2001, the Deerfield Conservation Commission (DCC) proposed the creation of a Joint Open Space Committee to identify how to most effectively expend revenues from the Use Change Tax for land protection. Since then, the Deerfield Open Space Committee (DOSC), in cooperation with the DCC, has worked on educating the public on land preservation, developing conservation priorities, identifying projects, and finding funding for open space protection. The committee has been working towards the completion of the Open Space plan to publicize their work and outline implementation strategies.

### Section 3: The Cost of Sprawl--Population Growth, Sprawl, and Smart Growth Choices: How they Affect Open Space Protection

#### Population Growth in New Hampshire and Deerfield

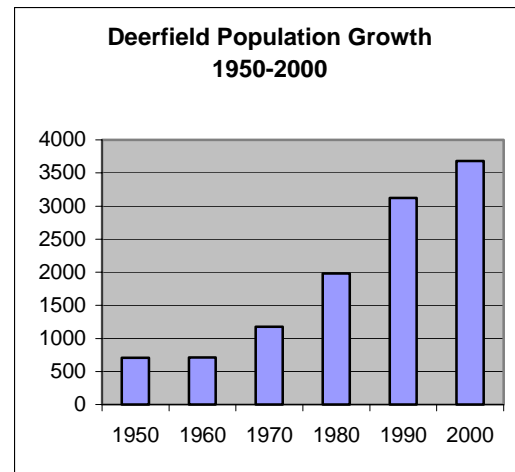


Since 1950, the population of New Hampshire has grown from 533,110 persons to 1,228,794 in 2000, an increase of *over 100%*. Deerfield’s population growth during this same period has increased from 706 persons in 1950 to 3,678 in 2000, an increase of *over 400%* during this same period.<sup>5</sup> The NH Office of Energy and Planning has projected additional population increases for Deerfield of approximately 30% from 2000 to 2010, and 18% from 2010 to 2020. The

New Hampshire Department of Transportation estimates that as many as 500 *additional* people may relocate to Deerfield as a result of the I-93 expansion.

The housing stock in Deerfield is approximately 78% owner-occupied and 9% rental housing. This is difficult for open space planning, as site-built single-family homes on large lots occupy considerably more open space than clustered developments.

So what does all this mean? Planning for future growth is not an easy task, since open space conservation must be balanced with inevitable population increases. Changes in allowable population densities, and zoning and subdivision regulations may be needed in order to plan for growth that will be here in the future.



#### The Costs of Sprawl

In a document produced by the Southern New Hampshire Planning Commission titled *Sprawl and Smart Growth Choices for Southern New Hampshire Communities*, it is estimated that the consumption of residential land within the 13 communities in the SNHPC region exceeded what was needed for population growth. From 1986 to 2000, residential acreage was consumed at *twice* the population growth rate, and commercial acreage was consumed at *three times* the population growth rate. In 1982, New Hampshire had 0.41 developed acres per person, and by 1997, that figure had increased to 0.55 developed acres per person. These figures are higher than those for New England as well as those for the United States as a whole.<sup>6</sup>

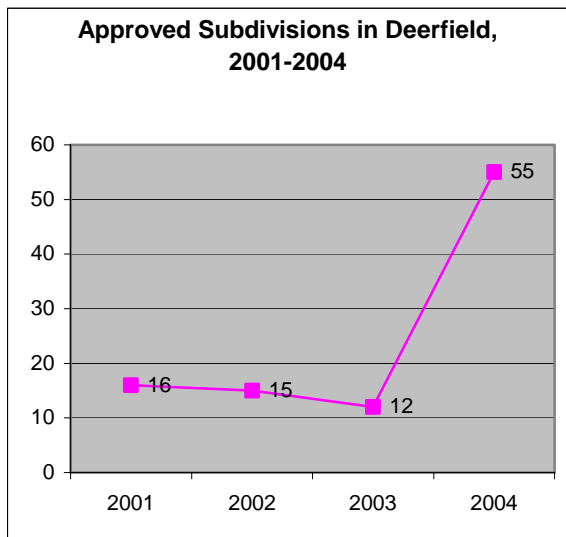
<sup>5</sup> US Census, 1950-2000.

<sup>6</sup> State of New Hampshire, Environment 2000.

During the past 20 years, many communities in New England required larger lots in their zoning ordinances for single family homes than were really necessary. They felt that, if larger lots were required, fewer homes would be built, and that would decrease sprawl and its accompanying traffic problems. However, large lot zoning resulted in the subdivision of tracts of land that would never again be useful for open space or other common public areas. Deerfield's zoning ordinance currently requires three-acre lots.

*“Overall, the state is converting 13,000 acres of open space per year to roads, houses, businesses, and commercial development.”<sup>7</sup>*

Deerfield has seen a considerable increase in amount of lots approved for subdivision in 2004. Subdivision of lots significantly reduces open space and often removes the potential even for current use of land. The graph below illustrates the recent spike in approved subdivisions, with an approved subdivision containing one or more lots. Details on conservation subdivision ordinances, one answer to the subdivision trend, can be found in Section 8. Please see the above document at the SNHPC website [www.snhpc.org](http://www.snhpc.org) for more information on this topic.



Multiple studies have found sprawling development to be more expensive for municipal, county, and state governments. Twenty-five years of studies cite millions of dollars saved through smart growth management as opposed to sprawl. A summary of some of these studies can be read on the following page as released by the Michigan Land Institute in January 2005. These studies confirm Deerfield's fiscal experience, where tax rates have grown steadily as the population has increased, primarily through large-lot, frontage-based subdivision. Now that few buildable lots on town road frontage

remain, subdivisions more frequently require new road construction, which further increases road maintenance expenses to the town.

Sprawl has been and will continue to be a problem for most communities. Many towns have developed both regulatory and non-regulatory answers to encourage more compact, less sprawling development. Potential regulatory measures for Deerfield will be addressed in Section 8.

<sup>7</sup> *Conserving Your Land*, Center for Land Conservation Assistance 2004, 1.

# Economic Consequences of Sprawl

*Government and academic studies consistently find that sprawl is much more expensive than compact patterns of development*

**1974** – *The Costs of Sprawl*, a three-volume report by the Real Estate Corporation for the White House Council on Environmental Quality, concluded that compact development patterns were much less expensive and environmentally damaging than sprawling residential and commercial development. It is one of the most significant critiques of sprawl ever published.

**1997** – *Fiscal Impacts of Alternative Land Development Patterns in Michigan: The Costs of Current Development Versus Compact Growth*, by Rutgers and Michigan State Universities, found that, in the 18 communities studied, land consumption and costs for infrastructure and municipal services were far less expensive when Smart Growth principles replaced sprawling patterns of development.

**1997** – *The Cost of Sprawl*, published by the Maine State Planning Office, found that residents of fast growing “new suburbs” were paying many “hidden costs,” including higher taxes, homeowners insurance, and school construction costs. Although its student population declined by 27,000 from 1975 to 1995, the state spent \$727 million to construct and maintain new suburban schools. Although Maine’s population declined 10 percent in the 1980s, its residents drove 57 percent more miles, highway costs increased by a third, local governments added 100 miles of new roads annually, and police employment increased by 10 percent, even with a 20 percent fall in the crime rate. (<http://www.maine.gov/spo/landuse/docs/CostofSprawl.pdf>)

**1998** – *The Costs of Sprawl – Revisited*, prepared for the National Research Council, analyzed nearly 500 studies of the fiscal, economic, and environmental effects of sprawl and concluded that while “most of the American public is not unhappy with the current patterns of development in metropolitan areas – it simply can no longer afford it.” (<http://www.nas.edu/trb/index.htm>)

**2000** – *The Costs of Sprawl – 2000* concludes that even modest new Smart Growth policies would save 4.4 million acres of farmland, \$12.6 billion in sewer and water expenses, \$109 billion in road construction costs, and \$420 billion in private sector development costs. (<http://www.national-academies.org/trb/bookstore>, or to download full report [http://guliver.trb.org/publications/ncrp/ncrp\\_rpt\\_74-a.pdf](http://guliver.trb.org/publications/ncrp/ncrp_rpt_74-a.pdf))

**2000** – *The Costs of Sprawl in Pennsylvania*, published by 10,000 Friends of Pennsylvania, reported that costs for infrastructure and housing are significantly higher in sprawling regions than in planned-growth areas. Compact development can save up to 25 percent of road and utility

construction and up to 20 percent of water and sewer costs. Applied to local road construction, “the savings would be \$52 million per year.” ([http://www.10000friends.org/Web\\_Pages/News/Costs\\_of\\_Sprawl\\_in\\_Pennsylvania.pdf](http://www.10000friends.org/Web_Pages/News/Costs_of_Sprawl_in_Pennsylvania.pdf))

**2000** – *The Costs and Benefits of Alternative Growth Patterns: The Impact Assessment of the New Jersey State Plan*, published by Rutgers University, found a state plan that encourages settling in existing communities could save local governments \$161 million by 2020, conserve 100,000 acres of farmland, save \$870 million in road construction costs, and eliminate \$1.4 billion in water and sewer development.

**2002** – *Growth in the Heartland: Challenges and Opportunities for Missouri*, a Brookings Institution report, found that Pettis County, located near Kansas City, will gain 3.6 percent in tax revenue thanks to population increases and development. But its costs will rise 6 percent, generating a \$2.4 million deficit unless the county raises taxes. (<http://www.brookings.edu/es/urban/missouri/abstract.htm>)

**2003** – *The Fiscal Cost of Sprawl: How Sprawl Contributes to Local Governments’ Budget Woes*, by Environment Colorado Research and Policy Center, concludes that “sprawling development does not generate enough tax revenue to cover the costs it incurs... If growth patterns do not change in the Denver area... sprawl will cost local governments \$4.3 billion more in infrastructure costs than Smart Growth.” ([http://www.environmentcolorado.org/reports/fiscalcostofsprawl12\\_03.pdf](http://www.environmentcolorado.org/reports/fiscalcostofsprawl12_03.pdf))

**2003** – *The Jobs Are Back In Town: Urban Smart Growth and Construction Employment*, by the Washington-based research group Good Jobs First, found that metro areas with concentrated growth had 30 percent more construction activity than areas that encouraged sprawl, and concluded that Smart Growth generates more residential, commercial, and transportation construction jobs than sprawl does. (<http://www.goodjobsfirst.org/pdf/backintown.pdf>)

**2004** – *Investing in a Better Future: A Review of the Fiscal and Competitive Advantages of Smarter Growth Development Patterns*, by the Brookings Institution, found that in Kentucky’s Shelby County, which managed its growth, the cost of additional police, fire, highways, schools, and solid-waste services for every 1,000 new residents added \$88.27 to an average family’s expenses. But in Pendleton County, which allows sprawling development patterns, those same services added \$1,222 per family — 13 times as much. ([http://brookings.edu/metro/publications/200403\\_smartgrowth.htm](http://brookings.edu/metro/publications/200403_smartgrowth.htm))

### **Smart Growth Solutions and Principles**

During the past 10 years, a number of books and articles have been written on the topic of “Smart Growth.” Many communities throughout New Hampshire have begun to embrace this concept, with promising results, although in reality it is a return to the distinctive practices of colonial New England. These practices reflect on a time when land uses were mixed, homes were often clustered into villages, and good land was fenced for pasture and agriculture. Woodlands were accessed by a network of woods roads, and rough land was left open and unmanaged.

“Smart Growth” won’t necessarily reduce municipal cost greatly because the majority of our expenditures are for education, not other services. However, the publication, *Managing Growth in NH*, notes that, on average, taxes on the median value home in New Hampshire communities are:

- Higher in more develop towns,
- Higher in towns with more year-round residents, and
- Higher in towns with more buildings (more value of buildings).

Since Deerfield will continue to grow, the community can choose its future character and manage this growth by directing it to areas that can sustain more dense development, or continue sprawl based practices (see page 7 on future character). Since large open space areas provide many other ecological and economic services, a better place to direct growth may be into the village areas and other existing developed areas, or into more condensed new development.

*Getting to Smart Growth: 100 Policies for Implementation* presents a series of ten smart growth principles along with ten policies for each principle. While some of these principles and policies may not yet work for Deerfield, several can work and have been tried in other communities in the region with great success. The following are a few that could work in Deerfield:

**Principle 1: Mix land uses.** The Town of Deerfield has only an Agricultural-Residential Zoning District, which allows municipal buildings and some commercial and industrial businesses by special exception. While this causes all non-residential buildings to be close to housing, development could more effectively embody mixed-use principles with specific mixed-use zoning. Places that are accessible by bike and foot can create vibrant and diverse communities. Separate uses tend to exact social costs by fundamentally changing the character of communities and undermining the viability of opportunities for people who walk to shops or work, and to meet and chat with their neighbors on the way. Smart Growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live.

**Principle 3: Create a range of housing opportunities and choices.** While Deerfield has some multi-family and manufactured housing, these options have fallen in popularity to the proliferation of single-family homes. Deerfield can better accommodate the housing needs of residents by encouraging small, dense multi-family housing near commercial or

municipal centers. By using smart growth approaches to create a wider range of housing choices, communities can begin to use their infrastructure resources more efficiently and help aging residents remain in their homes. Zoning codes can be revised to permit a wider variety of housing types.

**Principle 5: Foster distinctive, attractive communities with a strong sense of place.**

Deerfield has a strong history of preserving its community character. Smart growth seeks to foster the type of physical environment that creates a sense of civic pride, and supports a more cohesive community fabric. For example, planting trees is a simple yet fundamental way of adding to the beauty, distinctiveness, and material value of an area by incorporating the natural environment into the build environment.

**Principle 6: Preserve open space, farmland, natural beauty, and critical environmental areas.** Deerfield is already doing this through the development of this

Open Space Plan and the work of the Conservation Commission. Open space supports smart growth goals by bolstering local economies, preserving critical environmental areas, providing recreational opportunities, and guiding new growth into existing villages. Networks of preserved open space and waterways can shape and direct urban form while preventing haphazard conservation (conservation that is reactive and small-scale). Open space can increase local property values, provide tourism dollars, and reduce the need for local tax increases.



**Principle 9: Make development decisions predictable, fair, and cost effective.** Most conventional zoning codes offer relatively broad guidelines to define the size and use of buildings. A point-based performance evaluation system helps communities to evaluate projects in terms of the smart growth benefits they provide. Projects that fail to meet a desired point level can be redesigned during negotiations with planning staff to achieve a higher score. Reduction of development fees, support for infrastructure financing, or density bonuses may be used as incentives to encourage smart growth projects. Adding such growth incentives now can ensure compact, controlled development rather than the sprawling development that might come later without such regulations.

The principles describe traditional New England land use. Current land use practices follow early 20<sup>th</sup> century zoning intent to separate land uses, important when heavy industry was prevalent, loud, and polluting. Today, with increasing population, economic activity, land conversion, traffic volume, and energy prices, such traditional land uses once again make economic and planning sense.

## Section 4: The Economic Benefits of Open Space

Common misconceptions hold that open space programs are expensive for municipalities, but dozens of studies over the past few decades have shown that communities who curb sprawl and implement smart growth principles, *including land preservation*, spend considerably less money than towns with sprawl. Towns with widely-distributed residential development and continued construction of new residential areas have giant costs of infrastructure construction, including water, sewer, road, and utilities.

In 2005, the Trust for Public Land (TPL) released a study entitled, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*. Looking at the unique relationship between property taxes and municipal revenue in New Hampshire, the study addressed the concern that land conservation increased property taxes. A description of the system of taxation in New Hampshire leads to a better understanding of the concerns over the expenses of conservations lands.

### Who pays for land protection?

Acquiring conservation lands by direct purchase represents a known cost to the buyer, which in the case of a municipality is borne by the taxpayers. Municipalities purchasing conservation lands should clearly communicate the benefits of open space, and residents should understand the costs and benefits of the purchase. However, there is a hidden cost of land acquisition in the form of lost tax revenue. Since municipalities often need to compensate for the lost tax revenue, there can be a small, *short-term* tax increase for residents. In New Hampshire, there are measures in place by land conservation bodies to account for this tax base loss and avoid making residents pay the difference.

Open space land in Deerfield is most likely to be obtained through purchase or conservation easement acquired by the Town or through a private conservation group. Land may also be obtained through conservation subdivisions. In each situation, the cost is covered in different manners:

- **Private conservation groups:** Private conservation groups tend to acquire conservation easements, in which the owner continues to pay current use taxes on the land.
- **Conservation subdivision:** Open space land in conservation subdivisions is often owned by the developer, where it gets passed on to a Homeowner's Association. The taxation values are low because the land has lost its development rights, and taxes are paid through homeowner association dues by the residents of the subdivision.
- **Municipal lands:** When a municipality purchases land, they do not pay property taxes to themselves, so the property is removed from the tax roll. However, due to the Statewide Education Property Tax and Adequacy Aid (SWEPT), the total equalized value of the town would decrease with the lands removed from the tax roll. Therefore, "property rich" towns would have to send fewer property taxes to the state for education and "property poor" towns would receive greater adequacy aid from the state. While the SWEPT funds do not account for the total value

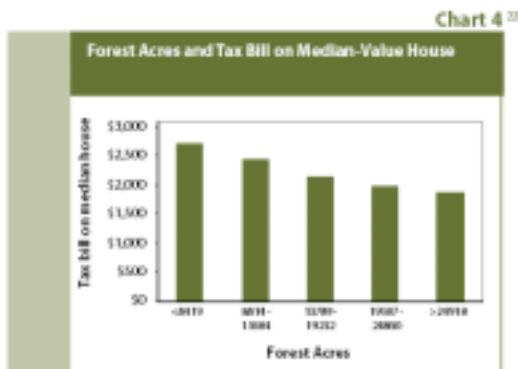
lost, the resulting tax increase is slight (in the TPL study, the highest scenario of tax increase was a mere \$0.88 on a \$100,000 property).

While not as likely in Deerfield, the state and federal governments have measures in place to account for municipal tax revenue lost through state and federal open space land acquisition:

- **Federal lands:** If the federal government purchases land in New Hampshire, they do not pay taxes but rather pay two annual fees. One fee goes directly to the town's school district and the other to the town as a Payment In Lieu of Taxes (PILT). If the fees do not equal the amount of taxes the town would receive on that land under current use, the state will pay the difference. However, these fees often exceed the current use taxation values.
- **State lands:** The state pays the municipality the amount of taxes they would receive under current use value of the land.

### Long-term Benefits

The TPL report shows that towns with more permanently protected lands have long-term tax benefits, or the residents pay fewer property taxes than towns with fewer permanently protected lands. The strongest indication of lower taxes comes in the form of commercial



developments, which can offset the financial demands coming from residential development. In the long term, however, increased commercial and industrial development have not been demonstrated to reduce taxes greatly, presumably because commercial and industrial development typically create jobs, which attract additional residents. The residential growth that often accompanies commercial and industrial growth can reduce or eliminate the tax advantages that the commercial and industrial

land use may appear to have if considered in isolation. All else being equal, the TPL study emphasizes land protection does *not* result in higher taxes and generally results in lower taxes, dispelling the myth that land protection is costly over the long run.

The report notes that the conservation of a single parcel does not have a large affect on the amount of development that will occur in towns. However, the strategic placement of certain conserved parcels can influence the direction and location of development, with the possible effect of confining development to proximate areas, which would ease the construction and servicing of infrastructure to new development.<sup>8</sup>

Several academic studies have also examined the relationship between open space and property values, indicating that properties bordering open space increase in value due to the quality-of-life increases associated with open space. Jacqueline Geoghegan's 2002

<sup>8</sup> Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, [http://www.tpl.org/content\\_documents/nh\\_managing\\_growth\\_report.pdf](http://www.tpl.org/content_documents/nh_managing_growth_report.pdf).

study of Howard County, Maryland, determined that land values on land located next to “permanent” open space increase three times more than land located near “developable” open space. These studies suggest that the property value increases derived from the open space additions can be used to fund current and future open space initiatives.<sup>9</sup> These findings do not reflect an overall tax increase for the town but rather greater perceived land value due to proximity to open space.

### **Does Open Space Pay?**

A study conducted during the mid 1990s by Philip A. Auger, Extension Educator, Forest Resources, University of New Hampshire Cooperative Extension, looked at the cost of community service for residential, commercial, industrial, and open space land uses within the communities of Stratham, Dover, Fremont, and Deerfield. In each community, residential land use revenues *were exceeded* by expenditures by an average of approximately 12%. Conversely, for open space land use, revenues *exceeded* expenditures. The results of this study, published in 1996, still ring true today as evidenced by a similar study for the Town of Brentwood, NH. This small town in southeastern New Hampshire, not far from Deerfield, had a population of 3,197 in 2000. Tax revenue generated from residential property in this town fell short of the cost of school and town services by 17%, while revenue from open space lands exceeded town service costs by 17%.<sup>10</sup>

While each town in New Hampshire has a unique blend of land uses, revenues and expenditures, these studies point out some fiscal consistencies that are likely to apply in most circumstances. One of these is that *residential land use very often costs communities more than they generate in revenues*. Traditional residential housing brings with it a tremendous cost load for community services, roads, landfills and schools.

Open space lands are often a net asset to New Hampshire communities, and contribute to the stability of community tax rates. If land is taken out of open space and converted to housing, it will often cost far more than it generates in taxes. This has been supported by other well-documented fiscal impact studies in New Hampshire communities, including Milford and Londonderry.

### **Water—quantity, quality, supply, and flood control**

Among the many benefits of land preservation is that undeveloped land contributes to a readily accessible and sufficient supply of clean water and reduced flood events. While water is commonly construed as a health or ecological benefit, it is also a strong economic benefit as adequate water supply is essential for economic activity, and water

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<sup>9</sup> Geoghegan, J., L.A. Wainger, and N.E. Bockstael. 1997. Spatial landscape indices in a hedonic framework: an ecological economics analysis using GIS. *Ecological Economics* 23(3): 251-264.  
Geoghegan, Jacqueline. 2002. The value of open spaces in residential land use. *Land Use Policy* 19: 91-98.  
Hobden, David W. G.E. Laughton, and K.E. Morgan. 2004. Green space borders—a tangible benefit? Evidence from four neighborhoods in Surrey, British Columbia, 1980–2001. *Land Use Policy* 21(2): 129-138.

<sup>10</sup> Brentwood Open Space Task Force. *Does Open Space Pay in Brentwood? Part 1: Housing Growth and Taxes*. May 2002.

treatment or purchase can be a costly endeavor for municipalities without access to enough clean water.

Deerfield's water supply is currently clean and healthy, providing an adequate source of water for residential, commercial, and institutional users. Should large tracts of open space be developed, more pollutants can enter the water supply. In the case of a polluted water source, the Town could potentially incur millions of dollars in clean-up costs or residents could face the need to purchase water from other sources. Nixon and Saphores estimated that the cost of cleaning up roadway-related water pollution could exceed \$200 billion.<sup>11</sup> This figure does not include the pollution of pesticides, fertilizers, and some road salting, all of which contribute to pollution but which can be mitigated through open space preservation and aquatic buffers.

Through the preservation of open space, Deerfield can protect its water supply, preventing costly clean up and maintenance. In addition, rain and snow can recharge the water table, maintaining river and stream flows, healthy wetlands, and clean lakes and ponds. When rain and snow melt refill the aquifers, rather than running off into surface waters, the potential for flooding is substantially reduced, or eliminated when combined with informed development practices.

### **Funding land conservation**

Deerfield has already taken a vital step in ensuring that some of its open lands remain permanently in their natural states. The Town has allocated 25% of the land use change tax monies to the conservation committee for the purpose of acquiring conservation lands. However, to maximize the economic, social, and environmental benefits of open space, the Town must find additional means of land preservation.



*Steven's Field on Griffin Road*

The DOSC emphasizes the importance of regulatory conservation strategies, including changes to zoning ordinances to emphasize conservation subdivisions. These regulations would have no implementation cost and, in fact, save money on infrastructure and operating costs. Using conservation subdivisions, the open space land is built into new developments rather than purchased afterwards, allowing cost savings for the Town.

For funding-based land acquisition, the Town can work cooperatively with land trusts and private non-profit conservation organizations to pool financial resources and expand conservation efforts. The Bear Paw Regional Greenway Land Trust works specifically with Deerfield and surrounding communities to link Bear Brook State Park, Pawtuckaway State Park, Northwood Meadows State Park, and other conservation areas. As a community-based organization composed of many townspeople, Bear Paw can serve

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<sup>11</sup> Hilary Nixon and Jean-Daniel Saphores, *Impacts of Motor Vehicle Operation on Water Quality: A Preliminary Assessment*, School of Civil & Environmental Engineering, University of California, Irvine ([www.uctc.net](http://www.uctc.net)), 2003.

as an important mobilizing and organizing resource. The Rockingham Land Trust, serving all the communities of Rockingham County, can also be a good local resource, although it currently holds no conservation lands in Deerfield.

The Trust for Public Land and the Nature Conservancy are both national land trust organizations active in New Hampshire, which can provide resources and assistance to preservation projects. Additional state resource organizations include the Society for the Protection of New Hampshire Forests and the Audubon Society. For more information on funding and strategies, see Section 8 on Implementation.

## **Section 5: Social Benefits of Open Space**

### **Connecting Resource Lands**

Regional greenways, such as those targeted by the Bear Paw Regional Greenways Land Trust, provide recreational and open space corridors for residents of the region as well as facilitating wildlife survival. Greenways, particularly among rivers and streams, have social as well as ecological benefits, such as the potential for recreational trails, wildlife viewing, and a wide expanse of connected open space.

The Deerfield Open Space Committee has already protected significant parcels of land encompassing some of the town's most valuable natural resources, including wetlands, waterways, steep slopes, town forests, and historic sites. These areas are home to diverse populations of flora and fauna, including old-growth beech, native rhododendron, great blue herons, and a black gum swamp. Additionally, these areas have been fitted with trails, picnic tables, and other amenities to encourage public enjoyment.

Bear-Paw Regional Greenways is a land trust dedicated to creating greenways to connect Pawtuckaway, Northwood Meadows, and Bear Brook State Parks, as well as other natural areas. Due to the high rate of land development, experts fear that wildlife habitats protected in the parks will suffer as outside land becomes developed. Bear-Paw has helped to protect over 2,000 acres to date and has over 3,000 more in negotiation. Most landowners have voluntarily approached the land trust to work towards preservation.

In the case of lands fragmented by roads, greenways that connect undeveloped tracts of land can create an expanse of scenic landscape along the roadway. These scenic roads can be enjoyed by all Deerfield residents as they drive through the town. Within these tracts, residents can hike, bike, jog, ski, and potentially fish and hunt (with permission of property owners). Greenways would provide a wealth of recreational opportunities to Deerfield citizens literally in their own backyards.

Two key strategies are fundamental to creating a regional open space network:

- Residents need to be better informed about the open space resources that already exist through the Deerfield Open Space Committee, and about the potential for new regional connections through Bear-Paw Regional Greenways;
- A coordinating and management entity is needed to forge continuing connections and enhance information exchange, harmonize local plans, build consensus on priorities, and help to fund specific projects.

If Deerfield is to protect the irreplaceable biological diversity, the Town must reduce fragmentation and restore the health and vitality of its forest communities.

### **Open Space and Recreation**

Lands that offer personal or socially interactive recreation, or active or passive recreation, are essential elements of the open space system. Universal access should be provided at a

variety of appropriate places where development of such access will not compromise the character of the area.

The Town of Deerfield recognizes the opportunity to provide responsible recreation for all types - walkers, skiers, snowshoers, people with strollers or wheelchairs, horseback riders, mountain bikers, hunters, fishers, and ATVs. Deerfield has a network of trails ranging from rustic paths to dirt roads existing on town lands and with some access granted on private conservation easements,. Further study is needed to evaluate trail use and to suggest a recreational network to serve the spectrum of trail users in this town. Not all open space land is appropriate for trail use and/or public access, but there remains potential to better connect and expand existing trails.

Deerfield can also consider implementing a plan for Livable, Walkable Communities, through New Hampshire Celebrates Wellness. The necessary elements of this plan include economic health, environmental health, human health, and community health. With these elements, residents can access services, improve air and water quality, improve their fitness through recreation, and gather informally with friends and neighbors. The characteristics of Livable, Walkable Communities are symbiotic with the goals of the open space plan.

Class VI roads are a significant resource for Deerfield. These currently provide recreational opportunities for Deerfield citizens and are often functionally used as trails. The town currently has the opportunity to develop policies for open space in the future, of which Class VI roads can be an important contributor to rural quality of life when preserved for recreational use. When considering the transfer of class VI roads to recreational trails, the town must consider the road's use in terms of access to land. RSA 231:43 stipulates that no roadway of any type that provides sole access to any land shall be reclassified as a class B trail without the written consent of the owner of that land.

In order to supplement the trails existing in Deerfield, the Town can look into the Recreational Trails Program (RTP), which is a component of the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). This program funds motorized, non-motorized, and diversified trail projects, and it is funded through federal gas tax money paid on fuel for off-highway recreational vehicles. Projects are given up to 80% of funding, with at least 20% required from the Town or organization in the form of labor, supplies, or cash. Many projects are completed by local scout groups or volunteers. New Hampshire receives approximately \$500,000 annually for RTP projects.

Another strategy for local recreation is to change land use regulations to require that existing paths and trails be incorporated into subdivision design. One successful example is Deer Run Estates, where new residents benefit from access to a trail within a designated right of way that provides them direct access to state parks.

The town also maintains park facilities and fields for recreational use, many of which also highlight the natural surroundings. Veasey Park offers a sandy beach and lake frontage on Pleasant Lake, and Lindsay Woods houses a physical training challenge

course as well as trails around the woodland acreage. Deerfield Community School, G.B. White Building, and Bicentennial Field all offer some combination of playgrounds, athletic fields, and open lawn space. These parks are run by volunteers appointed by the Board of Selectman

The advancement of recreational opportunities in Deerfield can also expand the social network of the town. Residents can meet neighbors while hiking a trail, hold town festivals in newly-established parks, and work together to construct improvements to public open spaces. The increased social benefits of open space again reinforce the rural character of the town.

### **Aesthetics**

A prime reason that people move to Deerfield is to live among the beautiful scenery of the rural, wooded town. With cleared agricultural lands, rivers and streams, and a rolling terrain, the Town of Deerfield offers many scenic viewsapes that residents associate with the character of the town.

The alternative to preserving land for its aesthetic value is to live in a town characterized by billboards, parking lots, and fences rather than fields, trees, and hills. Aesthetic landscapes lend appeal to the town and provide economic benefits as well. As delineated in Section 4, several studies indicate that land values bordering open space are higher than those in developed neighborhoods, suggesting that people are willing to pay for the aesthetic value derived from open space protection.

### **Air Quality**

The rural town of Deerfield does not currently suffer from excessive air pollution, in large part due to the amount of undeveloped land. The trees in forested areas absorb pollutants such as ozone and sulfur dioxide, leaving the air noticeably cleaner. A single acre of trees takes in about 2.6 tons of carbon dioxide each year, removing the some of the pollutants released by vehicles (American Forestry Association). As development progresses, construction and traffic will increase air pollution and formerly forested land may be cleared for buildings.

Open space preservation is integral in maintaining air quality in Deerfield. The older, larger trees (ones with diameters greater than 30 inches) currently residing in Deerfield's forests, such as the black gum tree, can remove up to 70 times more pollution from the air than trees with diameters less than three inches (Nowak 1994), meaning that trees cleared for development and replaced by new trees would contribute less to air quality. Additionally, trees trap the particulate pollution that causes asthma and respiratory problems (Nelson 1975).

### **Water Supply**

Deerfield residents receive their drinking water from underground aquifers through private wells, both of which are subject to runoff pollution due to salted roads and parking lots, pesticides, antifreeze, and other toxins f developed lands. Forested areas can retain up to 90% more of the rainfall than pavement and roofs, filtering the chemicals from entering the water system (Anderson 2000, Trust for Public Land 2005).

The town of Deerfield does not provide municipal water service nor does it have any immediate plans to provide this service. However, the Town has dam and flowage rights to Pleasant Lake, which is in the northwest quadrant of Deerfield. These rights were acquired by deed in 1974 from Thomas Hodgson and Son, Inc. The town owns several small tracts of land, including Veasey Park, around Pleasant Lake, and 30 acres on the western part of Freese's pond, which connects with the Lamprey River headwaters. Town residents obtain most of their water supply from underground aquifers in either sand and gravel deposits or bedrock, with wells located throughout the Town.

### **Water Quality**

Vegetated buffers physically protect a stream or river by maintaining trees, shrubs, bushes, tall grasses, and groundcovers that provide shade and remove debris and polluting nutrients. Buffers usually contain three zones: the innermost *streamside zone* of forested shade to enhance stream quality; the *middle zone*, 50-100 feet, often a managed forest with some clearing for trails or open areas, and the *outer zone*, usually around 25 feet, but often expanded to protect adjacent wetlands and any floodplain.



Developed lands include structures with roofs, driveways, and parking lots that shed water and concentrate the runoff into surface waters. Trees, meadows, scrub areas, and agricultural lands allow water to recharge back into underground supplies, maintaining base flow in rivers and streams, lakes and ponds, and wetlands. Without such recharge, droughts are more likely, as well as flooding during severe rainfall or snow melt.

**Section 6:  
Ecological Benefits of Protecting Open Space**

**The Importance of Biodiversity<sup>12</sup>**

Biodiversity, which encompasses the existence and interacting processes of plants, animals, fungi, algae, bacteria, and other microorganisms, is integral to human survival. The complex natural world provides elements that support human life, such as enriched soil to grow food, oxygen to breathe, and purified water to drink. The balance of maintaining these processes and protecting the habitats in which they occur is vital to supporting all life on Earth. However, as habitats are lost due to development of land or invasive and non-native species, this balance of biodiversity is threatened.

Biodiversity is important to maintain for economic as well as ecological reasons. Plants are sources of food, medicine, fuel, fibers, timber, and more. Furthermore, plants and animals pollinate fruit and vegetables, control pests, and add nutrients to the soil as part of their natural functioning. Wildlife is an attractive draw for visitors from around the country, who come to the region to bird-watch, to hunt and fish, and to hike amidst the fall foliage. In New Hampshire, 88 percent of the population participates in wildlife-related activities and this brings millions of dollars to local communities.

New Hampshire Fish and Game Department has just completed a statewide wildlife action plan (WAP) for both game and important non-game species. Because of the importance of wildlife to rural economies, additional federal funding is expected to support a wide range of activities in local communities so that wildlife populations remain healthy as the state grows.

| Species or Community Name         | Type of Species      | State Status | Locations in Town in the last 20 years |
|-----------------------------------|----------------------|--------------|--|
| Black gum - red maple basin swamp | Community-Palustrine |              | 3                                      |
| Giant Rhododendron                | Plant                |              | 1                                      |
| Small Whorled Pogonia             | Plant                | Endangered   | 1                                      |
| Cerulean Warbler                  | Bird                 | Critical     | 1                                      |
| Common Loon                       | Bird                 | Threatened   | 1                                      |
| Great Blue Herron                 | Bird                 |              | 1                                      |
| Osprey                            | Bird                 | Threatened   | 1                                      |
| Blanding's Turtle                 | Reptile              |              | 3                                      |
| Northern Black Racer              | Reptile              |              | 2                                      |

**Rare Species and Natural Communities**

New Hampshire's *Natural Heritage Inventory* (NHI) has assessed the Rare Species and Exemplary Natural Communities of Deerfield based on state and federal status as well as rarity of the species in the community. Table 2 lists those species and communities of very high importance that can still be found in Deerfield today.

<sup>6</sup> From Wildlife Habitats, Fall 1996, University of New Hampshire Cooperative Extension.

These inventories identify sites that contain habitat of rare, endangered and threatened natural species. The NHI was used to identify rare species and natural community areas on the *Lands of Special Importance Map* (Appendix A, Map8).

Also as noted in the Town's 2004 Update there is the rare black gum tree, living in several "basin swamps" in Deerfield. The black gum tree (*Nyssa sylvatica*) is a hardwood in the tupelo family that may grow up to 75-80 feet tall and may live over 400 years.

### **Wildlife Crossings**

The New Hampshire Fish & Game publish Coarse Filter Wildlife Habitat maps, which combine features such as riparian corridors, wetlands, unfragmented lands of natural land cover, and disturbed lands to determine areas that are best suited towards animal habitats. Map 5 illustrates the Wildlife Habitat Map for the Town of Deerfield.

The aforementioned regional greenways are also important tools to protecting wildlife habitats. Small blocks of open space expose more borders to development, thereby threatening species habitat inside.

Wildlife crossings are a simple way to help connect wildlife habitat through consideration in zoning and planning. Wildlife crossings are small parcels of land, usually underneath or across roadways that connect fragmented wildlife habitats and allow wildlife to breed, find food, and migrate to find new habitats. The most important environmental features to consider in terms of wildlife habitat are unfragmented tracts of land with natural land cover and undeveloped riparian zones. Wildlife crossings can be as simple as constructed passages through or under roadways that connect two wildlife habitats. The following areas are recommendations for potential wildlife corridors for the Town of Deerfield (descriptions correspond to the Coarse Filter Wildlife Habitat Maps):



#### *Southeast*

- South Road east of Birch Road
- Mt. Delight Road between Swamp Road and Thurston Pond

#### *Southwest*

- Brown Road west of Rte 107
- Reservation Road across riparian corridor
- Rte 43 at steep slope area

#### *Northwest*

- Griffin Road at Mud Pond or Fogg Shores Forest
- Old Center Road North north of Meeting House Hill

#### *Northeast*

- Mountain Road across riparian corridor
- Blake Hills Road

- Nottingham Road west of Perry Road
- Coffeetown Road

Wildlife crossings are particularly effective when located along a riparian corridor, which has a rich array of species habitats. Aquatic buffers to developments can provide these crossings along such corridors.

### **Water Quality and Quantity**

Sustained water quality and quantity are vitally important to support all ecological functions. Undeveloped land supports the health of water bodies and wetlands, and the network of rivers and streams provide corridors vital for wildlife movement and food and shelter. As discussed previously, the forested soil of wooded lands can filter significantly more pollutants from pesticide or roadway-related runoff than can lawns or asphalt surfaces. By protecting the water supply, open space lands not only contribute to the health and economic benefits of the town, but they protect valuable water resources and wildlife habitats as well.

## **Section 7: Priorities for Deerfield**

There are a significant number of areas in Deerfield that are desirable locations for open space preservation. The Deerfield Open Space Committee has not specified any individual lots for protection; rather, they have focused on areas desirable as open space based on the land's attributes. These priorities and other significant considerations for assessing open space potential are described in the following section, with areas of high value to the town described at the end.

### **Criteria for Acquisition and Protection of Open Space**

The DOSC considers the following criteria priorities in terms of land protection:

1. Protect Deerfield's most sensitive natural areas, including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats and wildlife corridors, old growth forest stands, and agricultural soils.
2. Connect areas unfragmented by roads or development with guidance from local knowledge and Bear Paw Regional Greenways.
3. Preserve the natural and cultural resources provided by Deerfield's scenic views, Class VI Road system, trails, and culturally and historically significant lands.
4. Continue to work with Bear Paw Regional Greenway and other land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Book State Park, Pawtuckaway State Park and Northwood Meadows State Park.
5. Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to establish priorities for preservation.

These priorities will be considered for individual parcels as they become available for open space protection, as the Town works to best allocate its limited financial resources. Additionally these priorities will guide the Conservation Commission's larger efforts to match its own conservation strategies with those of state and regional conservation groups.

While the DOSC will prioritize the abovementioned criteria when considering land for open space protection, the following are additional criteria to consider beyond those specified by the commission:

- **Potential linkages to existing open space**, to recreation facilities, and to similar areas in adjacent communities.
- **Environmental sensitivity and importance of the parcel** such as the presence of aquifers, rivers, wetlands, wildlife and scenic qualities. This includes wildlife corridors, unique habitat, and endangered, threatened and rare species.
- **Location in areas that do not have enough public open space** or are threatened by continued development. Will the acquisition of the parcel provide additional recreational opportunities in an area of the Town that is in need of such facilities? Does the purchase of the parcel encourage Town-wide distribution of open space and recreation?

- **Town-wide versus special group benefit.** Would the acquisition of this parcel benefit the Town as a whole or a select group of residents in need of additional opportunities? The importance of addressing each need will depend on the specific goals of the Town.
- **Outdoor recreation potential.** This is related to providing additional athletic fields as well as providing areas for greenways and trails that provide opportunities for hiking, walking, running, skiing, and biking.
- **Cost and availability of the parcel.** This should account for the amount residents are willing to pay to purchase open space (in the form of increased taxes) and the availability of funding sources that would be available if a particular property were targeted for acquisition.
- **The financial impact** that removing the parcel from development will have on the Town. For example, a residential parcel may cost the Town in services while a commercial property may be a positive contribution to the tax base (see previous summary detailing cost of residential service versus open space costs and benefits).
- **Aesthetic benefits to the general public** and the preservation of the Town character.

### Co-Occurrence

A natural resources Co-Occurrence Analysis is an important tool in identifying and prioritizing areas for protection. The Analysis identifies high-value natural resource areas and maps them, with multiple levels of unique resource data overlaid spatially using geographical information system software (GIS) to display on one comprehensive map. The Analysis applies numerical values to selected resource factors, with higher values and darker colors indicating land that should be prioritized for protection. The following are the twelve resource factors considered in the Deerfield Co-Occurrence Analysis:

- Stratified drift aquifer
- Potentially favorable gravel well area
- Sanitary radii
- Drinking water protection areas
- National Wetlands Inventory (NWI) identified wetlands
- Open/Agricultural/Disturbed land cover
- High elevation (>800 ft.)
- Steep south facing slopes
- Unfragmented natural land cover
- Undeveloped riparian zone
- Prime agricultural soil and soils of statewide significance
- Hydric soil (poor or very poor drainage)

Appendix A shows maps of Deerfield featuring unfragmented lands, wildlife features, lands of special importance, and wetlands, all of which are features of the co-occurrence

analysis. The following areas, roughly categorized by region, are some of the areas with the highest Co-Occurrence scores.

*Southeast*

- Lamprey River corridor east of Cottonwood Estates Easement
- Lamprey River corridor along Rte. 107
- Riparian corridor along the brook north of Reservation Road

*Southwest*

- North Branch River corridor south of South Road
- Area north of Bear Brook State Park by Rockingham/Merrimack County border

*Central*

- Area along Ridge Road in Drinking Water Protection Area
- Area immediately west of Old Center Road North

*Northeast*

- Land west of Curry protected area
- Back Creek riparian corridor
- Undeveloped shore lands of Freese's Pond (lower portion)
- Lamprey River riparian corridor

*Northwest*

- Mud Pond and surrounding riparian corridor
- Riparian corridor north of Pleasant Lake
- Riparian corridor west of Griffin Road

It should be noted here that certain lands may become available that do not meet some of the specifications delineated above. When this occurs, the Town may wish to consider the potential purchase of these properties, or the purchase of a conservation easement, if these actions will enhance the Town's open space acquisition program. Success of the program is determinate upon flexibility and creativity.

## **Section 8**

### **Implementation Strategies**

The Deerfield Open Space Committee recognizes that the preservation of open space is closely tied to smart growth principles and that the largest threat to open space may be Deerfield's current growth patterns. The following are the committee's recommendations on the most effective and cost-efficient tactics to preserve open space and rural character:

#### **Summary of Recommendations**

1. Establish development and subdivision zoning regulations and ordinances for Deerfield to encourage smart growth, preserve open space, and make the Town economically sustainable.
  - Amend the Town's Open Space Development Regulations to mandate future subdivisions to include open space provisions, integrating practices that protect sensitive environmental features of the development parcel.
  - Provide incentives to developers building Open Space Developments, including density bonuses, reduction of minimum lot standards, and a streamlined application process.
  - Create areas of the Town where increased density will be allowed in exchange for protecting specific rural features.
2. Implement cost-effective means to preserve land to have the greatest overall tax and revenue benefits to Deerfield citizens.
  - Employ smart growth principles and regulatory measures to preserve open space.
  - Strengthen relationships with local, state, and federal agencies to obtain grants and technical assistance with conservation easements.
  - Encourage communication between landowners, town officials, and funding agencies.
  - Continue to fund open space projects adequately.
3. Use the priorities and criteria established in this Open Space Plan when considering potential lands for open space preservation.
  - Protect Deerfield's sensitive natural areas (wetlands, aquifers, water bodies, wildlife habitats, forests, and agricultural soils).
  - Connect unfragmented areas.
  - Preserve the natural and cultural resources (scenic views, Class VI Roads, trails, and culturally and historically significant lands).
  - Work with Bear Paw Regional Greenway and other land trusts and state and federal agencies to develop a natural greenway and trail system connecting protected lands.
  - Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to refine priorities for preservation.

4. Work to gain informed support from the residents of Deerfield concerning the multiple economic, health, ecological, and recreational benefits of Open Space.
  - Encourage the reading of the following aspects of the Open Space Plan:
    - Identify the economic benefits of open space to the town's tax base.
    - Promote open space protection as a prevention tool for the health hazards that can arise from non-point pollution sources in groundwater and air.
    - Promote the recreational potential of open space lands through Class VI roads, trails, and parks.
    - Demonstrate the importance of open space for wildlife habitat.
    - Promote the use of open space for flood control purposes.

The remainder of this section delineates techniques and strategies for fulfilling these recommendations. To help meet Deerfield's Open Space Goals, the following is a variety of tools and techniques that communities throughout New Hampshire have used for land protection. Dorothy Tripp Taylor describes many of these tools and techniques in more detail in the handbook "*Open Space for New Hampshire, a Tool Book of Techniques for the New Millennium.*" The handbook also refers to associated state laws and regulations, sample communities that have used these methods, and where to acquire technical assistance and additional written documents on each method. If the Town of Deerfield is interested in acquiring additional information on any of the following, this resource should be utilized. Section 8 describes some of the key ways of implementing land protection programs, but more of the techniques described in the above Tool Book can be found in Appendix E.

Section 7 outlined a host of criteria to consider for the acquisition and protection of open space. Deerfield should focus upon the following criteria first when implementing their open space plan.

1. Protect Deerfield's most sensitive natural areas, including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats and wildlife corridors, old growth forest stands, and agricultural soils.
2. Connect areas unfragmented by roads or development with guidance from local knowledge and Bear Paw Regional Greenways.
3. Preserve the natural and cultural resources provided by Deerfield's scenic views, Class VI Road system, trails, and culturally and historically significant lands.
4. Continue to work with Bear Paw Regional Greenway and other land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Book State Park, Pawtuckaway State Park and Northwood Meadows State Park.
5. Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to establish priorities for preservation.

Once the Town has identified parcels for protection, the Town should determine the most appropriate method of protecting the parcel. Options can range from growth management ordinances to outright purchase of the property, and the most successful

option will depend upon the specifications of the property and the needs of the landowner.

### **Voluntary Land Protection**

There are two primary types of voluntary land protection. The first is conservation easements and the second is conservation subdivision options. A voluntary conservation easement involves the donation of the development rights over the land. The landowner makes the decision that they wish to prohibit development on their land and preserve the natural state. They donate the development rights to the town or a land trust as the easement holder; this group is then responsible for easement stewardship. The owners continue to use their land and pay property taxes on it. However, a portion of the value of the easement donated can be deducted from federal income taxes.

A Conservation Subdivision is a residential or mixed-use development in which a large portion of the development site is set aside as unfragmented, permanently protected open space, with the buildings clustered off in the remaining portion of the land. A Conservation Subdivision Ordinance gives specific criteria that developers must meet in order to have a Conservation Subdivision, and these criteria will vary by town. Some of the main advantages of this arrangement include its efficiency and low cost relative to other protection methods, and its ability to maintain rural character while still allowing development. Drawbacks include resistance from residents concerned with increased density on the developed land and more complex governance of the resultant open space.

### **Open Space Development versus Conservation Subdivision**

Deerfield's current zoning ordinance contains wording pertaining to Open Space Developments, in which greater density is allowed in exchange for setting aside at least 50 percent of available land as open space. The ordinance also regulates that no more than 50 percent of the common open space area may consist of wetlands or steep slopes. Deerfield's Open Space Developments, therefore, can protect land and resources, yet through the addition of several important characteristics they can increase their conservation value.

Conservation Subdivisions, like the Open Space Developments, set aside open space land and increase density of individual lots. However in Conservation Subdivisions, open space land is placed under an easement for permanent protection from development. More significantly, Conservation Subdivisions consider the natural features of the landscape and natural vegetation when laying out parcels for homes and for open space areas. Focus is placed upon connecting sensitive resources, unfragmented lands, and trails rather than setting aside the most convenient parcel for open space.

In a voluntary conservation subdivision option, developers may chose to develop land into a conservation subdivision instead of evenly dividing the property into larger lots. The Town of Deerfield can add Conservation Subdivision Ordinances into their zoning regulations so as to encourage these among developers. This would include adding exceptions to minimum lot size in low-density residential zoning districts for the purpose

of conservation subdivisions. The ordinance would be most effective if it were accompanied by a streamlined site plan review process to Conservation Subdivisions and tax exemptions or discounts for open spaces contained within the development.

Another form of voluntary conservation subdivisions exists as the “Village Plan Alternative,” as described in RSA 674:21, available in its full text in Appendix I. This stipulates that a developer must locate all development on 20% of the development property to allow for maximum open space. The open space area will be under a recorded conservation easement. The Village Plan area should have expedited review for all applications. It is subject to all ordinances and regulations with the exception of

### **Conservation Easements**

A conservation easement permanently restricts development rights on open space or agricultural land. Any landowner can donate or sell a conservation easement to the easement holder (usually a non-profit land trust or municipality). The easement holder does not hold development rights (the rights are extinguished), but rather they are responsible for stewardship and enforcement of the conditions of the easement.

An easement should be tailored to the specific parcel of land and the values of the landowner, meaning existing structures and activities may continue to take place. This could include archaeological excavations, agriculture, and public events.

An easement *does not* signify public use; rather, the landowner can determine the best use of the land, including granting permission for community recreation and use.

density, lot size, and frontage and setbacks.

### **Regulatory Land Protection**

Another approach to land protection involves the use of zoning or municipal regulations to prohibit unnatural disturbance or development on the protected parcel. Two methods of regulatory protection are the Conservation Subdivision Requirement and Growth Management Ordinances.

A Conservation Subdivision requirement has the same result as conservation subdivision option but the requirement regulates that all new development must be in conservation subdivisions. This ordinance would lower the lot size of all houses built in new subdivision developments in Deerfield. However, it would also significantly increase the amount of conservation open space, ensuring that increased development will also maintain substantial amounts of open space.

Growth Management Ordinances are often used by municipalities experiencing population growth at a rapid pace whose public facilities and services cannot keep up. They function by placing short or long-term caps on new residences or population numbers. Under certain circumstances, a town may adopt regulations to control the rate of development. In New Hampshire, a town must have both a master plan and a capital improvement plan before it can adopt any ordinances controlling the timing of

development. In certain rapid growth situations, slowing the rate of development can give a community time to update its master plan, develop infrastructure, and consider ways to conserve open space. Methods include limiting the number of building permits, or an interim growth moratorium allowing the planning board to halt or severely limit development for up to one year.

### **Purchase**

The final method of open space protection is through the purchase of the land or acquisition of development rights to that land. Depending on the needs of the landowner and sources of available funding, land and development rights can be purchased at varying cost to the town.

In the case of an **outright purchase**, the town buys the property at market value from the current landowner. There are no tax benefits or exceptions for either party, and the Town no longer receives taxes on the land. This is the most costly method of land protection but requires no special arrangements with the landowner.

A **bargain sale** is an agreement of discounted sale of property to the Town. The landowner agrees to sell his/her land below market value, and the difference between fair market value and the sale price becomes a tax-deductible charitable donation. Bargain sales are also useful for the landowner in minimizing the liability of a long-term capital gains tax associated with selling a large estate. After the sale, the Town retains all rights and responsibilities over the land.

Finally, the Town can purchase or acquire **conservation easements** over the land, which means the owner still maintains ownerships and tax responsibility but is prohibited from developing the land. The owner of the easement purchases development rights, which is usually calculated to be the fair market value of the land for development purposes minus the value of the land for open space or agricultural purposes. The Town gains the responsibility of easement stewardship, which means monitoring the land to ensure that the agreements of the easement (generally a lack of development or disturbances) are being followed.

### **Combining Strategies**

While these methods are described for use independent of other strategies, they can be creatively combined to protect more land for less money. For more information on combining strategies and more implementation ideas and details, see Appendix E.

### **Applying Open Space Priorities to Zoning Ordinances**

Regulatory measures are perhaps the most cost-efficient means of land preservation, and if implemented according to the open space priorities of the town, can be extremely effective in curbing sprawl and protecting land. The two primary methods of regulatory land preservation are the abovementioned conservation subdivisions and growth management ordinances. Additionally other subdivision ordinances may be added to zoning regulations in order to reflect priorities on smaller scales.

The Deerfield Zoning Ordinances contains provisions for Open Space Developments, which stipulates that lot size or other dimensional standards can be reduced to permanently protect open space, forest, or farmlands. However, to date only two open space developments exist in Deerfield (Sawyer Farm and Cottonwood Estates), with two more in the works. In the last five years, however, the Deerfield Planning Board approved 48 subdivisions. Mandatory subdivision regulations requiring Open Space

Developments for all new subdivisions would ensure that Deerfield would retain at least 50% of its open space even at total build-out. Currently, the Planning Board “may

### **Frequently Asked Questions about Regulatory Measures**

#### *Do conservation subdivisions involve a taking without compensation?*

No, for two reasons. The first is that no density is taken away. Developers can still build at full permitted density for the municipality’s current zoning, but houses are condensed onto smaller lots such that at least half of the land is left as open space. Second, no land is taken for public use, since the neighborhood or the developer owns and manages the open space land (except in rare cases that are negotiated with the town).

#### *What are the ownership, maintenance, and tax issues?*

In the case of a conservation subdivision, the land most commonly belongs either to the original landowner (who can pass the land to heirs and keep it under conservation easement) or the Homeowner’s Association (which consists of all residents in the neighborhood and minimizes facilities to keep dues low). In rare cases the municipality or a private land trust maintains the land or an easement on the land. The landowner or Homeowner’s Association is responsible for taxation, generally the same as a normal subdivision, and maintenance.

#### *How can on-site sewage work with conservation subdivisions?*

Contrary to popular belief, conservation subdivisions lend themselves well to sewage disposal. One option is to situate houses on the best-drained soils to ease efficiency of septic systems. Another option is to provide central water and sewage disposal, or leach fields, which can be located under playing fields or conservation meadows. Conservation subdivisions can also utilize spray irrigation in which wastewater is heavily aerated in deep lagoons and nutrients are taken up by the forests or fields in the surrounding open space. Creative design can allow residents to enjoy the benefits of environmentally sensitive sewage treatment without unpleasant olfactory or visual side effects.

#### *How do conservation subdivisions differ from clustering?*

Clustering uses the same principle of decreasing lot size in exchange for more open space. However, clustering requires less land be set aside for conservation and makes no specifications as to what land be conserved. Conservation subdivisions are planned to preserve the most strategic features and create networks of green space throughout the community.

require” Open Space Planned Development when significant environmental attributes are affected.

Semi-mandated conservation subdivision options are another route Deerfield could take to proactively encourage open space developments without requiring them. Some rural towns require all developers to submit an alternative conservation plan along with conventional patterns of development. These conservation plans take open space, environmentally sensitive parcels, lot size, and profitability into consideration. Most regulations for alternative conservation plans require that certified landscape architects or similarly qualified experts help to craft the plan based on soil type, drainage, and environmental features. These towns have found that once developers create an alternative

plan, a great number carry through with the conservation design due to the many advantages it offers.

While Deerfield could achieve the greatest degree of open space protection for the lowest cost by mandating Open Space Developments, the Town may also choose to offer incentives to encourage developers to build according to Open Space Regulations. The following are some of the most effective incentives:

- **Density bonuses:** Subdivisions that use innovative protection can receive density bonuses allowing them to build more houses on the existing developable land. This bonus would come in addition to the density credit from the open space land. The density bonuses should not exceed 15% of the yield plan nor should they exceed the soil-based carrying capacity for the entire parcel.
- **Reduction of minimum lot standards:** Reducing requirements for elements of the subdivision allows the builder to have more flexibility in design and ultimately save money. The incentives could allow for exceptions in frontage, yard area, height, setback, and landscaping.
- **Reduction in road design standards:** As another incentive to save money and increase flexibility, the Town could allow for reductions in road width, parking, and signage standards. In a subdivision with more compact development, driving speeds would be reduced, allowing for safe road variations. Federal standards exist for low volume rural roads, and have been successfully used in at least one 2005 subdivision in Deerfield. Given that success, reduction in road dimensions should be considered for any future subdivision that meets the low volume criteria.
- **Streamlined application process:** The Town could implement a priority zoning or building permit process for conservation subdivisions to allow developers to save time (and money) in getting their developments approved.

While conservation subdivisions are the ideal way to ensure that all future development will maintain the rural character of the Town, other ordinances can be effective at smaller scales. These reflect the ideal characteristics of the conservation subdivision ordinance but can be implemented piece by piece.

- **Density requirements for new developments:** Ordinances for house lots in Deerfield are currently a minimum of three acres per lot. Reducing the minimum lot size alone could reduce the amount of land subdivided into residential areas, but reducing the minimum lot size while increasing the allowable density for residential districts *and* mandating open space areas within new developments could achieve similar effects as a conservation subdivision.
- **Mandatory percentage of open space:** Zoning ordinances can require that all subdivided lots maintain at least 50% of the original area as undeveloped, open space. This ordinance can also require an assessment of potential or priority conservation areas according to the priorities expressed by the DOSC.
- **Maximum setbacks and street widths:** By regulating that streets be made slightly narrower and that houses be built within a certain distance from the road, the Town can maximize the amount of open space contained contiguously behind

- each lot rather than leaving disjointed green space between the road and the building.
- **Expanded buffer zones for wetlands, riparian corridors, and special wildlife habitat on all new developments:** The DOSC expresses certain criteria for land protection due to their economic, health, social, and environmental benefits. By requiring developers to consider and protect particularly sensitive and valuable areas, the Town can preserve its resources at little or no cost.

### **Potential Schedule and Costs for Implementation**

It is recommended that the Deerfield Open Space Committee oversee the implementation of the Open Space Plan. The following basic steps can guide the implementation process:

- Identify and evaluate key conservation resource areas of Deerfield to pursue acquisition and protection.
- Work with Town officials to organize and develop sources of funding, including the issuance of bonds
- Assist the Conservation Commission in the development of an overall management plan for conservation land and existing Town-owned property.

In addition, the Planning Board and Conservation Commission should continue to amend the Town's zoning, subdivision and site plan regulations and adopt other mechanisms that give the Town more authority to create permanent, useable open space in and near new developments, if appropriate.

### **Cooperation with Conservation Agencies**

The Southern New Hampshire Planning Commission (SNHPC) received a grant from the New Hampshire Estuaries Project 2006 Local Grants Program to create a public outreach program to develop and implement local land use regulations to protect undisturbed streamside buffers in the Towns of Deerfield and Candia. This program, which will be developed and implemented through the fall of 2006, will include updated maps delineating the undisturbed natural vegetated buffers along streams within the Lamprey River watershed. The SNHPC will also work closely with planning boards to develop land use requirements to protect these areas. The Town of Deerfield can incorporate the technical assistance provided by SNHPC into its land protection program, specifically focusing upon water quality and shoreline protection areas.

### **Outreach and Landowner Contact**

The Town of Deerfield is working towards open space preservation for the public good of all citizens. As the project is motivated by the expressed needs and concerns of Deerfield citizens, landowners would ideally cooperate with the Town to sell their land or property rights with fair compensation. However, as landowners are reluctant to forfeit their individual properties and any potential revenues they may hold, the Town faces the challenge of reaching out to residents to persuade them of the importance and the benefits, both social and economic, of open space.

Public education campaigns are the first important step in outreach. The Natural Resources Outreach Coalition (NROC) is already focused upon presenting growth issues and concerns to the residents of Deerfield, and the DOSC has already recognized the challenge of identifying conservation lands without threatening property owners. The DOSC is committed to identifying critical protection areas based on natural resource co-occurrence value, large parcels of land, and "hot spots" in town without identifying specific landowners or parcels.

With community outreach and cooperation with Bear-Paw Regional Greenway (and other land conservation organizations), some landowners and developers will be more eager to

conserve their land through easements, conservation subdivision options, and sale of property. The Town must recognize that not all parcels perceived to be of highest conservation value will be available for purchase. However, landowners approached with the greatest array of benefits will be more likely to sell or donate their land. Therefore, preparing information on the income and estate tax benefits of land conservation can be one of the most influential ways to acquire open space from landowners.

**Action Plan for Implementation**

| <b>Actions/Recommendations</b>  | <b>Time Frame</b>          | <b>Funding Source</b> | <b>Primary Responsibility</b>   |
|---|----------------------------|-----------------------|---|
| <b>Establish development and subdivision zoning regulations and ordinances for Deerfield to encourage smart growth, preserve open space, and make the Town economically sustainable.</b>  |                            |                       |   |
| Adopt the Open Space Plan as an official part of the Town's Master Plan.  | Update of Master Plan      | General Fund          | Planning Board (PB)   |
| Amend the Town's Open Space Development Regulations to tie individual projects within the overall functioning network of open space as presented in the Open Space Plan. Also add new practices and techniques to the Regulations that can help preserve the community's rural character and protect sensitive environmental features. <ul style="list-style-type: none"> <li>• Create zoning regulations requiring Open Space Developments for new subdivisions, with an emphasis on the natural features of the landscape.</li> <li>• Add to zoning ordinances incentives for developers building Open Space Developments, such as relaxed regulations for setbacks, street widths, etc.</li> </ul> | 2005-2007<br><br>Long term | General Fund          | Open Space Committee (DOSC)<br>Conservation Commission (CC)<br>PB<br><br>PB |
| Consider defining areas within the community where increased density (i.e. above and beyond that permitted by current zoning) will be allowed in exchange for protecting specific rural features such as undeveloped road frontage, steep slopes, view points, view sheds, fields and pastures, vegetated corridors, etc. This may be achieved through a Rural Features Overlay District, a Density Credit Overlay District, or the Transfer of Development Rights.   | Mid-term                   |                       | PB<br>CC  |
| Develop performance regulations to zone land according to the impact of its potential   | Short-term                 |                       | PM  |

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| or expected activities upon the surrounding areas.  |            |  |                                      |
| <b>Implement cost-effective means to preserve land to have the greatest overall tax and revenue benefits to Deerfield citizens.</b>   |            |  |                                      |
| Employ smart growth principles and regulatory measures in development decisions to curb sprawl and preserve open space.   | Ongoing    | General Fund   | PB                                   |
| Pursue means of land protection to best utilize available funding and tax benefits offered by state, federal, and non-profit agencies. <ul style="list-style-type: none"> <li>Educate citizens about tax benefits of conservation easements, land donations, and bargain sales.</li> <li>Forge partnerships with local, state, and national land trusts to connect with additional funding sources.</li> <li>Identify and work to obtain grants for agricultural land protection, forestry, water resource protection, wetlands, scenic roadways, cultural and historic resources, and wildlife habitats.</li> <li>Continue to improve knowledge and practices in creation and use of conservation easements.</li> <li>Encourage communication among landowners.</li> </ul> | Ongoing    | Grants, Conservation Fund  | PB<br>Board of Selectmen (BOS)<br>CC |
| Continue to fund open space projects adequately. <ul style="list-style-type: none"> <li>Find sources for funding of future projects.</li> </ul>   | 2005-2007  | Bond issue, Conservation Fund, Land use change tax, Budget appropriation | CC                                   |
| <b>Use the priorities and criteria established in the Open Space Plan when considering potential lands for open space preservation.</b>   |            |  |                                      |
| Distribute criteria determined by the Deerfield Open Space Committee as well as other relevant information to the parties making land acquisition decisions,  | Short-term |  | CC                                   |

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| <p>including the Planning Board, the Conservation Commission, the Select Board, the Zoning Board, and developers.</p>   |   |                    |  |
| <p>Protect Deerfield’s most sensitive natural areas, including wetlands, aquifers, vernal pools, water bodies, wildlife habitats, old forest stands, and agricultural soils.</p> <ul style="list-style-type: none"> <li>• Work with the Southern New Hampshire Planning Commission to apply for a 2006 Local Source Water Protection Grant and grant funds from the New Hampshire Estuaries Project to protect water sources.</li> <li>• Work with area farmers to establish agricultural conservation easements on current agricultural land and to ease zoning ordinances that restrict agricultural operations.</li> <li>• Encourage private forest owners to join the New Hampshire Tree Farm Program, which promotes sustainable forest management practices.</li> <li>• Work with New Hampshire Fish and Game on the implementation of the Wildlife Action Plan.</li> </ul> | <p>Short term</p> <p>Short term</p> <p>Short term</p> <p>Short term</p> | <p>Grant funds</p> | <p>PB<br/>CC</p> <p>CC</p> <p>CC</p> <p>CC</p> |
| <p>Connect unfragmented areas with guidance from local knowledge, Bear Paw Regional Greenways, I-93 Conservation Framework, and Seacoast Conservation Plan.</p> <ul style="list-style-type: none"> <li>• Maintain current tax maps including subdivided property and conservations lands, and make these available to parties making land preservation and land development decisions.</li> <li>• Contact landowners in important conservation areas.</li> </ul>  | <p>Short term</p>   |                    | <p>DOSC</p>                                    |
| <p>Preserve the natural and cultural resources provided by Deerfield’s scenic views, Class VI road system, trails, and culturally and historically significant lands.</p> <ul style="list-style-type: none"> <li>• Develop regulations that will preserve the natural and cultural resources provided by Deerfield’s</li> </ul>   | <p>Mid term</p>   |                    | <p>PB</p>                                      |

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| <p>Class VI Roads and existing trail system.</p> <ul style="list-style-type: none"> <li>• Inventory existing trail network.</li> <li>• Consider scenic road designation of other town owned roads.</li> <li>• Prepare an inventory and map of significant historic sites in Deerfield.</li> </ul>   | <p>Mid term<br/>Mid term<br/><br/>Mid term</p>                             |                           | <p>Local volunteers<br/>CC<br/><br/>Historical Society</p>                                     |
| <p>Continue to work with Bear Paw Regional Greenway and other land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Brook State Park, Pawtuckaway State Park, and Northwood Meadows State Park.</p> <ul style="list-style-type: none"> <li>• Maintain partnership with Bear Paw in order to ensure congruency between the goals of both parties.</li> <li>• Expand partnerships with Conservation Commissions in surrounding towns.</li> </ul>  | <p>Ongoing</p>   |                           | <p>DOSC<br/>CC<br/><br/><br/><br/><br/><br/><br/><br/><br/><br/>CC</p>                         |
| <p>Work with the NH Coastal Watershed Land Protection Program (NHCWLPP), through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to refine priorities for preservation.</p> <ul style="list-style-type: none"> <li>• Establish and maintain relationship with the NHCWLPP to ensure congruency between the goals of both parties.</li> <li>• Collaborate between the Planning Board, the Conservation Commission, the Zoning Board, and the Open Space Committee on the Shoreline Protection Buffer Study and promote and implement appropriate land use regulations.</li> </ul> | <p>Ongoing<br/><br/><br/><br/><br/><br/><br/><br/><br/><br/>Short term</p> | <p>NH Estuaries Grant</p> | <p>CC<br/><br/><br/><br/><br/><br/><br/><br/><br/><br/>DOSC<br/>CC<br/>PB<br/>Zoning Board</p> |

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| <p><b>Work to gain informed support from the residents of Deerfield concerning the multiple economic, health, ecological, and recreational benefits of Open Space.</b></p>  |   |  |   |
| <p>Publicize the Open Space Plan as part of the Master Plan and encourage the reading of the following aspects:</p> <ul style="list-style-type: none"> <li>• Identify the economic benefits of open space to the town’s tax base and land values.</li> <li>• Promote open space protection as a prevention tool for the health hazards that can arise from non-point pollution sources in groundwater and air.</li> <li>• Promote the recreational potential of open space lands through Class VI roads, trails, and parks.</li> <li>• Demonstrate the importance of open space for wildlife habitat.</li> <li>• Promote the use of open space for flood control purposes.</li> </ul> | <p>Short term</p> <p>Ongoing</p> <p>Long term</p> <p>Mid term</p> <p>Short term</p> <p>Short term</p> |  | <p>DOSC</p> <p>DOSC</p> <p>CC</p> <p>CC</p> <p>CC</p> <p>CC</p> |