

TOWN OF WENDELL OPEN SPACE AND RECREATION PLAN 2010



**Prepared by the
WENDELL OPEN SPACE AND RECREATION PLANNING
COMMITTEE**

**And the
FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS
PLANNING DEPARTMENT**

TOWN OF WENDELL

OPEN SPACE AND RECREATION PLAN 2010

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Prepared by the
WENDELL OPEN SPACE AND RECREATION PLANNING COMMITTEE

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SECTION 1

PLAN SUMMARY

The Wendell Open Space and Recreation Plan (OSRP) coalesces the interest, effort, and motivation of community members towards the identification, prioritization, conservation and protection of Wendell's landscapes and ecosystems in the face of new residential development. Its purpose is to provide a framework for decisions dealing with land uses, which may impact valuable ecosystems and the lands that contain unique historical, recreational, and scenic values.

The 2010 Wendell Open Space and Recreation Plan (OSRP) embodies the understanding of Wendell residents of the interdependence of contiguous forests, streams and wetlands, agricultural fields, scenic views, and significant historical structures and landscapes with the Town's rural character. The OSRP also reflects the respect that Wendell residents have for ecosystems and for all the life they contain. It illustrates the role that all undeveloped open spaces have in providing wildlife habitat, in ensuring that aquifer recharge areas remain vegetated, and the role that residents have in being, and learning how to be, good stewards of the land and the ecosystems in their Town.

The Seven Year Action Plan gives concrete substance to the goals and objectives, which were developed from the results of the 2008 Open Space and Recreation Survey and from community members' understanding of their Town's vast yet vulnerable natural resource base. The 2010 Wendell Open Space and Recreation Plan prioritizes actions that will identify focus or priority areas and clarify the criteria for protection priorities; identify and prioritize parcels that are of special conservation interest; work with local land trusts to identify potential conservation buyers; identify funding sources for land protection; apply for State Historical Preservation funding; negotiate access to the Phelps Forest Conservation Area for forestry purposes and complete a stewardship plan; provide ongoing maintenance for trails in the Fiske Pond Conservation Area; formalize public access to the Millers River for recreational purposes; sponsor educational events and materials for residents concerning the management of invasive pests and diseases; post signage on all roads leading into town identifying Wendell is a "Right-to-Farm" community; conduct a comprehensive investigation of the needs of Town boards and departments for administrative assistance; construct a sidewalk and bike path near the Commons in the center of Town, and develop a comprehensive plan to update the playground in the Town Center for improved safety and aesthetics.

SECTION 2

INTRODUCTION

In 1987, the Wendell Conservation Commission prepared the Town's Open Space and Recreation Plan. In 1990, through the Rural Design Assistance Grant from the Massachusetts Council on the Arts and Humanities, Conway Design Associates developed a Community Vision of the Future for the Town of Wendell, entitled "Wendell Places of the Heart Plan." Since then, the Town has worked to develop a vision of future development through the 2002 Open Space and Recreation Plan (of which this plan is an update), the 2002 Western Millers River Watershed Growth Management Plan, the 2004 Wendell Community Development Plan, and the 2007 Pelham Hills Forest Conservation Project. Many of the focus areas, ecosystems, historical structures and sites, and scenic areas identified in all of these plans as being worth protecting are also found in this Open Space and Recreation Plan.

The land and all it contains continues to capture the hearts and minds of Wendell residents, though perhaps these days it seems the search for effective tools and action steps may have taken on a more desperate energy. For the past several years Town officials, volunteer boards, local conservation agencies, and concerned citizens have been exploring the feasibility of, and implementing, different land use and open space projects within the Town of Wendell. These projects include amending the zoning bylaws with cell tower, phased growth, and large development review measures; continuing to permanently protect vital parcels of land within the forested landscape; and, organizing the means of protecting key parcels of recreation land in town. It became apparent that the lack of an approved, up-to-date Open Space and Recreation Plan has kept the Town of Wendell from benefiting from state and federal grant programs that could provide financial support for the acquisition of open space and the development of recreational facilities.

This update has been developed between 2008 and 2010 with the aid of the Franklin Regional Council of Governments using Town funds and local technical assistance funding from the Department of Housing and Community Development. The 2010 plan builds on the strengths of the earlier plan, while providing updated information and revised priorities and objectives reflecting the many accomplishments that the Town has achieved in the intervening years in implementing the 2002 Action Plan.

A. STATEMENT OF PURPOSE

The purpose of this plan is to provide an accurate and thorough basis for decision-making involving the current and future open space and recreation needs of the residents of Wendell. This plan brings together and builds upon the planning efforts of the past twenty years including the Open Space and Recreation Surveys in 2008 and 2001, as well as the survey results of the 1990 and 1987 planning efforts.

The 2010 Wendell Open Space and Recreation Plan also establishes a strong foundation for further town master planning. This plan identifies the most important community and natural resources needs in Town and recommends steps necessary for their satisfaction and/or protection.

B. PLANNING PROCESS AND PUBLIC PARTICIPATION

Public participation in the planning process began in 2008, when an Open Space and Recreation Survey was prepared and sent to all the households and landowners in Wendell. Of these, 53 surveys were returned from Wendell residents, which represented a five percent return rate (See Appendix). The 2008 Open Space and Recreation Survey results were used as the basis for the development of Section 8: Goals and Objectives, as well as the overall open space and recreation goals or vision. In addition, three residents in their early 20's assisted with the initial collection of information for the Plan during the summer of 2008.

A total of 12 public meetings were held by a volunteer Open Space and Recreation Planning Committee between September 2008 and December 2010. Two to three drafts of each section of the plan were mailed to a broad range of reviewers representing key town boards, community groups, and non-profit organizations for their comments and suggestions for revisions before and after each of these meetings. This process was followed both in 2008 and in 2010, resulting in an especially comprehensive review of the draft chapters, particularly those inventorying the community, its natural resources, and its open space lands.

Several sets of the Open Space and Recreation Plan maps have been displayed during regular meetings of the Open Space and Recreation Planning Committee, in two map review sessions held at the Town Offices, as well as at the Public Forum. All comments have been incorporated into the maps included in the Plan.

Additional opportunities for public participation included tables with information about updating the Plan with an emphasis on the goals and objectives at the Earth Day Celebrations in both 2009 and 2010; information about the planning process in the Town newsletter; and materials available at Old Home Day in 2010 focusing on the objectives and proposed action steps including opportunities for community feedback.

Town Boards and departments also had numerous opportunities to provide input into the Plan. The Chair of the Open Space and Recreation Planning Committee met with the Planning Board, Agricultural Commission, and Selectboard in 2009 to review the goals and objectives and gather action steps. In 2010, the Chair met with the Selectboard, Conservation Commission, the Tree Warden, and the Open Space Committee to discuss their concerns and review the new draft Action Plan. The Planning Board and Agricultural Commission reviewed the Action Plan at their meetings in 2010 and provided valuable feedback that was incorporated into the Plan.

A public forum was held on November 4, 2010, attended by 17 people. The public forum was advertised extensively through the use of posters displayed around town, press releases to three different local papers, notices sent out on the town e-mail list, and was featured on the town website. In addition, the complete draft plan was available for review on the website and hard copies of the draft were available at the Country Store, the library, and at the Town Offices. At the public forum, residents reviewed and discussed the inventory, analysis, community goals, objectives, and seven-year Action Plan, including assisting with the prioritization of action items. All public comments have been recorded and incorporated into the final version of the 2010 Wendell Open Space and Recreation Plan.

SECTION 3

COMMUNITY SETTING

The Town of Wendell contains rural landscapes that have been affected by its human inhabitants over the past several thousand years, whether for early settlement or habitation or the more recent trend in this century of planned housing development. Planning for open space in Wendell must account for the complex relationships between people, the open spaces, and the natural resources upon which they depend. Continued growth without consideration of the natural systems that need to be protected, such as wildlife habitat, preservation of native flora and fauna, and broader protection of complex ecosystems, will reduce the quality of life for future generations.

The information provided in this section, Community Setting, inventories and assesses the human and land use components of the landscape, detailing present, past, and potential future uses, based on current development trends. Subsection A, Regional Context, gives a snapshot of Wendell today, and identifies the ways in which the location of the Town within the region has affected its growth, its quality of open space, and its recreational resources. Subsection B, History of the Community, looks back at the manner in which the human inhabitants settled and developed the landscape. Using statistical information and analysis, Subsection C, Population Characteristics, shows the reader who the people of Wendell are today and how population and economic trends may affect the Town in the future. Finally, Subsection D, Growth and Development Patterns, describes specifically how the Town of Wendell has developed over time and projects the potential future impacts that current zoning may have on open space, drinking water supplies, and municipal services.

A. REGIONAL CONTEXT

Regional Context concentrates on the location of the Town of Wendell relative to natural and socio-economic resources and demonstrates the significant influence that physical location can have on Wendell's community characteristics. This includes the quality and quantity of open space in the Town as well as its recreational resources. Regional Context also considers the impact that different land uses, located within the Town of Wendell and in surrounding communities, have on regional open space and recreational resources. Finally, potential regional strategies for environmental and open space protection are offered.

The Town of Wendell (32 square miles) lies in the eastern part of Franklin County in the rugged highlands east of the Connecticut River. It is bounded by Erving on the

north, Orange and New Salem on the east, Shutesbury on the south, Leverett on the southwest, and Montague on the west. The principal highway serving Wendell is State Route 2, the Mohawk Trail Scenic Byway, a major east-west highway passing along Wendell's northern border and paralleling the Millers River, which is also the boundary between Wendell and Erving. U.S. Route 202 is accessible in the neighboring Town of New Salem, and provides access to points north such as Orange and Athol, and points south such as Belchertown. Route 2A provides access to Route 2 and points east, as well as access to Orange Center. Routes 47 and 63 are accessible from the neighboring Towns of Montague and Leverett, and are used to commute south to Amherst, South Deerfield, and other communities. (See the Regional Context Map at the end of this section.)

A.1 Natural Resources Context

In order to plan for the protection of open spaces, natural resources, and rural character, the Town of Wendell should consider the roles these resources play across the landscape. A pond, for example, may be regionally important due to the presence of rare species habitat, or because the pond helps to link a regional chain of wetlands that support amphibian population movements or serve as a water source for vertebrate species. Wendell's major natural resources and topographical characteristics include its abundant contiguous forestland, high elevations, and the Millers River. The regionally important natural resources include the Quabbin Wilderness, and the Millers, Chicopee, and Connecticut River watersheds. Wendell residents also enjoy the presence of Lake Wyola and the Sawmill River, located in neighboring Shutesbury and Leverett. The Sawmill River is significant because of its scenic value along a major area highway, N. Leverett Road, and because it contains spawning Atlantic salmon. Lake Wyola is a great site for swimming, boating, and fishing, and is in a part of the area which has played an important role in Wendell's heritage. Regionally important local resources present both opportunities and challenges to open space planning.

A.1.1 Contiguous Forestland

Forests constitute the most abundant and one of the most important natural resources in Town of Wendell, and include many large tracts of uninhabited or roadless land, providing Wendell its rugged and rural character. Some of this land lies within Wendell State Forest and the Whetstone Wood Wildlife Sanctuary. Many acres of forestlands, particularly in the southern portion of Town, are privately owned.

Wendell State Forest, located south of the Millers River, covers 7,638 acres of rolling forested hills, streams, ponds, old roads and trails. The Department of Conservation and Recreation, Division of Forest and Parks manages Wendell State Forest for recreation, forest products and wildlife habitat protection. It is one of the most popular recreation and wilderness areas used by residents of Wendell and surrounding towns.

The Whetstone Wood Wildlife Sanctuary, owned by the Massachusetts Audubon Society, is comprised of 1,886 acres of mostly forested land in Wendell, 200 acres in

the Town of Orange and an additional 94 acres in the Town of New Salem. The land is managed as a sanctuary for the protection of wildlife habitat.

Bear Mountain, located in northwest Wendell, lays claim to being part of the largest contiguous forested area in Town, and consists of several thousand acres of forest suitable for all forms of wilderness recreation. Nearly all of the land surrounding Bear Mountain itself is part of the Wendell State Forest. There is a seven-mile stretch of unspoiled riverbank along the Millers River, which is partially contiguous with the unbroken woodlands of Bear Mountain. As a natural major riverbank-forest edge, it ranks as one of the three best examples in Massachusetts.

A.1.2 Elevation

Wendell's high elevations are derived from the region's geological history, which is explained in more detail in Section 4, A.2. In short, as result of this history, all the main hills in Wendell and its near vicinity consist of schist outcrops with elevations of about 1,200 feet. Elevation has played a significant role in the Town's development. During the late-1800s, Wendell Center was a cool summer destination for tourists and for residents of the industrial towns along the Millers River, which helped to sustain the community with economic activity. Like other hill towns in the region, agricultural use of the soils was mostly limited to grazing cattle, sheep, and supporting dairy farming. Pasture was more common than cropland. Wendell's topography coupled with the high level of industrial activity along the Millers River to the North, helped to maintain Wendell as a sparsely populated community. The low density of its population has been a draw for new residents for the past half-century. The very rural nature of Wendell, caused in part by its being separated from lowland uses, has likely contributed to the abundance of wildlife. This topographical characteristic is even more significant because of the presence of the Quabbin Reservation to the southeast.

A.1.3 Quabbin Reservoir and Surrounding Lands

The Quabbin Reservoir and surrounding lands are mostly owned by the Commonwealth of Massachusetts and managed by the Department of Conservation and Recreation (DCR), Office of Water Supply Protection. These lands provide an important ecosystem service for the people of the metropolitan Boston area by helping to maintain the quantity and quality of their drinking water supply. An indirect benefit of these more than 56,000 acres of protected land is the wildlife habitat it supports. Nowhere else in Massachusetts can you find a larger block of contiguous forestland permanently protected from development. The contiguous forested areas in Wendell, together with interspersed wetlands, extend the habitats of many mammals and birds, which require larger home ranges, including: Black Bear, Fisher, Mink, River Otter, Bobcat, Moose, Bald Eagle, Sharp-shinned Hawk, Cooper's Hawk, Northern Goshawk, Red-shouldered Hawk, Broad-winged Hawk, Red-tailed Hawk, Turkey Vulture, American Kestrel, Peregrine Falcon, Wild Turkey, Great Horned Owl, Barred Owl, Long-eared Owl, Northern Saw-whet Owl, Pileated Woodpecker, Belted Kingfisher, Northern Harrier, Great Blue Heron, along with many other upland bird species and waterfowl.

A.1.4 Millers, Chicopee, and Connecticut River Watersheds

The three major watersheds in Eastern Franklin County—the Millers, Chicopee, and Connecticut River watersheds—converge just south of Wendell Center. (For the location of these watersheds, see the Water Resources Map at the end of Section 4: Environmental Inventory and Analysis.) The relative importance of the first watershed lies in the impact of the Millers River on the development of Wendell and surrounding communities and vice versa. Although the Millers River fluctuates between sluggish and rapid flows, there is an average drop of 22 feet per mile. This feature made the Millers River and its main tributaries a magnet for manufacturing and hydroelectric power generation, which provided the impetus for industrial activities in neighboring towns in the late 1700s. While much work has been done to clean up the watershed in recent years, resulting in the river’s contamination has been upgraded from dangerous to elevated, the effects of PCB contamination of sediments in the Millers River will undoubtedly continue to have a negative long-term impact on the recreational potential of that resource for the Town of Wendell and surrounding communities.

The Chicopee watershed contains the Quabbin Reservoir and is therefore important for its contributions to wildlife and scenic values, as well as for the associated land use regulations that control development density around its tributaries. The Chicopee River watershed is comprised of four major river systems, including the Swift River, which is the source of the Quabbin Reservoir. Nineteen percent of the Town of Wendell drains into the Quabbin Reservoir via tributaries of the Swift River, all located in the southeastern section of Wendell.

The Connecticut River watershed is important to Wendell due in part to the presence of anadromous fish and the Silvio O. Conte National Fish and Wildlife Refuge. The southwestern section of Wendell is located in the Connecticut River watershed. The Skerry, Plympton, Fiske, and Red Brooks drain seventeen percent of the Town of Wendell via the Sawmill River, which flows southwest through the Towns of Shutesbury, Leverett and Montague, to its confluence with the Connecticut River. The Connecticut River watershed is the largest river ecosystem in New England. As an American Heritage River, the Connecticut can receive special attention from federal agencies for the cultural, economic and environmental values of the River. The Connecticut River watershed (including the watersheds of the Millers and Chicopee Rivers) was designated the “Silvio O. Conte National Fish and Wildlife Refuge” by an act of Congress in 1991. This refuge was the first of its kind, encompassing an entire watershed ecosystem and is a benchmark in environmental conservation.

A.1.5 Major Landscape Level Patterns

The major landscape level patterns existing in and around the Town of Wendell include large patches of contiguous forest, hills, wetlands and beaver ponds; both clusters of built environments and scattered residential development; and river corridors that focus

the energy of the watershed's water flows and the movement of its human inhabitants. These patterns have impacted development of the landscape, but in some cases they are also the result of human use of the land.

Wendell's large contiguous areas of forest land are very attractive to statewide conservation efforts because land in Wendell and neighboring communities is much less expensive than in other parts of the state due to this area's relatively low development pressures. This condition is likely temporary, which has prompted regional land protection initiatives that seek the permanent protection of the remaining large parcels of open space. Hills and wetlands produce unique patches of wildlife habitat that offer resources to wildlife, and by their nature limit human development. Wendell consists of a matrix dominated by mixed forests, hills with steep slopes and wetlands including beaver-modified areas, which provide changes in aspect, soils, and microclimates that help to ensure a continuous diversity of plant and animal life.

Currently, Wendell has clusters of houses in villages and also homes spread out across town. This reflects both historical development patterns and new trends. Both farming and the post-World War auto-dependent development patterns are probable reasons for people living far apart from each other. More recently, the characteristics of the soils combined with Title 5 requirements have impacted the development patterns in town.

The Millers River to the north and the Sawmill River to the south (located in Shutesbury and Leverett) are two westward flowing rivers, in two separate watersheds. Both rivers have played a significant role in the community's development and are now known for mostly scenic, wildlife, and recreation values. They accompany commuters traveling on Route 2 in the north and on North Leverett Road in the south. In both cases, land uses abutting and upstream of these waterways have an impact on the quality of the water. The Millers River still acts as the disposal system for residential and industrial waste streams, albeit in a manner that complies with all permitting. It is a river that is plagued with contaminants (polychlorinated bi-phenyls (PCBs) and mercury) that disallow the full and free use of the Millers River resources by residents and tourists. The Sawmill River begins at the outflow point of Lake Wyola, and is therefore affected by land uses around Lake Wyola. It is unknown at this time what role Wendell has in contributing to the quality of the water in Lake Wyola.

The degree of forest continuity, integrity of hilltops and wetlands, pattern of residential development, and the purity of the water in the Millers and Sawmill Rivers all are beyond the control of any one community. Wendell should promote the conservation of all its significant open space and natural resources, but if surrounding towns fail to protect land, plan growth, or continue to clean the Millers River, Wendell's impact on the resources that disregard political boundaries (water, wildlife populations, scenic views, trails, etc.) will be less than it could be. Wendell should therefore take an active role in the conservation of regionally important natural resources, whether they occur in Wendell or not.

A.2 Socio-Economic Context

The Town of Wendell is a small rural hill town. Historically, farming, logging, and manufacturing all had an influence on the development and growth of the Town of Wendell, as have waterpower, the railroad, and the Mohawk Trail. Wendell's industrial development has been tied to the use of the Millers River and other smaller fast flowing streams. However, the second half of the 19th century saw a significant decline in manufacturing and population in Wendell. Shortly thereafter, Wendell experienced the loss of its small tourism industry as a summertime destination for urban residents. Beginning in the mid-1920s the automobile played a key role in transforming Wendell, with its residents traveling to other towns in the region to earn their livelihoods.

With the "return to the land" movement in the 1970s, Wendell experienced an influx of new residents. Cottage industries began to develop with Wendell becoming the home of many craftspeople, artists, musicians, etc. Today, many of Wendell's residents enjoy an integrated work/home life. This can be seen in either highly visible ways such as the Diemand Farm, or in subtle ways with home-based crafters/artisans. Residents also commute to neighboring towns such as Amherst, Greenfield, Orange, and Montague or further to earn their livelihoods, while some combine a home-based business with a commute elsewhere to work, or telecommute.

Like many of the hilltown communities found along the western and the eastern edges of Franklin County, Wendell has had a relatively low level of pressure to develop its open spaces for residential development. The 2002 Wendell Open Space Plan had predicted that this trend was going to shift. This prediction has not materialized, perhaps due to a decrease in area employment opportunities or higher fuel prices greatly increasing the cost of commuting long distances for employment. Regardless, land protection should still be a high priority. Nearly 60% of the nation's forests are privately owned by families and individuals 55 years of age or older. A large amount of open space is about to change hands as aging landowners relinquish ownership to heirs or buyers. Without adequate advance estate planning on the part of these landowners as well as open space planning on the part of the community, the rural character of Wendell that we all cherish could be seriously threatened.

The Town of Wendell and its residents have multiple options available for protecting open space and recreation resources in advance of these changes. By working in cooperation with state agencies or one of the many local land trusts, a landowner may sell or donate development rights through a conservation restriction (CR). There are numerous options available for land conservation that can be tailored to the individual while retaining private ownership and use of the land. CRs are permanent and remain in effect when the land is sold or inherited and the land use would continue to contribute to the tax base. In addition, developers can build a Conservation Development that would provide both additional housing and protected land.

Over the past decade there have been a variety of governmental and non-governmental efforts to revitalize the economy in the North Quabbin region by supporting local

agricultural and forestry related businesses. State environmental officials, non-profits, and concerned area residents have been working together in forums such as the North Quabbin Regional Landscape Partnership to coordinate regional land conservation efforts with programs aimed at supporting the viability of local agriculture and forestry. One such program, the North Quabbin Woods, focuses on supporting forest based economic enterprises by supporting local eco-tourism and marketing of locally made wood products, as well as education related to sustainable forestry. Another program based in the Pioneer Valley, Communities Involved in Support of Agriculture (CISA), provides marketing support for local farmers. The annual North Quabbin Garlic and Arts Festival, the Wendell Old Home Day and the Wendell Holiday Fair provide a showcase for local farmers and artists. Natural-resource-based economic revitalization projects have a symbiotic relationship with regional land conservation efforts. Enhancing the viability of natural-resource-based enterprises also helps to support the economic viability of related land conservation, while protecting farmland and forests supports the continuation of these industries in our region.

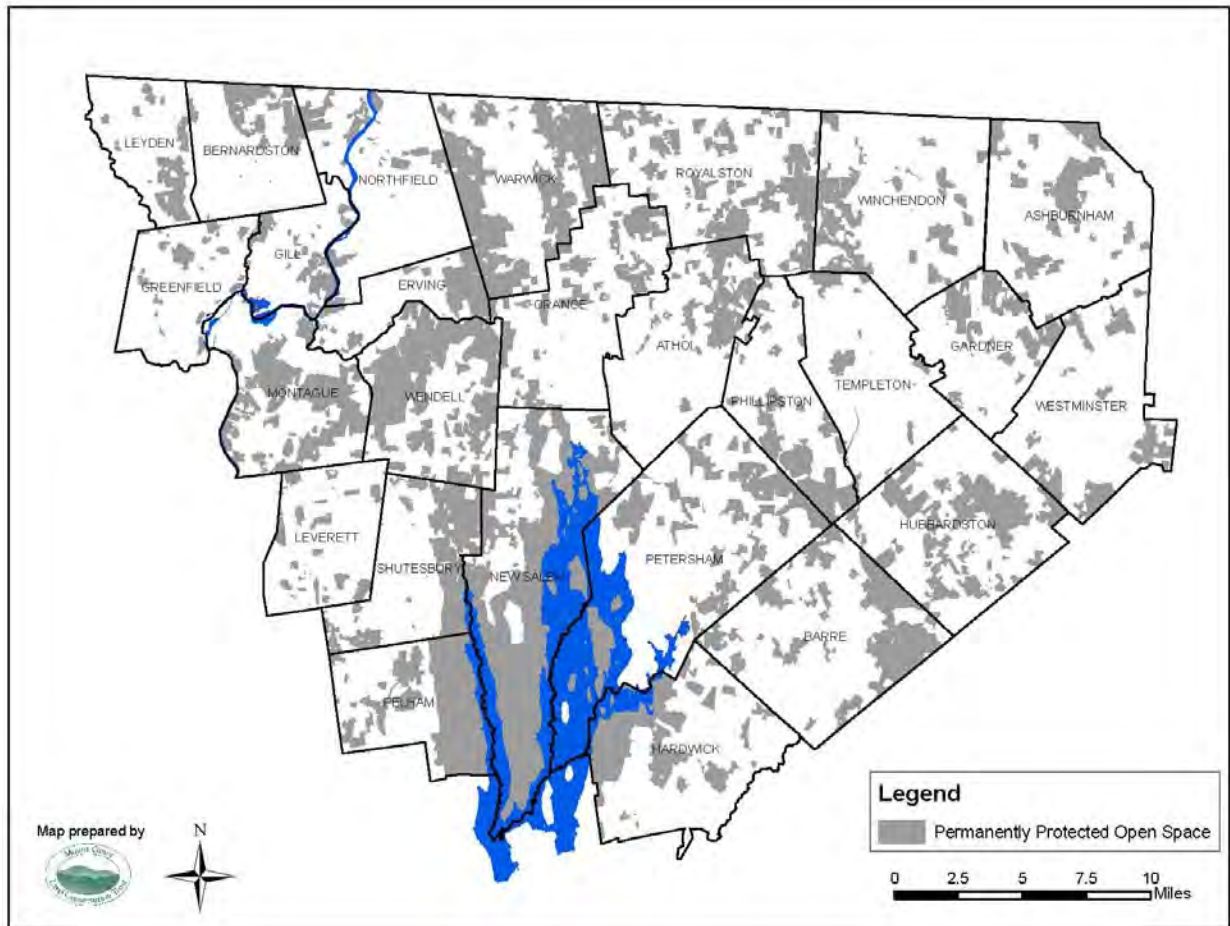
A.3 Regional Open Space and Recreation Opportunities and Issues

A parcel of land that is permanently protected from development can create real value for a community by being a potential site for recreational activities, by maintaining rural character, by conserving the forest habitat, by conserving habitat for wildlife and fisheries, and by protecting the integrity of first and second order streams, which are the most extensive and vulnerable water resources within a watershed. If the parcel of land is located within the recharge areas of the public water supply it can also contribute to protecting wells from contamination by point and non-point source pollution. When abutting parcels of land are permanently protected over time, based on a plan, the result can be a network of open spaces covering thousands of acres. When land is protected in such a manner as to link the open spaces of each community together, this can create a regional greenway.

Currently, Wendell is part of a potential regional greenway. There is a circular belt of permanently protected open space that stretches northwest from the 60,000-acre Quabbin Reservation through New Salem, Wendell, and western Orange into Warwick. The eastern half of the circular belt continues up to the state line through Royalston, and then extends south to Tully Mountain in North Orange, Tully Lake, Birch Hill and Harvard Forest in Petersham. Another network connects the western part of the belt in Erving and western Orange through Wendell, Montague, and Sunderland to the Connecticut River. Within these networks of open spaces there are eleven state forests or reservations that are popular for activities such as camping, fishing, hiking, and swimming. These include, in addition to Wendell State Forest, the Orange State Forest which lies to the east of Wendell, the Erving and Warwick State Forests which lie to the north, Montague State Forest which lies to the west, and the Shutesbury and New Salem State Forests which lie to the south of Wendell. According to the Mount Grace Land Conservation Trust, these lands together are the single largest continuous tract of protected land in southern New England (see Figure 3-1 on the following page).

Other protected open space and natural resources in the region that Wendell residents may take advantage of include the Town's Fiske Pond Conservation Area and the Metacomet-Monadnock (M&M) Hiking Trail, which passes through Wendell State Forest and along the Millers River. The Quabbin Reservoir, Lake Wyola, Lake Mattawa, Laurel Lake, Tully Lake, Wendell State Forest, Millers River, various wildlife management areas controlled by the Division of Fisheries and Wildlife, and the Northfield Mountain Recreation Area are also among nearby regional attractions used by outdoor enthusiasts throughout the region and the State. Clearly, there are many critical natural and recreational resources that can only be conserved for current and future generations by the permanent protection of land encompassing resource networks that cross town boundaries. In addition, because of the presence of this potential greenway, there may be more opportunities for the Town of Wendell to protect key parcels that add to this regional resource.

Figure 3-1: Large Blocks of Permanently Protected Open Space in the North Quabbin Region



Source: Mount Grace Land Conservation Trust, September 2010.

A.4 Regional Strategies for the Protection of Open Space, Natural and Recreational Resources

Actions aimed at improving and protecting the quality of open space, natural, and recreational resources in Wendell and surrounding communities must take place at different political levels. At stake is the future of the region's wildlife, fisheries, recreational, and scenic resources and all the values associated with them. Regional efforts are needed because regional planning agencies, land trusts, and watershed/landscape planning groups together can attract political and funding resources which individual towns may not be able to attract. Towns, on the other hand, have the power to implement changes in land use patterns directly through zoning and open space protection.

The main regional issues developed in this first part of Section 3, Regional Context include: 1) the presence of large corridors of protected open space; 2) current land protection opportunities presented by a sluggish local economy and population growth relative to other parts of Massachusetts; 3) the need for continued monitoring and clean-up of the Sawmill and Millers Rivers; and, 4) the need for addressing the potential negative impacts of sprawling development patterns on the open space, natural, and recreational resources in Wendell and surrounding communities.

Land protection opportunities currently exist within the Town of Wendell because of the presence of large blocks and corridors of protected open space. Regional groups like the North Quabbin Regional Landscape Partnership (NQRLP), local land trusts, and the Millers River Watershed Council have the attention of state conservation agencies like the Department of Conservation and Recreation. This is because these groups represent many local constituencies and the region currently is one of the last areas in the State with large contiguous forested blocks with significant biodiversity. According to the Mount Grace Land Conservation Trust, the Nature Conservancy has identified the North Quabbin as one of the two areas in Massachusetts most suitable for designation as a large-scale priority region within which land protection at the landscape scale could be accomplished. The Town of Wendell continues to work with this group and others to identify and sponsor land protection efforts that conserve regional open space and recreation resources in Wendell.

A variety of state and regional studies have been done which can help the Town of Wendell to further identify local land protection priorities. The Massachusetts Natural Heritage & Endangered Species Program produced a BioMap report in 2001 and Living Waters report in 2003 that identify priority habitats and continually update the resources every two years. Harvard Forest issued a reported entitled Wildlands and Woodlands: A Vision for Massachusetts Forests in 2005, recently updated in 2010, that presents a strategy for protecting the state's forests including both unmanaged areas and managed woodlots. The report identified potential wild land reserves and recommended the formation of Woodlands Councils to develop a "bottom up and voluntary approach that provides structure and guidance for those who aspire to conserve and manage their forests as part of a coherent program." The NQRLP conducts ongoing programs that

help local officials and residents incorporate information and strategies from these projects into local planning efforts.

The Franklin Regional Council of Governments Regional Open Space Plan was completed in 2000, and was created as a comprehensive approach to planning for open space on a regional level. The final report includes local and regional strategies for open space protection in Franklin County.

The Commonwealth has completed The Statewide Comprehensive Outdoor Recreation Plan (SCORP), Massachusetts Outdoors 2006, an update of the SCORP 2000, five-year plan. SCORP plans are developed by individual states to be eligible for federal Land and Water Conservation Fund (LWCF) grants and serve as a tool for states to use in planning for future needs and uses of outdoor resources for public recreation and relaxation. This plan notes the significance of Wendell State Forest as part of the protected land in the region as follows:

Another profound element of the protected land supply pattern in this region is the extensive state forest and wildlife management area system extending north from Mt. Toby, through the Wendell State Forest, and up through Erving, Northfield and Warwick.

The SCORP also provides information about use of and demand for outdoor recreational resources in the Connecticut River Valley region that may be relevant to Wendell's open space and recreational planning efforts. When assessing resource use in this region, the SCORP notes that rivers and streams, historic and cultural sites, lakes and ponds, forests, coastal beaches and shorelines, and mountains, all have 40% participation rates or greater. When reporting on satisfaction levels of users of resources in this region, residents report being most satisfied with historic and cultural sites, mountains, and trails and greenways resources. Somewhat lower than statewide levels of satisfaction were reported in this region for rivers and streams, and lakes and ponds. Connecticut Valley Region residents who use these rivers and streams were least satisfied overall. This regional information may be relevant for Wendell in improving river access as well as for assessing levels of use of town waterways by town and area residents for recreational use, and determining strategies for balancing these uses with water quality and other ecological concerns. Wendell State Forest should also be valued for its trail access for regional as well as local residents, as well as for hiking, mountain biking and other outdoor activities. When considering new recreational projects, the Town may want to consider the following response from regional residents about future needs and interest from the SCORP:

In contrast to demand (or present use patterns), respondents in this region place the highest priority for new facilities on road biking (14.5%), walking (13.9%), swimming (13.8%), playground (11.3%), hiking (10.0%), and mountain biking (10.3%).

The Franklin Regional Council of Governments completed a corridor management plan in 2009 for the 29-mile eastern portion of the Mohawk Trail Scenic Byway from

Greenfield to Athol. The vision for this Mohawk Trail East Scenic Byway Corridor Management Plan is “to expand economic, tourism and recreational opportunities along the Byway while educating people about the Byway and preserving its unique scenic qualities, natural resources, historical structures/places, industrial and agricultural heritage and community character.”

Clean-up of the Millers, Connecticut and Chicopee River watersheds is currently being addressed by the Executive Office of Energy and Environmental Affairs and the Department of Environmental Protection. The Millers River Watershed Council also provides opportunities for concerned residents to assist in this effort by helping to monitor local streams and clean up the banks of the Millers River. Wendell may also opt to consider changes to its zoning that would help to protect the quality of the water in the Millers River. Ideally, surrounding communities in the watershed would also make similar efforts to protect water quality.

Planning for the protection of critical natural resource systems requires both regional and local planning. Local Planning Boards, Conservation Commissions, and Open Space Committees must be willing to champion changes to zoning and targeted open space protection that would ensure the long-term protection of vulnerable natural, open space, and recreational resources.

B. HISTORY OF THE COMMUNITY

Wendell began as an isolated hill town with secondary access to a regional corridor along the Mohawk Trail. It was incorporated in 1781, approximately 25 years after the area was settled. Wendell was originally composed of a tract of land taken from the northern part of Shutesbury and that part of Ervingshire that lay south of the Millers River. In 1803, a tract known as the Benjamin Hill Gore and a one-mile wide strip from Montague were added. Colonists to Wendell came predominantly from Shutesbury, New Salem, and eastern Massachusetts. These families were associated with the Shutesbury Meeting House until 1781, when Wendell established its first Congregational Church.

Improved transportation routes during the period from 1675 to 1775 also encouraged settlements. The Montague-New Salem route over Wendell Center Hill, and the Jennison-Rockwell Hill Road from New Salem to Lockes Village (Shutesbury), were two very important travel ways. These were followed by roads connecting the Millers River to the Town center and an east-west branch along Farley Road through what became Mormon Hollow. The establishment of the Congregational Meeting House in Wendell Center created a central point for a radial axis of roads. The Jennison-Rockwell Hill Road was also a main focus for travelers. It is along this road that the Ballard Tavern was built in 1820.

B.1 Federal Period (1775-1830)

Farming was the main source of livelihood for 50 years after the Town was incorporated, although the many fast-running streams provided sawmill sites for lumber cut from Wendell's forests. In 1754, a gristmill was built on Locke's Pond (now Lake Wyola) and a sawmill was built on Osgood Brook. The larger production sites grew along the Millers River. Only those colonists who had acquired productive land stayed through the mid-nineteenth century, i.e., for about 100 years. Place names and street names reflect this history. These names are those of mid-nineteenth century residents, e.g., Jennison Road, Farley Road, Mormon Hollow Road, Fiske Pond, and Bowen's Pond.

In addition to cultivating the soil and using the forest, various occupations were represented in Wendell. The 1810 census listed a tanner and one, possibly two, shoemakers. There were 95 looms in Wendell in 1810 yielding 5,865 yards of linen cloth, 4,869 yards of woolen cloth and 4,137 yards of cotton cloth. With the rise of machine looms, this type of industry was doomed. By about 1830, straw and then palm leaf was braided into hats throughout the winter. An agent would pick up completed hats and pay for them by the piece. Wendell's population in 1790 was 519, and rose to 983 in 1810.

B.1.1 Historical Resources

Archaeological resources in Wendell include several pre-historic sites along the banks of the Millers River. A survey of historical structures in Wendell identified 29 existing structures built during this period of early settlement. Nearly all the early houses are sited askew to the present roads. All these early houses are in isolated positions with the house sited at its best angle to the land.

There are two, two-story "mansion" houses in Wendell. The Nathan Putnam-L. J. Baker house (#34)¹ on Locks Village Road may be c. 1785. The Dwight Gates house (#40) on the corner of Depot Road and Farley Road may date to 1803. The D. Lavery-J. Holston house (#54) on Depot Road, built in 1778, burned down recently and was replaced by a modern house.

Fifteen other early houses (from c.1770) comprise the oldest existing structures in Wendell. Stylistically, they are two variants of the typical small eighteenth century house used all over New England, that is, the hall and parlor houses (#22 and #26) and thirteen of the smaller Cape Cod-type structures (#'s 18,19, 20, 22, 31, 39, 41, 42, 48, 53, and 58).

¹ This is the number affixed to the Massachusetts Historical Commission forms compiled by the Historical Commission of the Town of Wendell and the identifier used on the Massachusetts Historical Commission's on-line data base, the Massachusetts Cultural Resource Information System (MACRIS), <http://mhc-macris.net/>. This number is also used to indicate the location of the property on the Sketch Map of Historic Homes and Sites in Wendell that is included at the end of this section.

The houses designated as the oldest are the Martin Armstrong-L. Wyman hall and parlor house (#22) on West Road and the Addison Leach-W. Barrows Cape Cod house (#33). Two existing houses on Wickett Pond Road—the T. Howe–Wetherby house (#18) and the E. Locke house (#19)—are also very old, as is the Daniel Ballard house (#29) on Jennison Road. The Town Common dates from 1780 and the Town Cemetery dates from approximately the same year, with the first stone dated 1782. The cemetery’s iron fence was erected before 1871.

Six Federal style houses remain in Wendell. An early one is the Aaron Fisher one-story five bay center entrance house with a side gable (#51). This house dates to about 1805 and has been minimally altered. About the same time, Timothy Taft’s house (#36) was built, a three bay side entrance two-story side gable Federal style. The Samuel French-T. Harrington house (#14) (c. 1811) burned down and was replaced by a modern house. The Ballard Tavern (#30) on Jennison Road is a seven bay two-story side gable structure with two entrances on the facade. Built in 1820 as a stagecoach stop or tavern, it is reputed to have had a ballroom on the second floor, a typical installation of the early nineteenth century. The structure has retained its Federal characteristics in its overhangs and trim. The Parsonage (#15) on Montague Road was built in 1823. It too retains much of its Federal characteristics.

There are several interesting stone structures in Wendell that most likely date back to this period. A rock-walled pound at the junction of Montague Road and Bullard Pasture Road was probably constructed to contain stray town animals. At the corner of Jennison and Old Stage Road lies the foundation of a livery stable, used as an overnight stay for stagecoaches that ran through Wendell.

The 1800 census records 139 families living in 111 houses. Surprisingly, there are more houses remaining from this period in Wendell than those built later.

B.2 Early Industrial Period (1830-1870)

The railroad arrived in Wendell in 1848. Built along the Millers River, the area close to the railroad station became know as Wendell Depot. The railroad stimulated the development of a second commercial focal point for Wendell citizens. In addition to being near the railroad, the Depot was also near the Mohawk Trail. Consequently, the Depot grew and developed as a trade and travel spot through the turn of the century. A dam was built and hydroelectric power from it ran a lumber mill. It was purchased by an electric company around 1900 and was destroyed by the flood associated with the 1938 hurricane.

There were changes in the economy in Wendell during this period. Manufacturing came to Wendell in the form of three chair manufacturers, a hat manufacturer, a high quality carriage builder, a boot and shoe factory, and a boat builder. The population in Wendell in 1840 was 875.

B.2.1 Historical Resources

The 1840s saw the embellishing of the Common with the construction of the civic buildings in Wendell Center. Built at the corner of New Salem Road and Morse Village Road in 1845, the Baptist Church (#11-later to become the Town Hall) was moved to the present location in the 1920s, and the Congregational Church (#2) and the original Town House (#6) were built both in 1846. There are similar coordinated groups of structures in Sunderland and Shutesbury. The Town House was badly damaged by a tornado in 2006 and consequently ordered torn down by the Selectboard.

During this period, the Greek Revival architectural style was being incorporated across the nation. Several houses in this style face the Wendell Common (#3,5 and #9) and others are located on the roads leading away from the Common (#8 and #12). Two houses (#10 and #12) have the wide flat corner boards, heavy fascia or frieze, and a high roof plate. The others have the sunken center corner or pilaster similar to that of the churches (#2 and #11) and the Town House (#6). There are other structures that can also be described as Greek Revival although they are of a simpler style. These are the George Robinson house on Depot Road (#52), built between 1858 and 1871, and the J.C. Brown-B. Styles house (#56), which is near the Depot. Additionally, there are small barns (#37 and #61) and one barn in Wendell Depot (#63) that has been converted into a house, all of which can be classified as being in the Greek Revival Mode.

Several notable industrial sites date from this period. The one in the best condition is the site of the village of Stoneville, along the Millers River west of Wendell Depot. Built in 1851, it was the location of J.E. Stone and W. Washburn's piano and billiard case factory, which remained in operation until the end of the nineteenth century. This site has qualified for National Historic Register status because it is one of the few nineteenth century industrial sites where the entire village is undisturbed.

The Mormon Hollow Historic Area located along Mormon Hollow Brook includes a large number of nineteenth and possibly eighteenth century foundations and a cemetery. Only two of the gravestones are readable, with dates 1795 and 1797. The foundations include some buildings and a possible gristmill and may be linked to the short-lived Mormon settlement that gave the area its name. This area holds a wealth of information about Wendell's history, since the sites are essentially undisturbed. Other foundations and the cemetery are on private land. The cemetery land has been taken by the town for back taxes. Hopefully, for preservation, this land will remain in town hands, supervised by the Wendell Historical Commission.

South Cemetery (#802) is a significant feature and contains stones in good repair dating from 1833. There is also a small cemetery on Morse Village Road (#804) that holds three victims of a small pox epidemic who died in early March of 1833. In addition, it holds two members of the Sawyer family who died later of other causes.

B.3 Late Industrial Period (1870-1915)

In 1881, the Farley Paper Company factories and the Warren Truss Bridge, which spanned the Millers River, were constructed. Across the river in Erving, the little center for the Farley Mills was built. The mills burned, were rebuilt, and then business declined. In 1892, knitting looms were put into the basement, employing 20 people. The finishing work (mittens, woolens and worsteds) was done in local homes.

With the decline in manufacturing, commercial activity changed to boarding houses and hotels for those traveling to and through the area. Hotels could be found at the Depot as well as Wendell Center. In 1885, at Wendell Center, there were two churches, a town hall and a hotel called the Summit House, which was visited by tourists wishing to escape the heat of the summer months. In contrast, early photos showed that Wendell Depot remained an economic center. The population in Wendell in 1870 was five hundred and thirty-nine (539).

B.3.1 Historical Resources

Houses built during this period were mainly Queen Anne style of varied gable and fancy shingles. Most of these houses (#'s 38, 62, and 25) were probably built as summer residences in the 1880's. One house on Farley Road (#44) was possibly built for employees of the Farley mills. An interesting house of this time is the Mary Merchant house (#45) on Mormon Hollow Road dating to 1875. A full two-story house, it is one of the more grand houses in Wendell. Three other houses are of note from the period, the rebuilt Alms house (#16), the Howe site on Davis Road (#50) and the Bezio house (#47).

B.4 Early Modern Period (1915-1940)

After World War I, the center continued as a strong civic area with the building of a new library in 1921. Wendell Depot continued as a vacation spot available for tourists traveling on Route 2 (the Mohawk Trail) from Boston to Albany. A Civilian Conservation Corps (CCC) camp was established in 1933 near the Montague line. There the CCC dammed Lyons Brook to form Ruggles Pond. Since the middle 1920s, the automobile has been the deciding factor in transforming the character of the Town. Residents began to travel outside of Wendell to earn and spend money. Beginning during this period, the automobile took people to jobs in Erving, Orange, and Athol, which did not cause the population to change greatly. During the early modern period, the population continued to decline. In 1927 there were 397 people living in Wendell. Just three years later the population dropped to 351.

B.4.1 Historical Resources

A new library was built in Wendell in the Center in 1921, and the Baptist Church was moved to its present location and remodeled to become the Town Hall. Several hunting camps (#17 and #28 in Table 3-1) were built, but generally, during this period, construction was at a minimum.

Table 3-1: Significant Historical Structures and Sites in Wendell

*MHC#	Location	Historic Name
A.1	Town Common	Town Common
A.2	3 Morse Village Road	Central Congregational Church
A.3	24 Center Street	George Washington Fleming
A.4	11 Wendell Depot Road	Harrington House Barn
A.5	11 Wendell Depot Road	Luke Osgood Leach
A.6	7 Wendell Depot Road	Town House, Wendell Center School, and then Town Offices demolished in 2007 following damage from tornado was replaced by the Library
A.7	2 Lockes Village Road	Formerly Wendell Free Library, now Senior Center
A.8	6 Lockes Village Road	James Clark-Marcus M. Hopkins
A.9	2 Center Street	F. Howe-Lyman Gould
A.10	2 Center Street	Henry Green's Store
A.11	6 Center Street	Baptist Church – now Town Hall
A.12	8 Center Street	Otis Chittenden and Edwin Gates
A.13	10 Center Street	J. Forbes Store
14	11 Montague Road	Samuel French - T. Harrington – Recently burned and replaced
15	18 Montague Road	The Parsonage
16	54 Montague Road	Site of Alms House
17	25 Montague Road	Leach "Camp" – Demolished and not replaced
18	78 Wickett Pond Road	T. Howe-Wetherby
19	131 Wickett Pond Road	E. Locke
20	146 Montague Road	E. Beaman-Hiram Blaire
21	Approx. opposite 175 Montague Road	(stonewall and chimney) D.J.M.A. Jewett House
22	32 West Street	Martin Armstrong-L. Wyman
23	66 West Street	A. Dexter-Nathan Hudson
24	95 West Street	Eli Ames-Mrs. Clarissa Darling
25	125 West Street	Mary McGrath
26	102 West Street	W.E. & C.C. Stebbins
27	166 West Street	C.W. Darling-W. Fisk
28	199 West Street	Unknown
29	75 Jennison Road	Daniel Ballard House
30	70 Old Stage Road	Ballard Tavern
31	475 New Salem Road	Captain Nathan Putnam – S. Butler
32	324 Lockes Village Road	A.K. Haskell
33	114 Locke Hill Road	Addison Leach-W. Barrows
34	60 Lockes Village Road	Nathan Putnam-Luther Baker
35	55 Lockes Village Road	Mrs. Cameron-Miss Needham
36	38 Lockes Village Road	Miss Sarah Taff (Taft)
37	38 Lockes Village Road	Aaron Roger's Shop
38	50 Wendell Depot Road	McCleod House
39	68 Wendell Depot Road	Clark Rice
40	7 Farley Road	Dwight Gates

*MHC#	Location	Historic Name
41	132 Farley Road	W.I. Strong
41	11 Stone Cutoff Road	G.K. Freelove-C.Stone
43	47 Stone Cutoff Road	G. Flemming
44	7 Posk Place Road	Unknown
45	58 Mormon Hollow Road	Mary Merchant House (Mariette Merchant)
46	62 Mormon Hollow Road	Chester Merchant House
47	79 Mormon Hollow Road	Bezio's
48	126 Mormon Hollow Road	Alonzo Flemming
49	178 Mormon Hollow Road	Clifton Reed Barn
50	47 Davis Road	Site of Howe House, Barn, Shop
51	97 Wendell Depot Road	Aaron Fisher
52	149 Wendell Depot Road	George W. Robinson House
53	41 Bear Mountain Road	Captain Henry Sweetzer – in danger of falling down
54	197 Wendell Depot Road	D. Lavery-J.C. Holston – Recently destroyed by fire and replaced by a modern house
55	269 Wendell Depot Road	L. Leonard-Leach & Bowin (sic)
56	444 Wendell Depot Road	J.C.Brown-B. Styles
57	435 Wendell Depot Road	C. Washburn-S.H. Putnam
58	4 Old County Road	W. Leach-S. Stephens
59	105 New Salem Road	James Clark-S.Lilly
60	466 Wendell Depot Road	Putnam Store
61	1 Elm Street	Barn
62	1 Elm Street	Jefferson House
63	6 Elm Street	Barn – House
64	8 Elm Street	D. Putnam Residence – Destroyed by fire
65	10 Elm Street	Barn for Dexter House – Recently demolished
66	11 Morse Village Road	Old School House
67	Montague Rd – approx. opposite intersection w/Bullard Pasture Rd	Town Pound
A.801	Opposite North Common	Center Cemetery
802	Intersection of Locke Hill and Jennison Roads	South or Lockes Village Cemetery
B. 803	Off Farley Road	Mormon Hollow Cemetery, now town-owned land
804	On discontinued section of Morse Village Road	Small Pox Cemetery
900	Where Farley Road crosses the Millers River	Farley Bridge
XXX	On Millers River opposite Stoneville in Erving	Old Stoneville Factory Site**

Source: Town of Wendell, MA. Open Space and Recreation Plan – 2002 and input from Open Space Committee members.

*This is the number affixed to the Massachusetts Historical Commission forms compiled by the Historical Commission of the Town of Wendell and the identifier used on the Massachusetts Historical Commission's on-line data base, the Massachusetts Cultural Resource Information System (MACRIS), <http://mhc-macris.net/>. An "A" prefix indicates the site is part of the Wendell Center Complex. A "B" prefix indicates the Mormon Hollow Area. The 800 numbers indicate cemeteries.

**The Old Stoneville Site has been determined eligible for listing in the National Historic Register by the U.S. Dept. of the Interior.

C. POPULATION CHARACTERISTICS

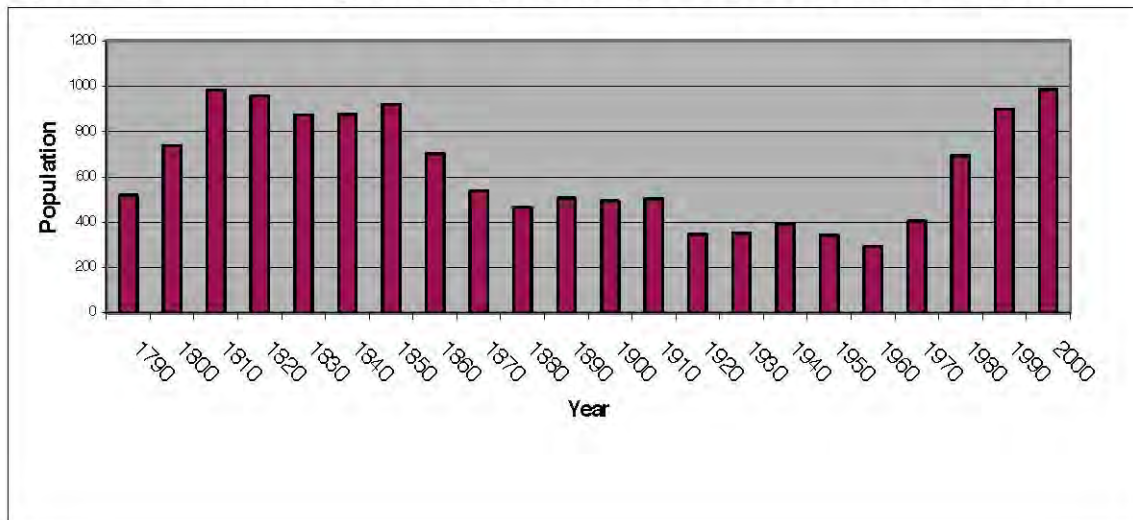
In this section, Population Characteristics, the Town of Wendell's needs for open space and recreational resources are assessed based upon an analysis of demographic and employment statistics. The demographic information includes changes in total population, changes in different age groups in Wendell, and changes in development patterns. In small towns like Wendell, the traditional sources of employment figures rarely provide an accurate description of economic base and labor force. However, these sources have been combined with informal surveys of local officials and employers and anecdotal information to provide a more accurate representation of the local economy.

C.1 Demographic Information

C.1.1 Population and Population Change

The population of the Town of Wendell began a slow decline beginning around 1870 and continued until it reached a low in 1960 with a mere 292 residents (see Figure 3-2). Beginning around 1970, Wendell began to see an influx of new residents and its population began to increase dramatically.

Figure 3-2: Historical Population Figures for the Town of Wendell 1790-2000



Source: 1970, 1980, 1990, and 2000 US Census of Population.

In just twenty years, between 1970 and 1990, there was a 122% rise in Wendell's population, with a 71% increase between 1970 and 1980, and a 30% increase between 1980 and 1990. This growth exceeded that of all towns in Franklin County except for Shutesbury.²

² U.S. Census Bureau – Decennial Census of Population and Housing.

Table 3-2 shows more recent population growth for Wendell compared with Franklin County and Massachusetts. From 1990 to 2000, according to U.S. Census data, Wendell’s population grew by 87 residents or 9.7%. This increase ranked Wendell eighth (out of twenty-six towns) in Franklin County in terms of population growth. Wendell’s population growth during this decade was more than the growth rate for both Franklin County (at 2.1%) and the State (at 5.5%). In order to understand what has been happening with population growth since 2000, the best available data is from the U.S Census annual population estimates, which show a population growth of 1.6% from 2000 to 2009 for Wendell. This is slightly higher than the growth rate for Franklin County during this timeframe (.1%), but in line with Massachusetts growth rate estimate of 1.6%. Population density in Wendell in 2009 was 31.1 persons per square mile, based on a total area of 32.2 square miles and an estimated population of 1,002.³

Table 3-2: Population Growth for Wendell, Franklin County, and Massachusetts 1990, 2000 and 2009

Location	1990 Census Population	2000 Census Population	% Change 1990 -2000 Population	2009 Estimated Population	% Change 2000 -2009 Population
Wendell	899	986	9.7%	1,002	1.6%
Franklin County	70,092	71,535	2.1%	71,778	0.3%
Massachusetts	6,016,425	6,349,097	5.5%	6,593,587	3.9%

Source: U.S. Census Bureau – Decennial Census of Population and Housing 1990, 2000; U.S. Census Bureau Population Estimates, 2009.

It is important when analyzing this data to note that population growth has been generally stagnant in the region and the state in recent years. According to U.S. Census data, Franklin County experienced its greatest population increases in the 1970s and 1980s. By the 1990s, the population growth slowed to a more modest rate of about 2% for the decade and has continued at a rate of less than 1% into the new millennium. There are several factors that can contribute to population stagnation. The Pioneer Valley has been a net-exporter of domestic migrants since 1990, having generally lost a higher proportion of its residents than the state as a whole.⁴ A decreasing average family size is another factor that contributes to population stagnation. The average persons per family in Franklin County decreased 2.6% from 1990 to 2000, showing that family size is on average decreasing in the region. During the same decade, the persons per family in Wendell decreased 5.2%, which was twice the rate of Franklin County.⁵

The town has continued to attract new residents in recent years in the face of a regional and state population slowdown. New residents may be attracted to Wendell due to affordable housing compared with other regions, abundant natural resources, and other factors related to the quality of life in town. Development pressure may increase in

³ MassGIS 2005 land use data; U.S. Census Population Estimates Program 2009.

⁴ The Massachusetts Regional Benchmarking Project, University of Massachusetts Donahue Institute Economic and Public Policy Research Unit in collaboration with the UMass Lowell Center for Industrial Competitiveness, December 31, 2005.

⁵ U.S. Census Bureau Persons Per Family 1990, Average Family Size, 2000 (P17).

Wendell in the near future due to the planned availability of broadband communications, making it easier for residents to work from home, and farther from places of employment, and potentially allowing for an increase in new businesses. The town may see this as an opportune time to protect valuable resources and plan for the potential impacts of future growth on town services and land.

Age distribution data from the 2000 U.S. Census data divides the age of residents into age groups, or cohorts. This information can provide insight into the demand for different types of services within town. Table 3-3 shows a breakdown of these cohorts and how they have changed from 1990 to 2000, according to U.S. Census Data. Based on 2000 U.S. Census data, there is a fairly even distribution of residents within town based on age, with the highest concentrations in the young and middle-aged groups.

Table 3-3: Wendell Age Distribution, 1990 and 2000

	Total Population	% 9 Years & Under	% 10-19 Years	% 20-24 Years	% 25-44 Years	% 45-64 Years	% 65-74 Years	% 75 Years & Over
Wendell								
1990	899	13.8%	17.8%	3.3%	44.9%	15.4%	2.3%	2.4%
2000	986	11.2%	17.2%	4.6%	30.6%	31.8%	2.4%	2.1%
Franklin County								
1990	70,092	14.5%	12.6%	6.4%	34.2%	17.7%	8.2%	6.3%
2000	71,535	11.5%	14.3%	5.4%	28.5%	25.9%	6.7%	7.5%
Massachusetts								
1990	6,016,425	13.1%	12.6%	8.4%	33.6%	18.6%	7.7%	5.9%
2000	6,349,097	13.0%	13.3%	6.4%	31.3%	22.4%	6.7%	6.8%

Source: U.S. Census Bureau, 1990 Census STF3A and 2000 Census SF3.

The cohort with the most town residents according to 2000 data is the 45 to 64 year olds, at 31.8%, which increased 16 percent from 1990. The increase is similar to that of both Franklin County and the State over this decade. It should be noted that about half of this largest segment of the population in Wendell is made up of “Baby Boomers”, those born between the years of 1946 and 1966, a period that experienced a widespread population boom. As this segment of residents approach retirement age, some may start to work fewer hours, with more time available for recreation. Therefore, recreational programming should be offered for common interests of this age group. There may be residents in this age group with more time available than younger workers for volunteer opportunities such as trail maintenance or other events that may combine social and recreational opportunities while contributing to town needs.

The second largest cohort was the 25 to 44 year olds, at 30.6% in 2000. This age group decreased 14.3% from 1990. The County and State also showed decreases among this age group during this time period (-5.7% and -2.3% respectively), however the decrease in Wendell was much more significant (-14.3%), and reflects the aging of the Baby Boomer population into the 45 to 64 year cohort. The 25 to 44 years old cohort, often referred to as “Generation X”, generally has less population than the Baby Boomers. However, in Wendell in 2000, even with this decrease from the decade before, the 25 to

44 year old cohort still contained almost 1/3 of the population, very close to the same percentage as the 45 to 64 year olds in town.

Children of Baby Boomers generally represent another corresponding population boom although not as big as the one in their parents' generation. These residents were born in the 1980s and 1990s, so were between 5 to 20 years old in 2000. The youth population from 10 to 19 years was the third largest cohort shown in 2000 in Table 3-3, with 17.8 % of residents. This age group remained relatively constant from 1990 to 2000, with just a .6% decrease.

However, it should be noted that some conditions in town have changed since this 2000 data was collected. School enrollment data shows a decreasing number of children from Wendell at the Swift River School from 1999 to 2009⁶. In 1999 there were 102 Wendell students from pre-Kindergarten (ages 3 through 5) through grade 6, and by 2007 this number had dropped to 50, where it remained in 2009. This data indicates that there are fewer children in town than what was shown in 2000 Census data. It should also be noted that youth that would have been in the 10-19 age group in 2000 that have stayed in town would now (in 2010) be in their late teens and early twenties. Therefore, the youth concentration shown as 10 – 19 year olds in Table 3-3 appears to have shifted up in more recent years. It has been noted by town residents that there are 19 to 24 year olds that have not moved away to college, so are still living in town, and that they have recreational needs within town. Once 2010 U.S. Census data is available, it will be interesting to note whether or not this data reflects this trend in town, with a higher percentage of residents in the 20-24 age category and a lower percentage in the 10-19 age group.

The library currently offers programs including yoga, a playgroup, a program for “Teens and Tweens”, language for children, and knitting. However, it has been noted that a separate facility to serve as a recreation center with a ping pong table and classes targeted to this 19 – 24 year old group could respond to the needs of these young residents living in town. Other needs that this center could meet include a sound-proofed area for playing music and additional storage needs. A recreational center could serve the needs of multiple age groups within town by offering music classes and playgroups to families with young children, for example, or educational or volunteer opportunities for older residents.

Open space and recreational programming should take into account all segments of the population. This could mean, for example, providing family oriented events and activities, providing accessible walking paths, park areas with benches, and arts and leisure programs for seniors, and creating access to safe spaces for recreation for youth of all ages.

⁶ Based on available school enrollment data from Wendell Town Reports for the following years: 1999, 2000, 2001, 2003, and 2007, and personal communication with Christine Heard, School Secretary, August 2010.

When identifying the best location for the development of new open space and recreation resources, the town should consider where population growth will occur and which parts of the local citizenry require specific needs. As will be seen in Section 3.D, Growth and Development Patterns, future growth depends in large part on zoning, soil and groundwater related constraints, and on which lands are permanently protected from development. Town Officials could identify key parcels in Town that might be future parks and walking trails that are close to current neighborhoods. Officials could be looking for opportunities to conserve land in Wendell that protect valuable scenic and natural resources and provide public access to trail networks and open spaces.

C.1.2. Economic Wealth of Residents and Community

Measures of the income levels of Wendell residents as compared to the County and State are helpful in developing a demographic profile that provides general information about the ability of town residents to pay for recreation resources and programs and to contribute financially to open space protection. The most recent available income data is 1999, shown in Table 3-4 from the 2000 U.S. Census.

Table 3-4: 1999 Per Capita and Median Household Income for Wendell, Franklin County, Massachusetts and the U.S.

Location	1999 Median Household Income	1999 Per Capita Income
Wendell	\$43,846	\$19,701
Franklin County	\$40,768	\$20,672
Massachusetts	\$50,502	\$25,952
United States	\$41,994	\$21,587

Source: 2000 U.S. Census of Population.

Per Capita Income is determined by dividing the total amount of income earned in the area by the total number of the residents (which includes residents who may not be generating much income, such as children and the elderly). The 1999 per capita income in Wendell was \$19,701, lower than for both the County (\$20,672) and the State (\$25,952) for that year.

Median Household Income is another statistic for understanding the wealth of the community. Median income figures describe the middle income among residents, thus eliminating any extreme numbers (either the very wealthy or very poor) from influencing the overall figure. Median household figures include data for families, for households of non-related people, and for individuals living alone. The 1999 median household income for Wendell was \$43,846, which was higher than the County (\$40,768), and the United States (\$41,994), but significantly less than the State (\$50,502) for that year. This economic measure shows that households in the middle of the income spectrum are higher than in most towns in the County, a positive indicator of the wealth of the community.

1990 U.S. Census data showed that in 1989 Wendell had a lower median household income than Franklin County whereas the median household income was greater than

that for the County according to 2000 Census data. This shows that over this decade, the median household income in Wendell has improved relative to the County, which is a positive indicator of improving economic status of town residents.

Overall, the economic wealth in Wendell is comparable to other rural towns in Franklin County and has generally improved since the 2002 Open Space and Recreation Plan was completed. This provides information about residents' ability to pay for open space and recreational programming in town. However, considering recent increases in fuel and food prices as well as an overall national and regional economic downturn, the town might explore ways to offer convenient and free or low cost access to activities and public land for those in town that do not have disposable income available for these purposes. It is also wise to note that with changing economics and development pressures over time, recreation and open space needs may also change. Proactive planning to prioritize goals and resources will help ensure that the town will be prepared for changing conditions.

Although Wendell's resources today are clearly both its people and its natural landscapes, the status of its finances could be affected by an interdependent relationship that exists between the two. The costs of the community services provided to residents are paid for partially with the tax revenues generated by different kinds of property, both developed and undeveloped. Some developed uses like housing have been shown to be a net loss to the community due to its high demand for services, such as Education and Public Works. Protected open space on the other hand, while generating less total tax dollars, has been found to demand less in services for every dollar it generates. Commercial and Industrial development have also been found to generally pay for themselves with a positive net impact on municipal coffers.⁷ One reason that towns encourage economic development is to have enough different types of land uses to share the tax burden. The impact of different land uses is explored in more detail in Subsection D, Growth and Development Patterns.

C.2. Employers and Employment Statistics

C.2.1. Labor Force: Wendell residents who are able to work

The labor force is defined as the pool of individuals 16 years of age and older who are employed or who are actively seeking employment. Enrolled students, retirees, stay-at-home parents and other persons not actively seeking employment are excluded from the labor force. Labor force is available on an annual basis from the Massachusetts Department of Workforce Development. Data for Wendell for the first six months of 2010 show that there were 581 workers in town.

The unemployment rate describes the percentage of people in the labor force who are presently not employed, but who are actively seeking employment. According to

⁷ Does Farmland Protection Pay? The Cost of Community Services in Three Massachusetts Towns, American Farmland Trust, 1992.

Massachusetts Executive Office of Labor and Workforce Development⁸, the unemployment rate in Wendell during the first six months of 2010 was 7.5% with 44 residents unemployed. This data shows that the town of Wendell had a lower rate than both Franklin County (9.1%) and Massachusetts (9.3%) during the first 6 months of 2010.

C.2.2. Employment in Wendell: People who work in town (residents and non-residents)

The average annual wage for workers in Wendell in 2008 was \$27,196 according to Employment and Wage (ES-202) data from the Executive Office of Workforce Development⁹. This was lower than the 2008 average annual wage for Franklin County (\$35,204) and the 2008 average annual wage for Massachusetts (\$56,784). This information provides a perspective of income and wealth in the community that may encourage the town to consider offering free or low cost recreational activities and access to open space.

Table 3-5: Employment in Wendell 2001-2008

Year	Establishments	Total # Employees
2001	15	228
2002	15	254
2003	13	271
2004	13	267
2005	18	232
2006	16	210
2007	18	193
2008	17	228

Source: Massachusetts Executive Office of Workforce Development, ES202 data.

Table 3-5 shows the number of establishments and total employees for Wendell employers between 2001 and 2008 (the most recent data available). This includes residents as well as those who reside elsewhere but commute to Wendell for work. The number of establishments in Wendell has had an overall upward trend over the past 6 years, increasing from 15 in 2001 to 18 in 2007, then reduced to 17 in 2008 with the closing of Lake Grove School at Maple Valley; nonetheless, the number of places of employment is still low. The total employees started at 228 in 2001, increased between 2001 and 2003 (19%), decreased from 2004 to 2007 (-29%) to 193 total employees, but then increased to 228 again in 2008 (18%).

⁸ Labor Force and Employment data, Executive Office of Labor and Workforce Development, 2006 not seasonally adjusted data; updated February 28, 2008.

⁹ Employment and Wage (ES-202) data is from the Massachusetts Executive Office of Labor and Workforce Development and is derived from reports filed by all employers subject to unemployment compensation laws, both state and federal. http://lmi2.detma.org/Lmi/lmi_es_a.asp. Average Annual Wage is calculated by multiplying annual weekly wage by 52 weeks.

The information in Table 3-5 comes from ES202 data from the Executive Office of Workforce Development, which also provides information about the main industry sectors in town. Over the past 6 years, categories that showed Wendell workers included Trade, Transportation & Utilities, Wholesale Trade, Professional Business Services, and the Service Providing Domain. There has not been much change in the categories when analyzed over this period. It is important to note that data is kept confidential if a place of employment has fewer than three reporting units total, or if with three or more units, one unit accounts for 80% or more of the total. This means that for a given year a sector may not show up in the data, and that the total given for number of employees and number of establishments for each reported sector do not sum to the industry total given.

Table 3-6 shows the top 10 employment destinations of Wendell residents in 2000, according to Journey to Work data from the 2000 U.S. Census of Population and Housing. This information shows where residents are commuting for their jobs. The table shows that many residents work within town, at 17.6%. The majority of the employment destinations are in Franklin County (51%), which includes Wendell. Amherst, Athol and Northampton are also in the top 10 destinations.

Table 3-6: 2000 Wendell Journey to Work Data by Towns

Rank	Wendell Resident Employment Destination	Number of Employees	% of All Employed Wendell Residents
1	Wendell	102	17.6%
2	Amherst	70	12.1%
3	Montague	62	10.7%
4	Greenfield	52	9.0%
5	Athol	36	6.2%
6	Orange	26	4.5%
7	Northampton	24	4.2%
8	New Salem	22	3.8%
9	Deerfield	21	3.6%
10	Whately	12	2.1%
	Other	151	26.1%
Total Employees		578	100.0%

Source: U.S. Census Bureau – 1990 Census of Population and Housing.

Table 3-7 shows the travel time for workers residing in Wendell based on 1990 and 2000 U.S. Census data. Most workers commute between 20 and 29 minutes, with the next highest commute time between 30 and 39 minutes. This makes sense given the data in Table 3-6 showing that most residents work within Franklin County. The data also indicate an increasing number of at-home workers who live and work in Wendell. The number of residents working at home has doubled from 4.9% in 1990 to 9.9% in 2000, representing almost 10% of the total workers in town. This increase in at-home workers is significantly greater than the increase in the state for this 10-year time period. This may be partially a result of limited employment opportunities within Wendell, and will continue to be a factor if fuel prices continue to be high. The

increase in at-home workers is a recent trend found in many communities due to changes in the workplace and advances in telecommunications. As internet options continue to become more available, Wendell should expect the number of at-home workers to continue to increase. Progress in telecommunications will also increase opportunities for small businesses to develop in more rural areas such as Wendell.

Table 3-7: Travel Time to Work, 1990 and 2000

Geography	Total Workers*	Work at home	Less than 10 Min.	10 - 19 Min.	20 - 29 Min.	30 - 39 Min.	40 - 59 Min.	60 - 89 Min.	90 or More Min.
Wendell									
1990	474	4.9%	7.4%	17.3%	27.2%	22.2%	11.6%	9.1%	0.4%
2000	578	9.9%	9.7%	13.3%	22.8%	22.5%	10.4%	8.5%	2.9%
Franklin County									
1990	34,674	4.7%	21.8%	32.1%	17.8%	11.5%	7.7%	3.2%	1.1%
2000	37,053	5.1%	16.3%	30.0%	19.1%	14.2%	9.7%	3.3%	2.3%
Massachusetts									
1990	2,979,594	2.5%	15.6%	31.3%	18.7%	15.5%	10.7%	4.7%	1.0%
2000	3,102,837	3.1%	12.6%	27.4%	18.6%	16.3%	13.0%	6.5%	2.4%

* Employed workers 16 years and over.

Source: U.S. Census Bureau, 1990 Census STF3A and 2000 Census SF3.

C.2.3. Major Employers and Home Based Businesses

Through interviews with Town officials and residents, it has been determined that employment in Wendell is limited to a few visible employers and many less visible home based businesses. The Town of Wendell itself employs three full-time, three part-time (with benefits) and 85 part-time (non-benefited) employees. There are two United States Post Offices located in Wendell with a total of 6 employees (two full-time and 4 part-time), three of whom live in Wendell. Wendell State Forest employs 3 full-time year-round employees and one seasonal employee. The Swift River Elementary School is located on the border of Wendell and New Salem and serves the towns of Wendell and New Salem. The school employs a total of 27 full-time employees and 10 part-time employees, eleven of whom are residents of Wendell. The Deja Brew is a restaurant/pub with live music that is attached to the Wendell Country Store that employs local workers. The recent closing of the Lake Grove School at Maple Valley, formerly the largest employer in Town, resulted in the loss of 120 jobs, although only a small number of Wendell residents had been employed there.

The Diemand Egg Farm is probably the most widely known and most visible farm in Wendell. The Farm, which began in 1936, currently employs three family members full-time and four employees part-time. Just prior to Thanksgiving, the farm employs approximately 14 additional individuals for a two-week period to assist in processing turkeys. The Diemand Farm produces eggs, chickens, turkeys, turkey products including potpies and turkey burgers, hay, cordwood and lumber. The Diemand Farm has opened a farm store on the property that sells poultry products, beef, and prepared foods such as soups, casseroles, etc., and baked goods.

Other family-run farms in Wendell include the Rocky Road Farm that specializes in Highlander beef cattle, pigs and maple syrup and Cold Brook Farm, which produces vegetables and also has beef cattle. Other small farms in Wendell include Sugarbush Farm, which produces maple syrup, hay and beef cattle; Companions of Health, which produces organic herbs, garlic, and shitake mushrooms; Mycotopia Farms, which produces shitake, oyster, and other saprophyte mushrooms and offers classes; and Isle of View Farm, which grows vegetables using eco-friendly methods on multiple sites in Wendell and sells them at area Farmers Markets. A Food Production and Gardening Coordinator position was passed at the Annual Town Meeting in June 2010; and a job description was approved at a Special Town Meeting October 6, 2010.

Many residents in the Town of Wendell are self-employed. The types of employment range from farming to art/crafts, construction, and business related. Most home-based businesses in Wendell are consistent with the community's character. They generally are small in size and have a minimal impact on the landscape and natural resources of the community. A home-based business may not be readily recognizable as a business operation to people driving past. It may be the primary occupation for the business-owner or a part-time business venture. Home-based commercial enterprises can include a wide variety of businesses, such as child-care provider, professional consultant, or artist. Technological changes and shifts in employment trends have changed the work environment to allow more opportunities for individuals to work at home. Table 3-8 includes a listing based on available information, but is not a complete listing of all home based businesses in town. Out of respect for the privacy of individuals, the actual names of businesses are not included.

Table 3-8: Types of Home Based Businesses in Wendell

Arts/Crafts Related Businesses:	Computer Related Businesses:
Jewelry	Software Services
Blown Glass	Video/Documentary Production
Photographers	Auto Related Businesses:
Sign Maker	Auto Repair
Fine Arts/Crafts	Auto Salvage
Musician/Music Venue	Towing Service
Potter	Business Related:
Custom Clown Shoes	Accounting Services
Dance Instructor	Attorneys
Yoga Instructor	Marketing
Construction Related:	Organizational Consulting
Electrician	Other:
Contractors	Herbalist
Plumbing & Heating	Acupuncture
Masonry	Machine Shop
Structural Engineering	Midwife Services
Excavating	Forester
Restoration	Geothermal Drilling
Carpenters	Pest Control
Lightning Rod Installers	Shiatsu/Massage Therapy
	Catering
	Landscaping

Source: Online search by industry; review of Yellow Pages; input from Wendell Open Space Committee members.

C.3 Analysis

Recreational programming should be available to all, but given the demographic and economic factors of the Town of Wendell, there should be specific efforts to target activities towards youth as well as for those the middle age group and Baby Boomers. These activities might be housed in a facility located on the Common, maintaining a community center that would be intergenerational. This would continue to foster the strong sense of community expressed by residents as important to the quality of life in Wendell. Walking and hiking were noted as the primary recreational activities for respondents of the 2008 Open Space and Recreational Survey with most of this activity concentrated in Wendell State Forest and on local roads. Designated walking/hiking paths interconnecting the various neighborhoods through protected areas might be considered. The town may also want to consider supporting other free or low cost outdoor activities, such as bird watching, bicycling, and canoeing – all of which were reported as very popular activities in the 2008 Open Space and Recreation Survey. These can be supported through low cost measures such as benches along walking trails, road signage, river access, bike paths, and more.

D. GROWTH AND DEVELOPMENT PATTERNS

D.1 Patterns and Trends

The Town of Wendell is a sparsely populated community with a history of cyclical population changes over the past two hundred years. Historic development patterns originated with early agricultural activities and the construction of Wendell's first European built roadways. More recent patterns and trends appear to involve a different model of population change and several new patterns of residential development.

Early development patterns that are still present today were most likely influenced by the necessary separation of farmhouses, early roadways, and civic and industrial activities. The pattern of farmhouses dispersed across the landscape is seen in many Franklin County communities. A second pattern was the concentration of houses along the Town's early roadways. Those roadways included Wendell Depot, Jennison, Montague, Morse Village, New Salem, Farley, and Lockes Village Roads, which were the main thoroughfares between Wendell Depot, New Salem, Montague and Lockes Village as early as 1775. The main concentrations of residential and past commercial development occurred in village centers originating from a clustering of civic and industrial activities. These include Wendell Center, Mormon Hollow, Farley, and Wendell Depot.

More recent development patterns appear to have been impacted by changes in population over time and the adoption of zoning. Between 1790 and 2000 the population of Wendell went through increases and decreases with the lowest level in 1960. Then, from 1960 to 2000 U.S. Census data show a dramatic increase in population to 986 residents, more than 3 times what it was in 1960 (292 residents). (See Figure 3-2 in subsection C.1.1 of this section). In more recent years, according to U.S. Census Bureau Population Estimates, the population increase has been slightly more in Wendell than Franklin County from 2000 to 2009, but remained relatively constant, with an increase of 16 residents (see Table 3-2 in subsection C1.1).

The land use figures presented in this section are based on data provided by MassGIS. MassGIS classifies land uses based on aerial photograph interpretation conducted by the Department of Forestry's Resource Mapping Project at the University of Massachusetts, Amherst. Statewide data including all municipalities are available for 2005, 1999, 1985, and 1971.¹⁰ Initially, analysis was conducted through manual interpretation of the aerial photos. In 2005, the land use data was created using semi-automated methods. MassGIS uses 38 land use classifications in the 2005 data, an increase from the 21 codes in the 1999 dataset. It is important to note that readers should exercise caution in comparing land use data over the years. Such comparisons can provide only an estimation of the trends in land use change over the years. Due to different data

¹⁰ The first statewide land use maps were created in 1953-54 from 1951-52 aerial photos. These maps were never digitized. They are available in the Map Collection Archives at the W.E.B. DuBois Library at the University of Massachusetts, Amherst.

collection and analysis methodologies used over the decades, direct comparisons cannot be made with precision between the various datasets.

By comparing MassGIS land use maps available from 1985 and 1999, the predominant land use change in the Town of Wendell during that period was the construction of residential developments on greater than three-acre parcels. The most recent MassGIS land use data available from 2005, show a significant reduction since 1999 in acres of low density residential development on lots of .5 acres or more (-249 acres or -44%). An analysis of these data suggests that this change appears to be largely the result of more sophisticated mapping techniques used in 2005, rather than actual changes of land use on the ground. According to the 2005 data, residential land represents 1.5% of the Town's total land area.

Residential development has tended to occur in three main development patterns. Some are located around historical residential concentrations like Mormon Hollow, Farley, Locke Hill and Lockes Village. Others are found in new concentrations along roads that between the early 1900s and 1985 had few homes. These include Stone Road and New Salem Road north of Morse Village Road. The rest tend to fill in the previously undeveloped parcels along already well-populated roadways, including Jennison Road, Lockes Village Road, and Wickett Pond Road. Another development pattern that occurs today is the small farm or summer farm where residents supplement their farm incomes with part-time jobs. All of this type of large lot residential development has so far been in the form of approval-not-required (ANR) lots.

The current Zoning Bylaw in Wendell designates one zoning district in Wendell for rural-residential and agricultural uses. Industrial, commercial and business enterprises and their related facilities may be located, expanded, or constructed within the town by special permit. The zoning requires a minimum lot size of three acres and 200 feet of frontage. (See the Zoning Map at the end of this section.)

The 2002 Open Space and Recreation Plan identified changes needed to the zoning to discourage sprawl. With a three-acre minimum lot size, each new site that is developed requires more space in comparison to other communities that have a smaller lot size requirement, leaving less land available for open space and limiting the options for new development. The current conservation development bylaw is intended to encourage the preservation of open space by allowing more dwellings in a given acreage than in a conventional subdivision plan. This bylaw has not been applied. The Wendell Planning Board is working on replacing the current conservation bylaw with a new bylaw. Section D.3, Long-Term Development Patterns, discusses this proposed approach and its predicted impact on development patterns in more detail.

In the Subsection C, Population Characteristics, it was shown that the cohort with the most residents in Wendell was age 45 to 64 according to 2000 Census data. If these residents have stayed in Wendell and are still a high percentage of total residents in town, in 2010 they would be aged 55 to 74. These residents would fall right within the Baby Boomer category (born between 1946 and 1966). Therefore, planning for the

needs of this aging population in the near future, town residents may want to consider housing options with less maintenance to accommodate this age group.

D.2 Infrastructure

D.2.1 Transportation

The road layout in the Town of Wendell is essentially the same as it was 100 years ago. Roads follow the drier ridges (such as West Road and Lockes Village Road), as well as hugging streams (Depot Road and Mormon Hollow Road, for example). The Town's active policy of discontinuing roads in the late 1980s resulted in fewer current town roads than a century ago. This policy is one way in which the town has taken control over where new development will and will not occur.

Half of the 45 miles of town roads in Wendell are paved, and half are dirt. Two-thirds of the development in Town has taken place along the paved roads, where homes traditionally have been placed close to the road. The life of the Town is apparent from the roads, which are in themselves a large area of open land in the Town of Wendell. Another type of open land occurs under power lines. The major north-south route running through Wendell is Depot and Locks Village Roads. The east-west route is Montague/Morse Village/New Salem Roads. Both the north-south route and the east-west route pass through Wendell Center. An additional route running roughly northwesterly is the Mormon Hollow/Farley Roads. This route originates near Wendell Center linking it to Millers Falls and Route 2. Running along Wendell's northern border is State Route 2 (the Mohawk Trail Scenic Byway), which is accessible from either Farley or Depot Roads.

There are no designated bicycle or pedestrian facilities in Wendell. There are no sidewalks and only three crosswalks. There are no public transportation systems in Wendell. However, the senior population and those people with disabilities may access Demand Response transportation services through the Franklin Regional Transit Authority (FRTA).

D.2.2 Water Supply

The Town of Wendell is currently served by private wells, except for a cluster of public buildings in the center of Town with a common well. A high proportion of residences rely on shallow wells that have a more variable yield, occasionally running dry, and with a greater chance of contamination than deeper wells.

Potential aquifers lie in areas of sand and gravel deposits. Sites on similar deposits of sand and gravel in Wendell would typically contain groundwater deposits capable of yielding a minimum of 120 gallons per minute and could be adequate for a municipal water supply. Most of the rest of Wendell is overlain by very sandy, stony glacial till. Potential well yields from material of this kind are low, generally less than ten gallons

per minute. The Water Resources description in Section 4, Environmental Inventory and Analysis, identifies the presence of at least three aquifers that could be used for drinking water sources in the future.

There is also a potential for town drinking water supplies to be developed from surface water impoundments. Ten potential reservoir sites were identified in 1974 by the U.S. Department of Agriculture in a survey of the Millers River watershed. These sites were identified from topographic maps and the areas of potential open water impoundments were calculated. Four of these locations are along Whetstone Brook, three along Osgood Brook (including Bowens Pond), two along Lyons Brook (including Ruggles Pond) and one along Mormon Hollow Brook. In the Sawmill River watershed, six potential and existing reservoirs were identified in the southwesterly corner of Wendell by the U.S. Department of Agriculture (1975) in a survey of the Connecticut River watershed. These include upgrading existing sites on Fiske Pond and Tyler Pond and four new sites, three on Plympton Brook and its tributaries and one on Red Brook about 2,000 feet north of the Leverett town line. In the Swift River watershed in the southeasterly corner of Wendell three potential reservoir sites were identified by the U.S. Department of Agriculture (1973) in a survey of the Chicopee River watershed. Two of these are on the west branch of the Swift River and one is at the outlet of Sibley Swamp. No detailed plans were presented for these since they were on land then owned by MDC (and now owned by DCR's Office of Water Supply Protection) and presumably would reduce the amount of water reaching the Quabbin Reservoir.

Depending on the heights of the dams and the areas of the impoundments created, most of these reservoirs could supply between 100,000 and 1 million gallons of water per day (U.S. Dept. of Agriculture -1974). Assuming a maximum population of 6,000 people and a liberal water usage of 75 gallons per person per day, one reservoir could conceivably come close to meeting Wendell's water needs.

D.2.3 Septic Systems

Sewage disposal in Wendell is by private systems, except for the cluster of public buildings in Wendell Center which shared a common system. The effectiveness of the private systems is variable and depends on topography, water table, and soils. Dependence on private sewage disposal requires that housing be restricted to soils and slopes that can reasonably be expected to handle on-site sewage systems. Soil types are critical for determining this capacity, and many soils in Wendell are wet, are shallow to bedrock, or are coarse and stony which provide very little filtration to septic leachate since water passes through coarse soils very quickly. While not precluding development in Wendell, the density and total amount of new development in the near future will in large part be determined by the soils and their ability to pass percolation tests.

In many communities across the region, development follows infrastructure improvements. However, given Wendell's lack of a community drinking water supply or sewer collection system, the relationship between development and infrastructure

appears to be a conditional one. If the soil, drainage, and topographical characteristics of the land are favorable, development will occur. If technology were to remain static, as it may in the near future, development may be limited to those areas that are already developed. As population increases and the land most accessible to development becomes scarce, developers may adopt new and/or alternative septic technologies that would allow for the construction of homes in areas once thought to be beyond consideration.

D.3 Long-term Development Patterns

Long-term development patterns will be based on a combination of land use controls and population trends.

D.3.1 Land Use Controls

Local land use controls in The Town of Wendell include the Zoning Bylaw, Board of Health Regulations, the Right to Farm Bylaw, and state watershed protection regulations. The portions of Wendell located in the watershed for the Quabbin Reservoir that drains into the Swift River are subject to watershed protection regulations (M.G.L. Ch. 92, Sections 104, 107A, & 108; and 350 CMR 11.00). The current Zoning Bylaw includes common driveway requirements, provisions for secondary dwellings, back lot development and conservation development. Further, the Wendell Planning Board is currently working on replacing the current conservation development bylaw requirements with a new approach.

Zoning District. The entire Town of Wendell is one zoning district, Rural Residential and Agricultural. (See the Zoning Map at the end of this section.) It allows a number of other uses by special permit. In 1990, according to the U.S. Census, there were 346 housing units. The Town Clerk recently reported that there are only four two-family homes (approximately 1 percent of the total) and no three-family homes in Wendell. In 2000, according to the U.S. Census, there were 378 occupied housing units in Wendell. 320 of these, or 85%, were owner occupied and the remaining 58 (15%) were occupied by renters.¹¹

Table 3-9: Selected Features for the Rural Residential and Agricultural Zoning District

Dimensional Requirement	Single-Family House	Two-Family House	Three-Family House
Min. Lot Area	130,680 sq. ft. (3 acres)	130,680 sq. ft. (3 acres)	174,240 sq. ft. (4 acres)
Min. Lot Frontage	200 feet	200 feet	200 feet
Min. Front Yard	50 feet	100 feet	100 feet
Min. Side Yard	25 feet	25 feet	25 feet
Min. Rear Yard	25 feet	25 feet	25 feet

Source: Town of Wendell Zoning Bylaw, December 2009.

¹¹ 2000 U.S. Census Summary File 1 Data: QT-H2. Tenure, Household Size, and Age of Householder.

It is assumed that even though Wendell has some commercial and industrial uses that are allowed by special permit, future development will be primarily of a residential nature. The industrial uses that have been mapped by MassGIS include an egg farm and a junkyard.

Having one zoning district potentially provides both positive and negative impacts on the conservation of Wendell's natural resources. On the one hand, a three-acre minimum lot size will mean that fewer people can ultimately become residents. It may also mean that with every new resident in Town, people will be spending more time driving (fuel and pollution costs). It could also encourage human activities to spread out more quickly, cover more ground overall, and venture more closely to interior forest cores than if people were given opportunities to purchase homes in areas where the houses were closer together, as in Wendell's village centers, though many people do not like near neighbors.

Common driveways are allowed, but must meet minimum requirements. Two of the requirements are that a common driveway does not serve as access to more than three lots and that its length does not exceed six hundred forty eight feet. Secondary dwellings of limited occupancy (2 persons) are allowed with primary dwellings that are 10 years old. The secondary dwelling provision provides a new housing option.

Backlot Development Bylaw. The stated purpose of the Backlot Development Bylaw is to encourage efficient, economic use of the backland to protect the Town's rural character, health, safety, welfare, and wildlife habitats. The cost of the bylaw is the reduction in backland interior forest. The minimum requirements for use of this bylaw are:

- Four acre minimum lot size;
- Fifty-foot minimum access way width with frontage on an existing public way;
- Access way cannot cross a wetland;
- Access way cannot exceed 1000 feet in length; and
- No more than two back lots may be created out of any parcel less than 25 acres and up to four lots are allowed for parcels greater than 25 acres.

Current Conservation Development Bylaw. The purpose of the Conservation Development Bylaw is to encourage the preservation of common land for conservation purposes and to allow more efficient provision of municipal services while developing a residential subdivision. The minimum requirements of this bylaw include:

- Minimum area of ten acres;
- The maximum number of dwellings may exceed by 20 percent that which is allowed in a conventional subdivision plan with approval of the Planning Board;
- Lots shall be for single and two-family housing;
- At least 35 percent of the lot shall be set aside as common land;
- Individual lots must be greater or equal to one-half acre;
- A lot must have at least 50 feet of frontage.

Applying this bylaw using a 30 acre parcel as an example results in the following calculation of the number of allowed lots. If, for example, steep slopes or wetlands were on two acres of the parcel, we would remove these from consideration. Of the remaining 28 acres, 35 percent would be set aside as common land. On the 18.2 acres left over, a developer could have a maximum of ten lots, given the 20 percent limit. The same 28-acre land area in a conventional subdivision would require roughly 15 percent of the land for roads and drainage. This would result in roughly 24 acres to develop into eight, three-acre lots. Twenty percent more than eight is equal to ten lots. It remains to be seen whether an increase of two house-lots and the reduction in the land and overall cost of infrastructure would attract developers to apply unconventional means.

Coupled with population increases, Wendell's land use controls will result in sprawl pattern of development. Although the three-acre minimum lot requirement of the zoning district and the back lot and conservation bylaws will reduce the total number of people that could live in Wendell, they also encourage human activities to spread out across the landscape. This is potentially in conflict with residents' interest in wildlife habitat protection. To address this problem, the planning board is proposing a new Conservation Development bylaw.

Proposed Conservation Development Bylaw. The proposal is intended to allow development, while maintaining a working landscape and a viable wildlife corridor connecting the Quabbin watershed through Wendell to the Connecticut and Millers River watersheds. Wendell undertook this planning project because both its Community Development Plan (2004) and Open Space Plan (2002) noted that Wendell's pattern of growth might not be the right fit for Wendell. Also, the Conservation Development bylaw had not been used and could be replaced with a more appealing and up-to-date approach to housing development.

Under the proposal, two development options are available. New primary dwellings are allowed at the rate of no greater than one in any seven year period on either: 1) a lot in existence on the date of adoption or 2) a new lot divided from a lot in existence on date of adoption. The idea is to slow suburban sprawl. Alternatively, landowners who want to create more lots more frequently would use the proposed bylaw. Both development options would be considered "by right" in the revised Zoning Bylaws. This second development option is conducted under the Site Plan Review process, and is available for projects on one or more lots anywhere in Wendell, or may be conducted on only part of a single lot.

Under the proposal, the second development option the project acreage is divided into two sections. One section, 75% of the land, would include areas determined to have the most significance for forest and timber management, biodiversity, wildlife habitat and corridors, historical importance, agriculture, visual assets, or recreational use. This section would be set aside with a permanent Conservation Restriction approved by the Planning Board. The other section, the remaining 25% of the total acreage, may be developed with greater flexibility and streamlined reviews.

The flexibility and streamlined review includes the following: (1) the limits on lot size and frontage are removed; (2) common driveways of any length may provide access to the dwelling units in the development, saving the legal, financial and environmental costs of a standard subdivision road; and (3) secondary dwellings may be included among the units right from the start (not requiring the primary dwelling in place for 10 years).

The proposal has a formula for determining the number of potential dwelling units that takes into consideration frontage, total acreage, and acreage with development constraints. The applicant identifies the total project acreage and the acreage that has development constraints (water bodies, wetlands, 100-year FEMA defined flood plains, or slopes over 25%). Half the acreage with development constraints is subtracted from the total lot acreage before determining the number of dwelling units. The formula provides credits (to allow more dwelling units) if 10% or more of the base units are affordable housing as defined by M.G.L. chapter 40B; if there is significant public access to and linking through the project area that provides a significant recreational benefit consistent with specific objectives in the most recently adopted Open Space and Recreation Plan; or for protecting 85% of the original project area.

The protected land is identified and protected with these steps:

- (1) The applicant meets with the Planning Board and prepares a conservation analysis of the project area. The conservation analysis identifies areas of significant value in the project area.
- (2) The Planning Board consults with the Conservation Commission and Open Space Committee and the most recently adopted Master Plan and Open Space and Recreation Plan, and prepares a conservation finding. The Planning Board will generally assume that land farther away from the town road, open fields, land in agricultural use, adjoining or near existing protected land and land identified as Priority Open Space in the Wendell Open Space and Recreation Plan should have priority for protection from development.
- (3) The applicant delineates the whole area to be set aside from “development” and drafts a conservation restriction consistent with the conservation finding to ensure that the appropriate delineated land is permanently protected from development. The conservation restriction can allow activities consistent with a working landscape, like tree cutting, agriculture, hunting, fishing, gathering, and trails, or it could limit one or more of those activities, if appropriate. If necessary, the protected land could contain a septic system or play area, subject to Planning Board approval.

Board of Health Regulations. The Wendell Board of Health (BOH) adopted regulations concerning wells and underground disposal system construction as of July 23, 2001 for the purpose of protecting the health of the residents and the environment. The BOH amended these regulations several times in recent years, first extending their scope beyond the parameters of Title 5 and later in January 2006 reducing the rules to the scope of the state law.

The BOH states in its regulations that they will apply to “any subsurface wastewater disposal system located within the Zone of Contribution of a public water supply well, located in an area of private well supplies, located within the watershed of all potential municipal water supplies, or any other pond in the Town of Wendell, or located within the watershed of any stream which drains into said lakes, ponds, or reservoirs”. Research presented in “A Hydrogeologic Investigation of Wendell, Massachusetts,” Master of Science Thesis by Timothy L. Limbers, Department of Geology and Geography, UMass Amherst, dated September 1994 indicates that several potential municipal water supplies may exist within the Town.

Subsurface discharge of wastewater effluent can contaminate public and private supply wells with different types of chemicals and impact local surface waters. Nitrate contamination of drinking water is a serious public health problem also associated with the use of household and industrial chemicals, pesticides, solvents, and other toxic substances. Subsurface wastewater disposal, without nitrogen removal, is a major source of nitrate-nitrogen loading in the ground water and surface waters. The BOH states that by controlling nitrate-nitrogen loading in the groundwater, eutrophication rates of local surface waters will be reduced.

Wells: The following rules apply to the location and construction of all new wells unless the Board of Health grants a specific exemption:

- Well construction and destruction shall be done in accordance with the Department of Environmental Protection’s Private Well Guidelines.
- Wells shall be located a minimum of fifty feet from center line of any public roads or rights of way, and a minimum of ten feet from any lot line.
- Wells shall be located not less than 100 feet from a sewage disposal field (leaching facility either currently in use, abandoned or reserve area).
- Wells serving multi-unit dwellings and more than one dwelling must have a flow equal to at least 2 gallons per minute per dwelling unit or dwelling as measured by the well driller’s test.
- In establishing the location of a well, applicants must identify actual or potential sources of contamination within 200 feet of the well site and locate wells to avoid all potential sources of contamination.

Percolation Tests and Soil Evaluations: Percolation Tests and Soil Evaluations for all new systems will be conducted year-round, except when mottling does not manifest itself in the particular soil type. In such case the Board of Health may require additional testing to determine the Estimated Seasonal High Water Table, such as the installation of a 4” diameter monitoring well. If the observed or the estimated seasonal high water table is 12” or less below ground surface, then the test site is not suitable for new construction.

Leach Fields: The following rules apply to the location and construction of all new leach fields unless the Board of Health grants a specific exemption:

- Leach fields must be a minimum of 100 feet from wetlands and other surface water features as defined by 310 CMR 15.000 and the Wendell Wetlands Protection Bylaw.
- Sewage disposal fields and reserve areas shall be located not less than 100 feet from public and private water supplies, and a minimum of 25 feet from any lot line.
- In order to maximize equal distribution, when gravity feed systems are used (all systems where effluent is delivered to the distribution box by gravity flow from the septic tank), the maximum leaching trench or pipe length shall not exceed 50 feet as measured from the beginning of the perforations.
- No swales, interceptor drains, curtain drains or other means of lowering the ground water elevation shall be allowed for new construction. Such means may be allowed only for the repair and replacement of existing systems and then only where, in the opinion of the Board of Health, no feasible alternative exists.

Right to Farm Bylaw. The town of Wendell passed a Right to Farm Bylaw at its Annual Town Meeting in June 2009. This General Bylaw encourages the pursuit of agriculture, promotes agriculture-based economic opportunities, and protects farmlands within the Town of Wendell by allowing agricultural uses and related activities to function with minimal conflict with abutters and Town agencies. This Bylaw re-states and emphasizes rights accorded to Massachusetts under existing state law and applies to all jurisdictional areas within the Town. (See Appendix for the full text of the Right to Farm Bylaw.)

Watershed Protection. DCR's Office of Water Supply Protection regulates specific parcels of land that are located adjacent to tributaries that empty into the Swift River (pursuant to M.G.L. Ch. 92, Sections 104, 107A, & 108; also 350 CMR 11.00) (see the Water Resources Map at the end of Section 4). In some cases, the regulations prohibit development and in others it regulates the density of development.

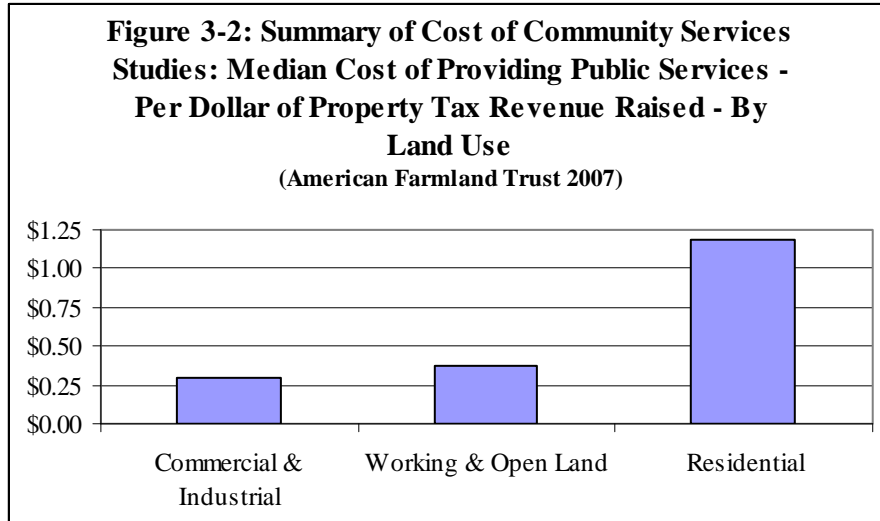
The land within the Swift River watershed that is regulated by DCR includes land associated with surface water or tributaries. All land within 400 feet of a tributary or surface water, within its floodplain or area of bordering vegetated wetlands (bvws), and lands above aquifers are under DCR's jurisdiction.

No alterations of the land are allowed within two hundred feet of the bank of any tributary or surface water. In addition, hazardous waste may not be generated, stored, disposed, or discharged within this area. The following uses are prohibited in all other areas including the second two hundred foot buffer of tributaries or the banks of any surface water, floodplains, bvws, and aquifer areas:

- The disposal of pollutants from either privately or publicly owned sewage treatment facilities;
- Placement of a leaching field less than four feet above the maximum water table level;
- Use/Storage of petroleum, pesticides, and other hazardous materials in excess of normal residential uses and then only when strict storage regulations are followed;
- Storage and disposal of solid waste, de-icing materials, and road salt, other than a reasonable volume produced by normal residential uses;
- Outdoor uncovered storage of manure;
- Operation of junk and salvage yards and boat or motor vehicle washing areas;
- The rendering impervious of more than ten percent (10%) of any lot or two thousand, five hundred (2,500) sq. ft., whichever is greater;
- The excavation of gravel and sand to a depth greater than six feet above the high water table, except where incidental to the construction of permanent structures;
- Any activity such as altering the bvw's, which could negatively impact the quality of the water in the watershed;
- The construction of any dwelling which exceeds a density of two bedrooms per acre or any use which may generate more than two hundred and twenty gallons of sanitary sewage per acre per day; and,
- The construction of any dwelling, which exceeds a density of one and a third bedrooms or one bedroom per acre on land above aquifers with yields of 100-300, or over 300 gallons per minute, respectively.

D.3.2 Costs of Growth

The challenge for Wendell will be to find a model for growth that protects vital natural resource systems like aquifers and their recharge areas and at the same time promotes a stable property tax rate. In designing the model it is important to understand the measurable values of different land uses. For instance, permanently protected open space (e.g. farmland/forest), residential, and commercial /industrial development each have a different fiscal impact depending on the relationship of property tax revenues generated to municipal services consumed. There is a process by which the fiscal value of these three different land uses are compared within a town to determine whether a use has a positive or negative fiscal impact. This process is called a Cost of Community Services (COCS) analysis. Figure 3-2 demonstrates the summary of more than 120 COCS studies.



Source: American Farmland Trust; 2007.

Although protected open space typically has a low assessed value and thus generates low gross tax revenues, municipal expenditures required to support this use are typically much lower than the tax revenue generated. In 1991, the American Farmland Trust (AFT) conducted a Cost of Community Services (COCS) analysis for several towns in Franklin County. A COCS analysis is a process by which the fiscal impacts of different land uses within a town are compared to determine whether a use has a positive or negative net fiscal impact. The results of the 1991 AFT study showed that protection of open space is an effective strategy for promoting a stable tax base. It found that for every dollar generated by open space, the municipal services required by that land cost on average only 29 cents, resulting in a positive fiscal impact to the town. In 1995, the Southern New England Forest Consortium (SNEFC) commissioned a study of eleven southern New England towns that confirmed the findings of the earlier AFT study. These findings were confirmed by other COCS analyses across the country conducted over the last two decades. For every dollar of property tax revenues received from residential property, the amount of money expended by the town to support homeowners is over a dollar, while farm/forest and commercial/industrial property provide a positive fiscal impact.

Patterns of commercial and industrial uses vary considerably between towns, and positive fiscal impact is only one of several important factors that need to be considered when encouraging this type of development. It is just as critical for communities to consider the impact of commercial and industrial development on quality of life. Viewed in this light, the best types of commercial and industrial development to encourage might have some of the following characteristics: locally owned and operated; use of a large amount of taxable personal property; “green industry” that does not use or generate hazardous materials; businesses that add value to the region’s agricultural and forestry products, and businesses that employ local residents. It is also important to consider that successful commercial and industrial development often generates increased demand for housing, traffic congestion and pollution. Therefore,

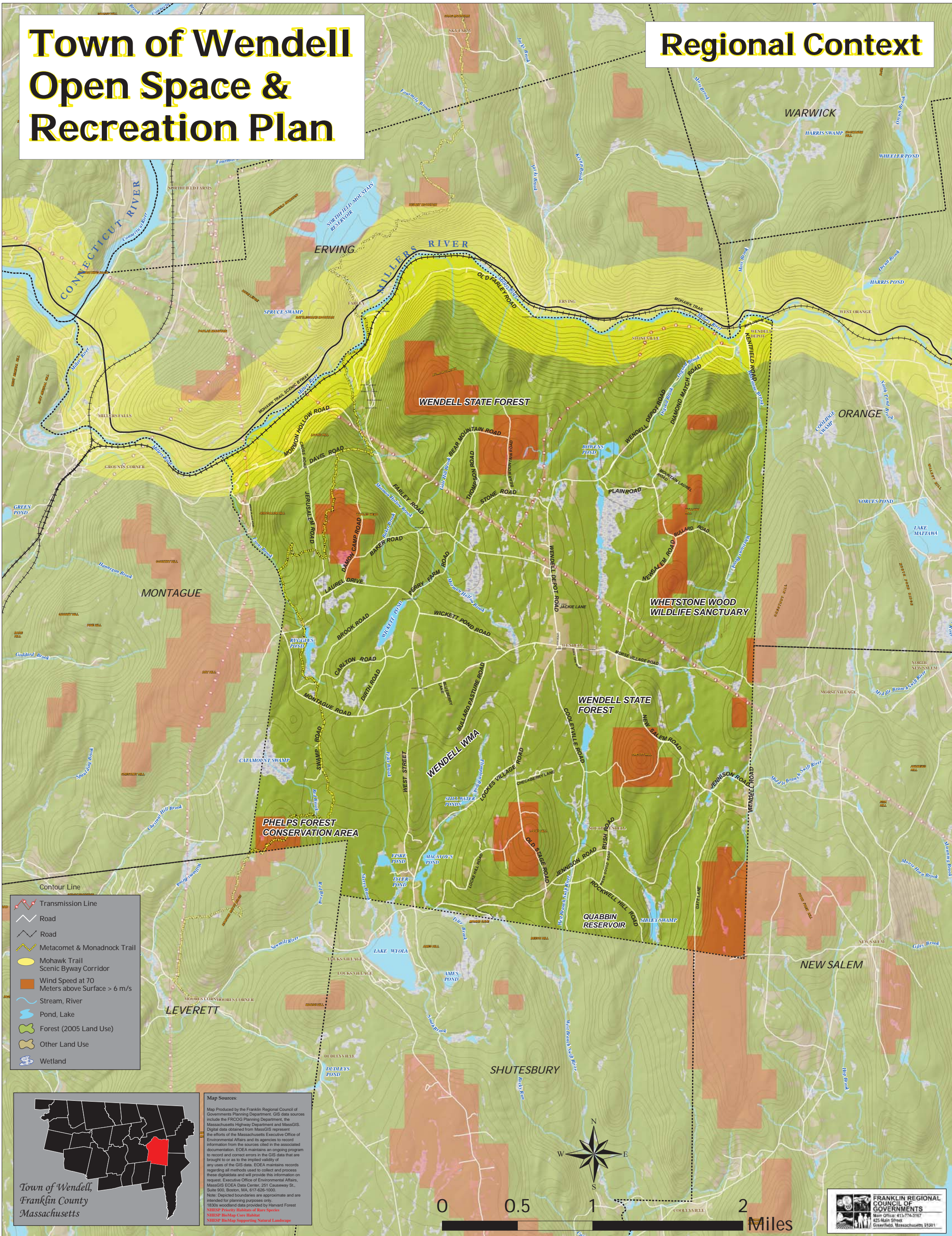
the type, size and location of industrial and commercial development require thorough research and planning.

The COCS studies also found that there is a correlation between a town's population characteristics and the cost of community services. Towns that have larger and growing populations generally experience greater losses on their residential development. The study concluded that a "well balanced" land use plan would, in the long run, develop a stable tax base.

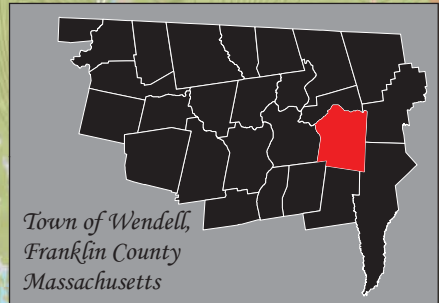
The challenge for Wendell and other communities is to define what "well balanced" looks like in their community. A land use plan that supports a stable tax base would also need to respect the capacity of the natural resource base. It might allow for the development of commercial and light industrial uses in a way that encouraged local entrepreneurship and business expansion, concentrated residential development where infrastructure already exists, and protected open space, farmland, and significant scenic, ecological, and historic resources.

Town of Wendell Open Space & Recreation Plan

Regional Context



- Contour Line
- Transmission Line
 - Road
 - Road
 - Metacomet & Monadnock Trail
 - Mohawk Trail Scenic Byway Corridor
 - Wind Speed at 70 Meters above Surface > 6 m/s
 - Stream, River
 - Pond, Lake
 - Forest (2005 Land Use)
 - Other Land Use
 - Wetland

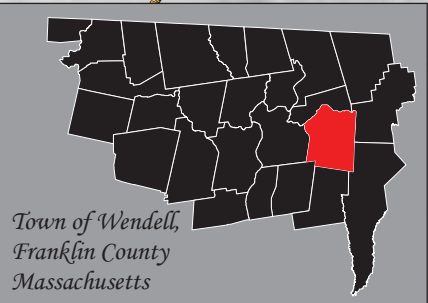
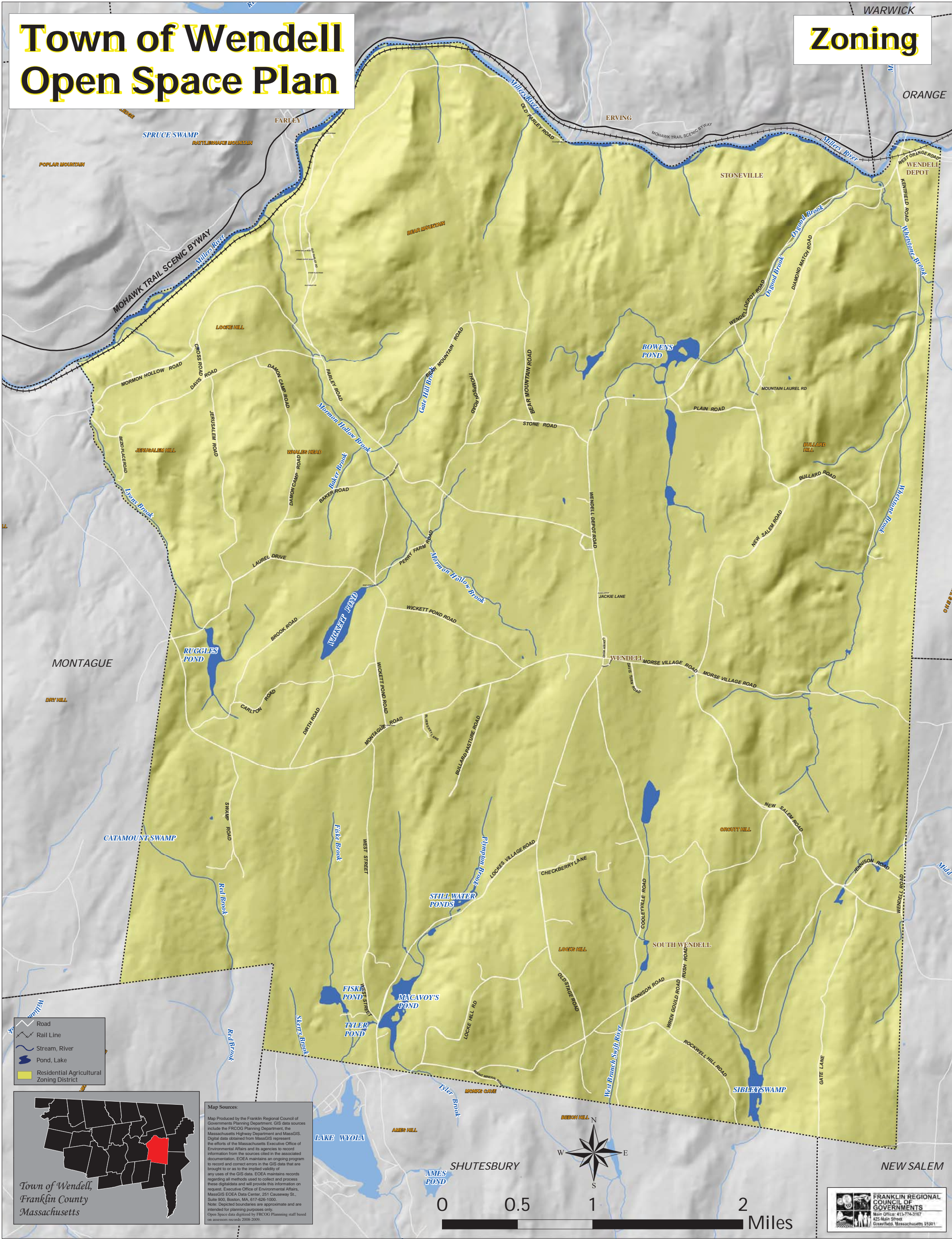


Map Sources:
Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FRCOG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEA maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEA maintains records regarding all methods used to collect and process these digital data and will provide this information on request. Executive Office of Environmental Affairs, MassGIS EOEA Data Center, 251 Causeway St., Suite 900, Boston, MA, 617-628-1000.
Note: Dotted boundaries are approximate and are intended for planning purposes only.
1830s woodland data provided by Harvard Forest
NHESP Priority Habitats of Rare Species
NHESP Wetland Core Habitat
NHESP BioMap Supporting Natural Landscape



Town of Wendell Open Space Plan

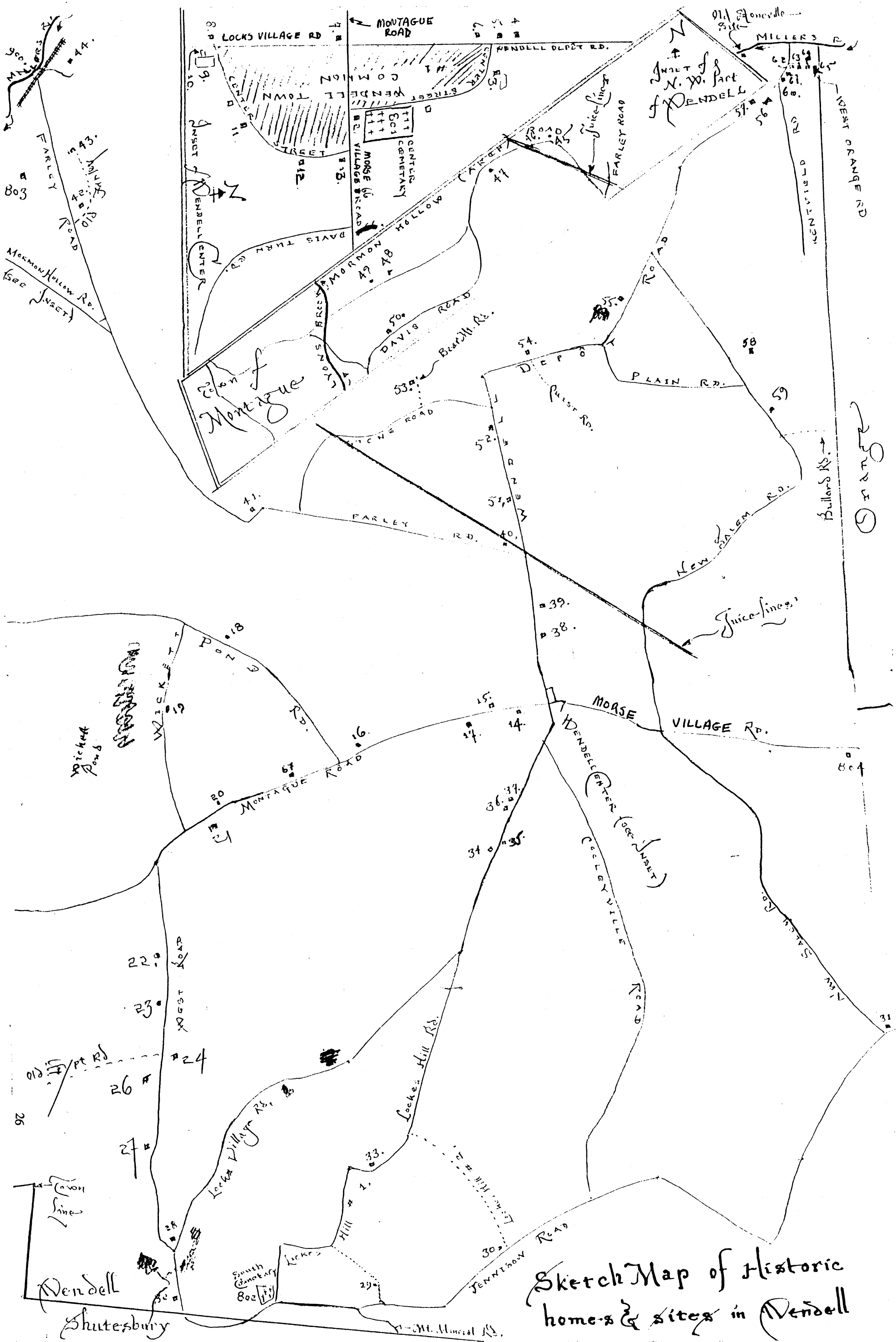
Zoning



Map Sources:
Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FROCG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEIA maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEIA maintains records regarding all methods used to collect and process these digital data and will provide this information on request. Executive Office of Environmental Affairs, MassGIS EOEIA Data Center, 251 Causeway St., Suite 900, Boston, MA, 01742-1000.
Note: Depicted boundaries are approximate and are intended for planning purposes only.
Open Space data digitized by FROCG Planning staff based on aeriavision records 2008-2009.



Map composed by Ryan Clay, FROCG Planning Dept., c:\a_projects\wend_ota_projects\ZONING.mxd 01/11



Sketch Map of Historic
homes & sites in Mendell

SECTION 4

ENVIRONMENTAL INVENTORY AND ANALYSIS

This Open Space and Recreation Plan represents a strategy for protecting open space while providing for recreation and allowing other compatible land uses within the ecosystem and will, if fully understood and implemented, help maintain our Town's quality of life. Trees, wildlife, and fisheries are its most visible tenants of the ecosystem after us, and a close careful survey of field and forest will show vast and complex biological interconnections among all species, true stakeholders in our collective commonwealth.

Protecting Wendell's Biodiversity

Using the Theory of Island Biogeography to Protect Wendell's Biodiversity

A large majority of Wendell's residents who responded to the open space questionnaire indicated that they wanted Wendell's biodiversity protected. The theory of island biogeography predicts that, all things being equal, biodiversity is greater on large islands than on small ones and greater on islands that are closer to the mainland. This has been extended to the notion of islands of protected open space surrounded by seas of development, with the conclusion that increasing the size of a protected area increases its biodiversity. This further suggests that connecting two already protected areas with a protected corridor, thus forming one large area from two smaller separated ones, will also increase natural biodiversity. The theory of island biogeography also suggests that biodiversity increases with proximity to other protected areas, so that nearby protected land is also valuable for this purpose. Saving Nature's Legacy, by R.F. Noss and A.Y. Cooperrider, provides a fuller discussion of this concept.

There is no clear agreement on how large protected areas should be to protect biodiversity except that they should be as large as possible. Similarly connective corridors should be as wide as possible. Obviously, stopping all further development would protect Wendell's biodiversity best, but that is clearly impossible. It is equally obvious that if all land available for development were developed, Wendell would be a much different place and its existing biodiversity would be seriously diminished. This suggests that more land should be permanently protected and the best way to do so would be to protect land connecting two pieces of already protected land, land adjoining already protected land, or land near already protected land.

Saving Nature's Legacy also describes the ideal notion of a biosphere reserve or bioreserve which consists of an unmanaged core area surrounded by a buffer in which light management such as long rotation forestry, hunting, fishing, and habitat manipulation for wildlife would occur. This would be surrounded by a further buffer area where more heavy management, such as low density housing and more intensive forestry, would occur, and surrounding all this would be urban and large scale agricultural land. This is further broadened into the idea of a regional bioreserve network where individual bioreserves are joined together by protected corridors.

The presence of an unmanaged core is important for a number of reasons. It provides a way of comparing the results obtained through management with the results obtained without management. It protects the habitat of species that need an undisturbed forest interior. It protects the habitat of sensitive species that require both wetlands and uplands, but that is not fully protected by the Wetlands Act.

Wendell has a good start at becoming part of such a regional bioserve network. The protected land in Wendell is already part of a protected corridor that almost connects the Connecticut River and the Quabbin Reservoir. The Whetstone Wood Wildlife Sanctuary (WWWS) acts as the unmanaged core area for this network.

Because of the existing pattern of development in Wendell, it is unlikely that the idealized regional bioserve network can be achieved. A more realistic potential model for Wendell open space planning from a landscape ecology perspective may be contained in the idea of "Aggregate with Outliers," which is described in Richard T. T. Forman's book, Land Mosaics. Such a landscape configuration would aggregate like uses while still allowing small bits of other uses. For example, farmland, built uses, and forest would constitute separate areas with limited residential development at forest edges, including small patches of habitat for flora and fauna within developed areas. Vegetated linkages in riparian corridors and between forest areas should be encouraged and maintained where they exist now. It is very important that roads not transect large blocks of forest otherwise free from interior development. Wendell already reflects this model by having large unfragmented blocks of protected forest and smaller patches of farmland with residential development aggregated along transportation corridors.

A More Scientific Approach Toward Protecting Wendell's Biodiversity

While the theory of Island Biogeography is still useful for protecting biodiversity, it is apparently controversial and a more scientific approach is preferred. Fortunately, shortly after the 2002 Open Space and Recreation Plan was published, the Natural Heritage and Endangered Species Program (NHESP) began to provide more scientific data. First came maps showing Biomap Core Habitat and Supporting Natural Landscape. Shortly thereafter they provided maps showing Living Waters Core Habitat and Critical Supporting Watershed, and still later they provided a map showing Large Blocks of Interior Forest Habitat. These maps are used in this Open Space and Recreation Plan and are described in more detail later (see the Large Blocks of Interior Forest Habitat shown on the Protected Open Space Map at the end of Section 5). Then, just as the present document was about to go to press, NHESP provided their latest maps showing Biomap2 Core Habitat and Critical Natural Landscapes. These two latest maps use large amounts of previously unavailable data and appear to combine all the features of the previous maps. In addition, Harvard Forest has made available state-wide maps showing the location of possible Primary Forest areas, using land use maps from the 1830s. (See the Biomap2 and Primary Forest Areas on the Environmental Habitat Map at the end of this section.) All of these maps will help Wendell prioritize land for protection purposes and they will also help the Planning Board make a better informed finding when implementing the new Conservation Development Bylaw (see page 3-35) approved at the Special town Meeting held on December 15, 2010.

In the interest of protecting biodiversity, it is very important that the large blocks of forest land remain as unfragmented by development as possible. Roads present a serious problem in this regard. A narrow road is less fragmenting than a wide one, a dirt road is less fragmenting than a paved one, a road with a full tree canopy is less fragmenting than one with little canopy; and roads with low traffic speed and volume are less fragmenting than those with higher speeds and volumes. If possible, road maintenance should take this into consideration, in particular where roads cross protected lands. In such areas dirt roads should not be paved or widened, paved roads should not be widened, and roadside trees should not be removed. This should apply to roads on protected lands as well. In addition, no new roads should be constructed through protected areas.

Wendell residents appreciate our natural, undeveloped environment—a driving force for many who settled here. By developing and using this Open Space and Recreation Plan as a decision-making tool, we seek to balance our needs for land, resources, and infrastructure with the requirements, finite limits and beauty of the ecosystem.

Ecosystems consist of the populations of living creatures together with the nonliving parts of the environment and they are variable in scale: an entire forest, or a single tree within it. Ecosystems are dynamic; they operate and function as wholes, providing the necessities for survival for all their populations, including human beings. Wendell residents understand that the ecosystem is easily damaged, and that certain land uses have negative impacts on the integrity of the ecology and therefore the quality of human life.

Overview of Section 4

The information provided in this section, Environmental Inventory and Analysis, inventories the quantity and quality of the natural resources contained within Wendell. The subsection on *Topography, Geology, and Soils* provides a foundation for understanding the ways different soil characteristics can impact land use values. *Landscape Character* provides a gross scenic context within which the resources play important roles. The *Water Resources* section describes all of the water bodies in Town, above and below ground, including their recreational value, public access, and any current or potential quality or quantity issues. Wendell's forest, farmland and wetland vegetation types are documented in the *Vegetation* section including rare, threatened, and endangered species. In the *Fisheries & Wildlife* section, wildlife, their habitats, special corridors, and rare, threatened, and endangered species are discussed. The *Scenic Resources and Unique Environments* section identifies and maps those areas in Wendell that contribute to the community's character. These include scenic landscapes; major characteristic and geological features; cultural, archeological and historic areas; and unique environments. The *Environmental Challenges* section discusses issues in Wendell and our region that influence open space and recreation planning, including hazardous waste and brownfield sites, landfills, erosion, chronic flooding, sedimentation, new development, pollution of ground and surface water, and impaired water bodies.

A. TOPOGRAPHY, GEOLOGY, AND SOILS

A.1 Topography

Mountain peaks, steep ledges, occasional deep ravines, rushing streams and wetland pockets characterize the topography of Wendell. The Town can be divided into two topographic regions. The northern half of Wendell is more rugged and is characterized by interconnected till-covered hills with steep-walled narrow valleys. The highest point of this northern half is the crest of Bear Mountain with an altitude of 1,274 feet. The lowest point, along the Millers River (at the mouth of Lyons Brook) has an altitude of approximately 292 feet. The remaining prominent peaks located in the northern rim include Bullard Hill in northeast Wendell with an elevation of 1,187 feet and Jerusalem Hill in the northwest corner of Wendell with an elevation of 982 feet.

Wendell Center sits high on a drumlin that runs north-south along Depot Road and Lockes Village Road to Locks Hill. The drumlin has a total length of about 10,000 feet and an average width of 3,000 feet and elevation of about 1,164 feet. A number of small to moderate sized tracts of wetland are situated in all of these uplands particularly near Wendell Center.

In contrast, the southern half of the Town is less rugged and is characterized by isolated till-covered hills with gently sloping valley walls and broad valleys. Orcutt Hill, elevation 1,306 feet, is the highest point in Wendell. The lowest point in this southern section of Town, along the West Branch-Swift River, is 818 feet.

Steep slopes that are over 25 percent grade (hills that rise one foot for every four horizontal feet) occur in various parts of Wendell and are considered constrained for development purposes. Slopes of 15 to 25 percent grade are located in the northern section of Wendell as well as running along the eastern and southeastern borders. While Wendell's terrain is varied with its changing grades providing interest and diversity in the Town, the great majority of Wendell is at a grade of 15 percent slope or less.

A.2 Geology

The sources for the following subsection include A Hydrogeologic Investigation of Wendell, Massachusetts by T. Limbers (1994), the 1987 Wendell Open Space Plan, and a 1996 University of Massachusetts graduate student report on the region's geological history. Limbers (1994) noted that there are two principal geologic units in the Town of Wendell. These are the bedrock formations exposed in the hilly areas of the Town and the unconsolidated surficial deposits that generally occur in the valley regions of Wendell.

The Town of Wendell that we recognize today is the result of millions of years of geologic history: the great upheavals of the earth's crust and volcanoes, and the sculpting power of moving water, ice, and wind. This distinctive physical base has determined the distribution of the Town's water bodies, its soils and vegetation, and its settlement patterns, both prior to and since colonial settlement.

A.2.1 Geological History

The following text describes the region's geological history over the past 700 million years.

Mountain Building: 700 Million Years to 190 Million Years Ago

The earth's crust is actually a system of plates whose movements and collisions shape the surface. As the plates collide, the earth's crust is compressed and forced upward to form great mountain ranges. In the northeastern United States, the plates move in an east-west direction, and thus the mountains formed by their collisions run north to south. Both the Taconic Mountains and the Appalachians were formed in this way.

The pressure of mountain building folded the earth, created faults, and produced the layers of metamorphosed rock typically found in New England today. Collision stress also melted large areas of rock, which cooled and hardened into the igneous rocks that are found in some of the hill towns in Massachusetts. Preceding the collisions, lines of volcanoes sometimes formed, and Franklin County shows evidence of this in bands of dark schist rock metamorphosed from lava flows and volcanic ash.

Earthquakes and Dinosaurs: 190 Million to 65 Million Years Ago

During the Mesozoic Age, a great continent known as Pangaea formed through the plate collisions. Pangaea began to break apart almost 200 million years ago (and continues today). This caused earthquakes and formed large rift valleys, the largest of which became the Atlantic Ocean. The Connecticut Valley was one of many smaller rifts to develop, and streams flowing into it from higher eastern areas brought alluvium including gravels, sand and silt. The footprints of dinosaurs are still visible in the sedimentary rock formed from these materials on the valley floor.

By the close of the Mesozoic Age, the entire eastern United States was part of a large featureless plain, known as the peneplain. It had been leveled through erosion with the exception of a few higher, resistant areas. Today, these granite mountaintops, named monadnocks, are still the high points in this region. Local examples include Mt. Monadnock in New Hampshire; Mt. Wachusett, and Mt. Grace are other nearby examples.

As the peneplain eroded, the less resistant rock eroded to form low-lying areas, while bands of schist remained to form upland ridges. By this time, the Connecticut Valley had been filled with sediment, while streams that would become the Westfield, Deerfield, and Farmington Rivers continued to meander eastward. The Miller's River and other westward-flowing streams would become more prominent later on.

Cenozoic Era and the Ice Age, to the Present: 65 Million Years Ago to Today

A long period of relative quiet followed the Mesozoic era. Then, as the Rocky Mountains were forming in the west eight million years ago, the eastern peneplain shifted upward a thousand feet. As a result of the new steep topography, stream flow accelerated, carving deep valleys into the plain. The plain rose one more time, and the Millers River, once a slowly meandering westward flowing stream, now carved its course through the sediment and bedrock. Today, the visible

remnants of the peneplain are actually the area's schist-bearing hilltops, all at about the same 1,000 foot elevation.

Mountain building, flowing water, and wind had roughly shaped the land; now, the great glacial advances would shape the remaining peneplain into its current topography. The earth's climate cooled until a point about two million years ago when accumulated snow and ice in the far north began advancing under its own weight. A series of glaciations followed, eroding mountains and displacing huge amounts of rock and sediment. The final advance, known as the Wisconsin Glacial Period, completely covered New England before it began to recede about 13,000 years ago. It scoured and polished the land into its present form, leaving a layer of glacial debris and landforms that are still distinguishable.

While the Miller's River probably first formed prior to the glacial period, most of Wendell's hydrological system is a remnant of that time. The major streams follow a north-south course with the topography. Smaller streams flow from uplands feeding the extensive wetlands formed by sedimentation that filled drainage points when the glacier receded.

The glacier left gravel and sand deposits in the lowlands and along stream terraces. These are the present day locations of the Miller's River. Where deposits were left along hillsides, they formed kame terraces and eskers. Kames are short hills, ridges, or mounds and eskers are long narrow ridges or mounds of sand, gravel, and boulders that followed streams flowing under the ice. Both are formed by glacial melt waters.

A.2.2 Bedrock Geology

Most features of the Town of Wendell's geology are oriented north-south with the exception of the Millers River that cuts its way west through miles of gneissic rock. The subsurface geology took its present shape during the Acadian orogeny, a period of mountain-building, beginning 390-400 million years ago. An orogeny is a process of mountain formation which folds the earth's crust. Pulses of deformation variously contorted the rock layers of Jerusalem Hill and Bear Mountain, both part of the Pelham Dome in Wendell. Just east of the dome lies the northern tip of the Pelham-Shutesbury Syncline, which extends southward into Shutesbury, passing through Locks Hill and emerging as a ledge across the roadbed, just south of the crest. A syncline is a trough of stratified rock. East of Wendell Center and west of Wendell Depot and Orcutt Hill is the Wendell Syncline, which is found near the Warwick Dome and the Kempfield Anticline and proceeds south into Shutesbury. An anticline is an arch of stratified rock where the layers bend downward in opposite directions from the crest. Further east is the Kempfield Anticline, that extends from a point north of the Millers River through Wendell Depot, Bullard Hill, Orcutt Hill and southward into Shutesbury. Along the eastern edge are found outcrops of Clough quartzite of lower Silurian age along with gray micaceous schist and thin strata of garnet schist. The Silurian age is a period of the Paleozoic era that marked the beginning of coral reef formation and the appearance of crustaceans. Between the Kempfield Anticline and the main body of Monson Gneiss in Orange lies the Prescott complex, a pluton and syncline. A pluton is a large body of intrusive igneous rock that formed from cooling magma. Schistic rock may also be found near the New Salem line in the southeast corner of Wendell.

According to Limbers (1994), the bedrock formations consist of metamorphic and igneous crystalline rocks with low water-bearing potential except where highly fractured. The geologic units underlying the Town may be divided into two categories, the consolidated deposits of Precambrian to Devonian age and the unconsolidated deposits of Pleistocene and Holocene age. Because of low primary and overall homogeneous porosities of the bedrock formations, Limbers describes the bedrock of Wendell as a single geologic unit with respect to groundwater occurrence. This unit is described as bedrock formations consisting of metamorphosed sedimentary and intrusive and extrusive igneous rocks of Precambrian to Devonian age. The bedrock formations are part of the Pelham Dome. The apex of the dome is elongated in a northerly direction; its layers dip outward in all directions. In the Wendell area, foliation of the units dips eastward at angles less than five degrees. In the eastern half of the Town, the bedrock is predominantly Ordovician Four-mile Gneiss consisting of gray, massive to moderately layered, well-foliated biotite gneiss containing beds of hornblende-epidote amphibolite. In the western half, the Late Proterozoic Dry Hill Gneiss is predominant, consisting of gray to pink, coarse grained, granite gneiss with biotite and hornblende-rich members. In general, the older units of the Pelham dome crop out near its apex in the western half of Wendell, whereas the younger units crop out with increased distance from the apex in the eastern half. On a larger scale, the rock units are part of the Bronson Hill Anticlinorium approximately three miles east of the Connecticut Valley Border Fault.

A.2.3 Surficial Geology

Surficial geology includes locations of deposits of glacial till, areas of sand and gravel, lake bottoms and other surface features. The retreat of the glaciers following the most recent ice age blocked the flow of water northward toward the Millers River and water flowed southward in the valleys containing both the Whetstone and Osgood Brooks. This resulted in the accumulation of large gravel deposits in these valleys that now are likely aquifer sites. Numerous features of glacial activity are found throughout Wendell, including sand deposits, eskers, (ridges deposited by rivers under the ice) and kettle hole ponds (depressions formed by blocks of ice left behind by glaciers).

These unconsolidated deposits are: 1) upper and lower till, which are heterogeneous mixtures of clay, silt, sand, and cobble to boulder sized gravel with low to moderate hydraulic conductivity commonly covering the hilly areas, 2) stratified drift, consisting primarily of fluvially (produced by stream action) and glaciofluvially (produced by streams from glaciers) derived sands and gravels with moderate to high hydraulic conductivities, which serve as a storage reservoir for precipitation and an easy passage for recharge to underlying permeable deposits and fractured bedrock and 3) swamp and lacustrine (formed in lakes) deposits, which have high hydraulic conductivity but are undesirable as aquifers because of insufficient thickness. Limbers noted that only the stratified drift has the necessary transmissivity and thickness to provide potential municipal water supplies. These specific areas may offer Wendell opportunities for developing municipal water sources (See Water Resources on page 4-12).

A.3 Soils

Soil is the layer of minerals and organic material that covers the rock of the earth's crust. All soils have characteristics that make them more or less appropriate for different land uses. Scientists classify soils by these characteristics, including topography; physical properties including soil structure, particle size, stoniness and depth of bedrock; drainage or permeability to water; depth to the water table and susceptibility to flooding; behavior or engineering properties, and biological characteristics such as presence of organic matter and fertility (University of Massachusetts Cooperative Extension; 1976). Soils are classified and grouped into associations that are commonly found together. These soil associations are named for the dominant or prevalent soils they contain.

As Wendell plans for the long-term use of its land, certain soil related questions arise:

- 1) Which soils are best for agriculture?
- 2) Which soils and substrate impact current and future drinking water supplies?
- 3) Which soils constrain development given current technologies?
- 4) Which soils support recreational opportunities and wildlife habitat?

The answers to these questions can help lay a foundation for open space and recreation planning in Wendell.

A.3.1 Soils for Agriculture

One good way for determining whether the Town contains soils suitable for different developed uses is to identify current farmland as well as those developed lands that used to be farm fields. Unlike the communities in the Connecticut River Valley, Wendell's soils are not deep, well-drained sandy loams. Those Valley soils are good for farming because they contain and hold nutrients and moisture in a manner supportive of growing plants. These soils are also very good for development and recreational field use because they are often level, deep, and supportive of in-ground septic and drainage systems. A good soil for septic systems will filter released wastewater in a manner that protects groundwater quality. Soils that are too wet will not allow wastewater to move or be filtered by the natural decomposition processes that occur in these soil layers. On the other hand soils that are too porous cannot hold wastewater long enough to be naturally filtered and purified by organisms in the soil, allowing untreated septage to move into the groundwater. Prime farmland soils often have the best characteristics for both farming and residential development.

The Town of Wendell has 1,416 acres or 6.3 percent of its land that can be classified as prime farmland.¹ Only a portion of this (1.25 percent) is actively used as pasture, tilled or otherwise productive agricultural land. These prime farm soils include Agawam and Gloucester types. These soils are scattered throughout the Town in pockets of five to 100 acres. However, there

¹ Prime farmland, as a designation assigned by U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses.

are larger blocks located in the center of the Town and in two north-south bands to the east of the Town Center.

Prime farmland soils support farming that contributes to Wendell's rural character and its economy. These farms provide residents local employment opportunities and maintain the Town's rural character. They also provide visual relief from the dense wooded areas dominating the region. Because these farm soils are the best kinds for agriculture and also the most likely type to be developed, Wendell residents may want to prioritize these areas in their land conservation efforts.

According to the Prime Farmland and Development Restraints Map (at the end of this section), prime farmland soils occur predominantly in the southern half of Wendell along streams and roadways. The three largest aggregates of these prime farmland soils are in north-south bands along Wendell Depot Road, bisecting Morse Village Road, and straddling Cooleyville Road. There are also clumps of these soils near Sibley Swamp, near the New Salem town line off Morse Village Road, at the intersection of Plain and New Salem Roads, along West Street, and just south of Fiske and MacAvoy's Ponds. In many cases, prime farmland soils overlie aquifers, are already farmed, or are already developed.

A.3.2 Soils that Impact Drinking Water Supplies

Soils of the Hinckley and Gloucester associations generally have high filtration rates and low runoff potential. The more easily drained Hinckley association forms in valleys on stratified drift. The Gloucester association, covering more than 50 percent of Wendell, forms on gently sloping and steep upland areas on sandy till. Both of these associations provide high amounts of recharge to aquifers in Town.

Rapidly draining soils are sometimes also poor filtering soils and include Agawam, Carver, Gloucester, Hinckley, Merrimack, and Windsor soils. These are found in the more easily developed areas. These soils provide little filtration to septic leachate as water passes through these soils very quickly, which may not be a problem when the depth to ground water is great. Unfortunately, aquifers are usually found where these soil types are located. Development could potentially pollute these aquifers if care is not taken to protect them.

A.3.3. Soils that Constrain Development

Steep slopes and wet soils prohibit and limit development on a significant portion of Wendell's land. Slopes over 25 percent, soils with a seasonal high water table less than one and one-half feet below the surface of the ground, identified wetlands, and lands already built upon are located primarily in the northwest third of Town. There are smaller blocks along the eastern town line and along a northeast-southwest strip in the southern half of the Town. This configuration follows in large part the layout of conservation lands in the Town, the single most significant factor currently prohibiting development in the Town of Wendell.

Those areas limited by a seasonal high water table one and one half to three feet below the surface, slopes of 15 to 25 percent, or bedrock ten to twenty inches below the surface are

uniformly distributed throughout the remainder of the Town and comprise approximately 5,400 acres. While buildable, the constraints to development may be moderate to severe in these areas due to the difficulty in sustaining adequate percolation for septic fields, limiting the number of housing areas possible.

The most easily developed land—only 11 percent of Town—is scattered throughout the central and southern portions of Wendell, following roughly the same course as the existing development. These least-constrained lands are in pockets of ten to 150 contiguous acres. Approximately three quarters of these parcels are located on existing roads, which could provide access to building sites.

A.3.4. Soils that Support Recreational Opportunities and Wildlife Habitat

Different recreational uses are constrained by separate soil and topographical characteristics. Sports fields require well-drained and level soils. Lands with slopes over 25 percent may be attractive to mountain biking and hiking enthusiasts but should be so used only if the soils are not easily eroded. Erodable soils include those that are shallow, wet, sandy, or sloped or those with a combination of these characteristics.

As Wendell continues to experience development pressures, those soils that may best support a variety of wildlife habitats may prove to be those that provide the most constraints to development. Wendell might consider identifying and protecting areas surrounding hydric or very wet soils. More than likely, these soils would provide a diverse array of species habitats. In addition, protecting any remaining high slope areas along ridge tops would also provide for the protection of habitats for large mammals as well as scenic views.

A.4 Analysis

A discussion of topography, geology, and soils in an open space and recreation plan helps to clarify what makes Wendell special. Overall, a discussion of open space and recreation planning will always revolve around human use of the land, development, and the impacts of that development on the systems that are at the base: soil nutrients, water purity, biodiversity, etc. The bedrock may be moving, but humans tend to change the landscape at a much faster rate. Which soil, geologic, and topographical characteristics should be considered when planning for open space and recreation resources? Wendell residents may want to develop a conservation plan to protect remaining prime farmland soils for future food production. Potential aquifers are vulnerable to contamination from surrounding septic systems and land uses and these may just be the Town's future drinking water supplies. Residents may also want to determine the recharge areas for these aquifers towards ensuring their long-term protection from contamination.

Overlaying the outlines of aquifers onto the Soils and Geographic Features Map uncovers relationships between land use, ownership, and the ecosystem processes that support life. Wendell residents are very fortunate to have so much land protected. There is a possibility that by protecting a few key parcels of land an important aquifer may be protected from developed uses. On the other hand, many areas that contain prime farmland soils occur atop aquifers. The

Town may want to ensure that anyone farming these lands is using agricultural best management practices or perhaps organic management practices.

B. LANDSCAPE CHARACTER

The Town of Wendell derives its special character as much from its landscape as from its people and their sense of community. The Town of Wendell has a rugged landscape with large tracts of undeveloped forest lands, abundant wetlands and streams, and a sparsely settled but changing rural residential landscape. The woodlands of Wendell State Forest and Whetstone Wood Wildlife Sanctuary provide the residents of Wendell, and the surrounding communities, with large tracts of protected open space. As well as these protected lands, residents of Wendell perceive three relatively small and widely spaced distinct villages: the Depot, Mormon Hollow and the Town Center. The Town Common and its surrounding buildings, including Town Hall and the Library, are located near the geographic center of Wendell. This is considered the community's focal point and is widely viewed as being prominent in the collective image of the Town. The Common and the surrounding farms also contribute to the sense of open space in this central location. Three establishments on the Common—the Country Store, the Post Office and the Deja Brew—are central to daily life in Wendell and are valued, important sites in Town.

A drive through Wendell takes one down the many narrow winding dirt roads, one of the Town's most prominent features. One is struck by the almost continuous densely wooded hillsides lining both sides of the road. Occasionally, a rare open field and farmstead offers an opportunity for a somewhat more distant view and relief from the dense canopy of trees. Many old paths, trails and unmarked, un-maintained roads as well as wetlands and streams are also noted along the roadsides. Most homes in Wendell are built close to the road, although a number are hidden from view with only a dirt driveway making them evident to the passerby. The overall visual impression when traveling through Wendell is one of space, wildlife, nature, privacy, peacefulness, and community.

Development, whether residential or commercial, has a distinct impact on the rural character of the Town as well as its natural environment. The protection of the existing open landscapes including farms with fields that provide open space and views, particularly around the Town Common, is especially important as a contrast to the wooded nature of the remaining areas of town. Protection of roadside wetlands, woodlands and stonewalls would help ensure the retention of the sense of space and character of the town. Long-term management of state lands and Town wetlands/ponds, with active input from residents and the Lake Wyola Advisory Committee (which also deals with issues related to the Wendell State Forest), is necessary for continued environmental protection, public access, and enjoyment for residents of Wendell and the surrounding communities.

C. WATER RESOURCES

Water resources for the Town of Wendell are shown on the Water Resources Map at the end of this section.

C.1 Watersheds

Wendell is part of three river basins – the Millers River watershed to the north, the Chicopee River (Quabbin) watershed to the southeast, and the Connecticut River watershed to the southwest. The Connecticut River watershed is the largest river ecosystem in New England. It contains 38 major tributaries/sub-watersheds including the Millers and Chicopee Rivers. The Connecticut River watershed encompasses approximately 11,000 square miles and travels from its headwaters at Fourth Connecticut Lake at the Canadian border and through four New England states: Vermont, New Hampshire, Massachusetts and Connecticut. The River enters Massachusetts at the Town of Northfield and drains all or part of forty-five municipalities in the Commonwealth before entering the State of Connecticut where it eventually empties into Long Island Sound at Old Saybrook. The watershed is 80 percent forested, 12 percent agricultural, 3 percent developed and 5 percent wetlands and water.²

In 1998, President Clinton designated the Connecticut River an American Heritage River, one of only fourteen in the Nation. As an American Heritage River, the Connecticut can receive special attention from federal agencies for the cultural, economic and environmental values of the river. Also, in 1991, the entire Connecticut River watershed was designated the Silvio O. Conte National Fish and Wildlife Refuge by an act of Congress. The Conte Refuge is the first of its kind, encompassing an entire watershed ecosystem in four states; it is a benchmark in environmental conservation.

The northern two thirds of Wendell is located in the western portion of the Millers River watershed, which includes portions of seventeen communities in north central Massachusetts and four towns in southwestern New Hampshire. It is bordered on the east by the Nashua River watershed, on the north by the Ashuelot River watershed and on the south by the Chicopee River watershed.

The Chicopee River watershed is comprised of four river basins, including the Swift River, which drains into the Quabbin Reservoir. Nineteen percent of the Town of Wendell drains into the Quabbin Reservoir via tributaries of the Swift River, which include the West Branch of the Swift River, Sibley Swamp, and the Middle Branch of the Swift River, all located in the southeastern section of Wendell. The southwestern section of Wendell drains to the Connecticut River via the Sawmill River and its tributaries – Skerry, Plympton, Fiske, and Red Brooks. The Sawmill River flows southwest through the Towns of Shutesbury, Leverett, and Montague to its confluence with the Connecticut River.

² The 1994 Environmental Impact Statement for the Silvio O. Conte National Fish and Wildlife Refuge.

C.2 Surface Water

The Town of Wendell has approximately 180 acres of open water, according to MassGIS 2005 land use data. The Millers River, a large river of statewide importance and historical significance, borders the Town on the north for seven miles. There are six ponds with over three acres in surface area in the Town of Wendell. Bowens, MacAvoy's, Ruggles, Wickett, Fiske and Stillwater Ponds, in total, cover an area of 84 acres. In addition to the above ponds, Wendell has many small bodies of water ranging in size from one-eighth to three acres. These small ponds are used for fire protection and private recreation. Numerous small streams can also be found throughout Town. These have small sub-watersheds and generally high velocities, consequences of Wendell's steep terrain.

The following inventory describes Wendell's rivers, streams, brooks, and ponds focusing on the extent of public access and recreational value as well as any water quality issues. The 2010 Massachusetts Integrated List of Waters (Section 303(d)), prepared by Department of Environmental Protection (DEP), is used as a source document for the Millers River and all listed surface waters within the Town of Wendell including Ruggles and Bowens Ponds. Section 303(d) is part of the Federal Clean Water Act. The State is required by the United States Environmental Protection Agency to identify water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls. In each case, the most severe pollutant is identified. Although the affected water bodies may contain other pollutants, the 303(d) list includes the results of only those evaluations upon which DEP has exercised some measure of quality control. The Integrated List of Waters lists water bodies according to the following five categories:

- 1) Unimpaired and not threatened for all designated uses;
- 2) Unimpaired for some uses and not assessed for others;
- 3) Insufficient information to make assessments for any uses;
- 4) Impaired or threatened for one or more uses, but not requiring the calculation of a Total Maximum Daily Load (TMDL); or
- 5) Impaired or threatened for one or more uses and requiring a TMDL. Waters listed in Category 5 constitute the 303(d) List and, as such, are to be reviewed and approved by the EPA.

C.2.1 Millers River

From its tributaries of origin in New Hampshire, the Millers River flows south, then gradually west, ultimately flowing into the Connecticut River. The Millers River drains a regional landscape of 392 square miles in size, 320 of which are in Massachusetts (Massachusetts Department of Environmental Protection; 1995). The total river length is fifty-one miles, forty-four of which are in Massachusetts. Although the Millers River fluctuates between sluggish and rapid flows, there is an average drop of twenty-two feet per mile. This feature made the Millers River and its main tributaries a magnet for manufacturing and hydroelectric power generation, providing the impetus for industrial activities in neighboring towns in the late 1700's.

Residents of the region value the Millers River for its recreational and natural resource values. Seven miles of the Millers River flows through Wendell along its northern border, providing opportunities for fishing, wildlife and scenic viewing, whitewater boating and hiking. However, public access to the Millers River in Wendell is limited. Potential access is available at the end of Sears Road. The only put-ins for canoeists and kayakers in Wendell are located at the Farley Bridge and Wendell Depot. According to the Massachusetts Division of Fish and Wildlife (DFW), land along the Millers River in Wendell is considered to have exemplary or unusual examples of natural communities including good examples of floodplain forests and high-energy riverbank communities. Also, the Millers River and its tributary Whetstone Brook support a variety of species including freshwater mussels. Freshwater mussels are particularly good indicators of water quality and therefore their presence may indicate improving conditions along the Millers River.

The quality of the water in the Millers River is important for many reasons. Clean water supports life in all of its forms and is reason enough to keep the river environment healthy. Other people may be motivated by the desire to swim or fish in the river. Currently, the Millers does not meet Class B fishable/swimmable status. The stated class for a particular river is in fact only the State's goal for that river. Hence there are public health warnings against eating native fish species caught in the Millers River. It also implies that the future recreational potential for the Millers River may in part depend on continued water quality improvements.

Regulation of industrial discharges under the Clean Water Act beginning in the early 1970s and advocacy by the Millers River Watershed Council (MRWC) resulted in substantial improvements in water quality in the Millers River. In 1983 the Millers River was stocked with fish for the first time in 20 years. Along with the regular sport fish, 20,000 juvenile salmon were released as part of the salmon restoration program. The Millers River no longer smelled or looked dirty, but fishing is on a catch-and-release basis only (Showers, 2000).

The continued presence of dangerous levels of mercury and PCBs buried in sediments has prevented the Millers from achieving its classification as "swimmable and fishable." Fish in the river have been found to contain these chemicals at levels resulting in public health warnings prohibiting their consumption. The full extent of PCB contamination of the sediments is under continued study by the DEP. The contamination undoubtedly has a negative long-term impact on the recreational potential of the Millers River for the Town of Wendell and surrounding communities.

Continuing support for the PCB study currently being done by the U.S. Geological Survey is one of the state's top five priorities for the Millers River Watershed. Other priorities include performing a hydrologic assessment and water supply forecast to identify flow and yields throughout the watershed and sub-watersheds; developing a non-point source assessment to comprehensively assess both existing and potential sources of water quality problems; and developing and implementing a water quality sampling program to characterize the current condition of the watershed.

In 2001, the Millers River Watershed Team also began implementing a Strategic Monitoring and Assessment for River Basin Teams (SMART) monitoring program in conjunction with the Department of Environmental Protection, the Division of Watershed Management and the Wall

Experiment Station. This program provides important information on long-term on-going water quality trends in the watershed. Volunteer monitoring teams were formed to collect data and information in the watershed.

C.2.2 Other Rivers and Brooks

- West Branch Swift River
Wendell contains the headwaters of the West Branch of the Swift River which flows into the Quabbin Reservoir. The West Branch starts east of Wendell Center and flows out of Town in the southeast corner. Several beaver ponds along its length serve as excellent wildlife habitat. Approximately one and a half (1.5) miles of the stream are within Wendell State Forest. At the southern boundary of town, the stream borders land owned by the Department of Conservation and Recreation (DCR). The remainder passes through private land. Residents of Wendell enjoy fishing along its banks.
- Middle Branch of the Swift River
The Middle Branch of the Swift River also has its headwaters in Wendell. The river begins along the southwest slopes of Poor Farm Hill in the southeastern corner of Wendell. The peak of Poor Farm Hill is in New Salem near the Wendell/New Salem Town Line.
- Whetstone Brook
Whetstone Brook begins east of New Salem Road and flows for approximately five miles north into the Millers River near Wendell Depot. The brook is especially scenic and flows through the Wendell State Forest and the Whetstone Wood Wildlife Sanctuary for most of its length. Its remoteness, numerous wetlands, and beaver ponds make the area surrounding Whetstone Brook superb wildlife habitat. The brook had a reputation as a fine trout stream but has suffered from acidification. The undeveloped watershed and effects of acid rain contributed to making Whetstone Brook one of three sites in the United States chosen for a federal study of methods to reduce acid rain damage to streams. Whetstone Brook is listed in 2010 Integrated List of Waters as a Category 5 water body for “priority organics.”
- Mormon Hollow Brook
Mormon Hollow Brook starts at Wickett Pond in the Wendell State Forest and flows parallel to Lyons Brook owned by the Division of Fisheries and Wildlife. This brook has provided good fishing and is easily accessed from Farley Road. All except the last three-quarter miles of the brook lie within the Wendell State Forest. Wendell residents enjoy swimming and fishing at Mormon Hollow Brook. Mormon Hollow Brook is listed in 2010 Integrated List of Waters as a Category 5 water body for “priority organics.”
- Osgood Brook
Osgood Brook begins in the swamplands, which lie in the valley between New Salem, Wendell Depot, Morse Village and Plain Roads. It flows from this area to the westerly side of Wendell Depot Road and then to Bowens Pond. From there it crosses to the easterly side of Wendell Depot Road, which it then parallels for most of its course to the Millers River. The stream provides fishing and scenic views along Depot Road. Approximately two-thirds

of the stream's length is east of Depot Road in the Wendell State Forest. Much of the headwaters of the brook are contained in the Whetstone Wood Wildlife Sanctuary.

- Lyons Brook
Lyons Brook begins at Ruggles Pond and flows approximately two miles to the Millers River, forming a portion of the boundary between Wendell and Montague. About three-quarters of a mile of Lyons Brook lies within the Wendell State Forest. The remainder flows through private land. Lyons Brook is listed in 2010 Integrated List of Waters as a Category 5 water body for “priority organics.”
- Plympton Brook
Plympton Brook originates west of Wendell Center and flows south to Lake Wyola in Shutesbury. It has been impounded at several points forming Stillwater Ponds and McAvoy’s Pond. The headwaters of Plympton Brook are on the Division of Fisheries and Wildlife land but the brook below Stillwaters Pond lies entirely on private lands.

C.2.3 Ponds

- Ruggles Pond
Located entirely within Wendell State Forest, Ruggles Pond is open to the general public for swimming and fishing. This pond is bordered by a scenic shrub swamp and marsh providing excellent habitat for wildlife including migrating waterfowl. The Ruggles Pond area is surrounded by woodlands and is very scenic. The pond is considered by residents to be a valuable recreational resource particularly for bird watching, canoeing, boating, picnicking, and swimming. Ruggles Pond was listed on the 1998 Massachusetts Section 303(d) List of Waters due to noxious aquatic plants. Noxious plants impair water quality when native and non-native species are present in such a quantity that it retards other uses for the body of water. Today, Ruggles Pond is listed in the 2010 Integrated List of Waters as a Category 2: “Attaining some uses; other uses not assessed.”
- Wickett Pond
Also lying within the Wendell State Forest, Wickett Pond offers ice skating, hiking, fishing, canoeing, boating, and bird watching to the public, in a solitary woodland setting. There is excellent wildlife habitat in the surrounding woodlands and pond edge.
- Bowens Pond
Located off Depot Road, Bowens Pond is surrounded by woods and fields and offers scenic views from the road. Privately owned, this pond is used by residents for fishing.
- Fiske Pond
Located off West Road in the southwesterly portion of Town, Fiske Pond is fed by Fiske Brook and drains into Tyler Pond and then into Lake Wyola in Shutesbury. This is a special ecosystem featuring, at the same site, plant species from ecological communities as disparate as the Atlantic Coastal Plain and the prairies of the Midwest. Paul Godfrey is a retired professor of botany at UMASS and Wendell’s resident expert on this unique area.

For many years Fiske Pond was enjoyed by Town residents as a swimming hole while the 125 acre property was privately owned. In 2005, the Town purchased the property with help of a state grant and established the Fiske Pond Conservation Area. With help from the Fiske Pond Advisory Committee, local volunteers and funds raised by the Mount Grace Land Conservation Trust, the Conservation Commission has taken actions to protect the property such as restricting parking and vehicular access by gating access roads, removing trees and brush from the dam, removing invasive species, installing a beaver deceiver, and posting the property. The Loop Trail surrounding the pond has been cleared and marked as have connecting trails leading to the M&M Trail. Efforts to bridge wet spots to protect the places from pedestrian damage are underway. Other improvements include a new parking lot with an information kiosk, wooden trail signs, several bluebird boxes, and a duck box.

- McAvoy's Pond
Located at the south end of Town, McAvoy's Pond provides habitat for amphibian, fish, waterfowl, wading and predatory birds, as well as various mammals, including beaver, otter, and deer, and provides water storage. The pond is on private land.
- Stillwater Ponds
These ponds, created by small dams along Lockes Village Road, provide wildlife habitat and water storage. They are privately owned. Stillwater Ponds are suitable for fishing, skating, and boating, and provide scenic views from Lockes Village Road.
- Other Small Ponds
Wendell contains several small ponds of several acres that are valuable for wildlife habitat, recreation, and water storage. Most are located on private land. Included in this category are the Twin Ponds on both sides of Jennison Road near the New Salem town line, Tyler Pond just downstream of McAvoy's Pond, Sibley Swamp Pond and beaver ponds along the West and Middle branches of the Swift River, Whetstone Brook and in the Plain Road Swamp.

C.3 Wetlands

The Town of Wendell contains several large forested wetlands and dozens of smaller forested, shrub and emergent marsh wetlands. A very large number of smaller, unmapped wetlands falling under the jurisdiction of the Wetlands Protection Act and the Town of Wendell's Wetland Bylaws occur on poorly drained sites throughout the Town. The most abundant wetland type in Wendell is forested deciduous swamp. Most of these swamps fall into the category of seasonally saturated, which means they have standing water at or above the soil surface during late winter, spring, and early summer of almost every year and they have saturated soils throughout the year during most years.

Important forested swamps in Wendell include Plain Road Swamp, Catamount Swamp, and a large swamp bordering Farley Road east of Perry Farm Road. Smaller swamps are common along streams and in low-lying areas that form the headwaters for many of the small streams that begin in Wendell. Some of these swamps are seasonally flooded but do not have saturated soils throughout the entire year. Important smaller swamps in Wendell include Sibley Swamp,

unnamed swamps near Wickett Pond and Ruggles Pond in the Wendell State Forest, swamps along the West Branch of the Swift River east of Cooleyville Road, and swamps bordering Whetstone Brook from its headwaters between New Salem Road and Morse Village Road north for a distance of approximately one mile. Small swamps along streams are often formed by the activity of beavers. Many of Wendell's wetlands, often overlooked, are remnants of decadent or former beaver swamps. Such beaver ponds occur along Osgood Brook in Plain Road Swamp, along the West Branch of the Swift River, in Sibley Swamp, along Damon Road near Ruggles Pond, along Whetstone Brook, and in numerous other locations throughout Wendell. These include both shrub deciduous swamps, and bogs. Bogs, which occur primarily near Ruggles Pond in the Wendell State Forest, are cited by the DFW as good examples of kettle hole level bogs, which are a variant of level bogs occurring in kettle depressions in sandy glacial outwash.

C.4 Aquifer Recharge Areas

The Town of Wendell has no existing municipal water supply and therefore relies solely upon private wells for its drinking water supply. (See also Section 3, Subsection D.2.2, Water Supply.) Given the continued growth of the Town, Wendell residents recognized the need for the location of aquifers. In 1994, Timothy Limbers, a graduate student at the University of Massachusetts, conducted a hydro-geological investigation for Wendell to determine potential aquifer locations as well as to recommend methods of protecting these aquifers.

In his study, Limbers found Osgood Brook Wetland, a kame-aquifer system, to be the most promising municipal groundwater supply for the Town. This aquifer is located in the headwaters of Osgood Brook, approximately one mile northeast of Wendell Center. It was found that the upper limit of developable groundwater from the Osgood Brook Wetland aquifer was 450,000 gallons per day. Another method of calculating developable groundwater determined the amount to be 170,000 gallons per day, which is considered to be extremely conservative, as it does not account for underflow and storage within the wetland. It was felt that some chemical treatment of water from this aquifer might be required to reduce concentrations of iron and manganese to acceptable levels. Two other major sites are Wendell's two largest groundwater basins, Mormon Hollow Brook and Whetstone Brook basins. The upper limits of these stratified drift aquifers were found to be over one million gallons per day for each (1.12 and 1.29 mgd, respectively). It is felt that these three sites potentially provide sufficient water supplies to meet Wendell's long-term needs. In addition to these aquifers, Limbers found five other areas with groundwater development potential. Other sites include: an area located in the headwaters of Mormon Hollow Brook west of Wendell Center that is underlain by water-bearing kame deposits and bedrock; an area along Whetstone Brook near the eastern border to Wendell containing kame, kame-delta, and kame terrace deposits; an area of kame deposits along Plympton Brook or Fiske Brook near Wendell's southern border; and two areas along the northern border of Wendell underlain by river-terrace deposits that may be capable of yielding large quantities of water.

C.5 Flood Hazard Areas

According to the Federal Emergency Management Agency (FEMA) Flood Hazard Boundary Maps for the Town of Wendell dated January 17, 1975, Special Flood Hazard Areas are located along the Millers River that forms the northern border of Town and along Whetstone Brook north of the Wendell State Forest.

C.6 Surface Water Reservoirs

Ten potential reservoir sites were identified by the U.S. Department of Agriculture (1974) in a survey of the Millers River Watershed. These sites were identified from topographic maps and the areas of potential open water impoundments were calculated. No information is available on water yields from these potential reservoirs. Four of these locations are along Whetstone Brook, three along Osgood Brook (including Bowens Pond), two along Lyons Brook (including Ruggles Pond), and one along Mormon Hollow Brook. In the Sawmill River sub-watershed, six potential and existing reservoirs were identified in the southwesterly corner of Wendell by the U.S. Dept. of Agriculture (1975) in a survey of the Connecticut River Watershed. These include upgrading existing sites on Fiske Pond and Tyler Pond and four new sites, three on Plympton Brook and its tributaries and one on Red Brook about 2,000 feet north of the Leverett town line. In the Swift River Watershed in the southeasterly corner of Wendell three potential reservoir sites were identified by the U.S. Dept. of Agriculture (1973) in a survey of the Chicopee River Watershed. Two of these are on the west branch of the Swift River and one is at the outlet of Sibley Swamp. No detailed plans were presented for these since they were on MDC land and presumably would reduce the amount of water reaching Quabbin.

The development of surface reservoirs for the purpose of increasing drinking water supplies would have at least two negative impacts on open space. First, by damming existing streams, many ecosystems and their inhabitants would be destroyed. The streams and their riparian areas would disappear, and the flow of water would be unnaturally removed from the sub-basin, which would affect groundwater recharge of local wetlands and associated plant and wildlife populations. The provision of ample drinking water supplies would also result in encouraging a level of population in-migration reflected in the build-out analysis. Both of these impacts are unacceptable to Wendell residents.

C.7 Public Water Supplies

The Town of Wendell has seven public water systems, according to DEP and MassGIS.³ There are four groundwater wells (Wells #1, 2, 3, and 4) and three transient non-community systems⁴

³ A Public Water System, as defined by the Massachusetts Department of Environmental Protection, is a system providing piped water to the public for consumption. A public water system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days of the year.

⁴ A Transient Non-Community Water System is a public water system which serves twenty-five (25) different persons per day at least sixty (60) days of the year. Some examples of this type of system are restaurants, motels, campgrounds, golf courses and community centers.

located at the DCR Wendell State Forest, the Wendell Country Store and the Wendell Town Buildings. These are shown on the Water Resources Map at the end of this section.

C.8 Potential Sources of Water Supply Contamination

C.8.1 Sewage Disposal

All sewage disposal in Wendell is by private septic systems, aside from a common system serving public buildings in the center of Town. The effectiveness of these systems, particularly older ones, is variable and depends on topography, water table, and soils. This situation is not expected to change in the near future. The Wendell Board of Health is separate from the Selectboard and now employs a health officer to witness percolation tests. Installation of septic systems is overseen by board members. Seasonal limitations have been established for site evaluation activities. Approximately two to three failures are reported each year, caused primarily by age and improper design and installation. No direct discharges to water bodies are known. Dependence on private sewage disposal requires that housing be restricted to soils and slopes that can reasonably be expected to handle on-site sewage systems. Soil types are critical for determining this capacity, as many soils are shallow to bedrock, or have high probability of containing hardpans that would prevent adequate percolation and result in greater likelihood of system failure.

No accurate records are kept of the volume of septage generated. Wendell licenses septage haulers, but it is suspected that not all pumped septage is properly disposed of. The Publicly-Owned Treatment Works (POTW) #1 in Ervingside accepts septage from Wendell residents.

In 2002 Wendell received funds from the Department of Conservation and Recreation to study the septic systems in the area of the Town Commons. Systems in both private homes and municipal buildings were pumped and Title V assessments conducted. A number of these systems were found to be failing or inadequate. This study led the Town to hire the engineering firm of Dufresne-Henry to conduct an in-depth feasibility study of the alternatives available for sewage disposal with the final report completed in June 2005. Although the primary objective was to provide a sewage disposal plan for town-owned buildings, several alternatives were investigated, including a community system incorporating both private homes in need of septic repair near the center of Town and the former Lake Grove School. They also considered the possibility of constructing a sewer line to the Erving Center Sewerage Treatment Plant, although this proved too costly. Ultimately, the decision was reached to build a large conventional system on the site of the Town Office Building located on Morse Village Road. Only municipal buildings were initially connected. But the possibility of adding private residences was left open for future consideration. The design of this system, which is more than adequate for the current needs of town-owned buildings and which lends itself to future expansion, will serve the community for many years to come.

C.8.2 Acidification

Historically, streams and ponds in Wendell suffered damage as a result of acid rain. Because of the acidic nature of the granite and gneiss bedrock in Wendell, soils have a tendency to be very acidic and contain little capacity to buffer the effects of acid rain and snow. Data on pH⁵ were collected on nineteen streams and ponds in Wendell between March 1983 and January 1987 as part of the Massachusetts Acid Rain Project. The results were disturbing. Wendell is one of the worst hit areas in Massachusetts.

As a result, the Commonwealth has tried to help Wendell with its acidification problem. The Massachusetts Division of Fisheries and Wildlife (DFW) has proposed that Whetstone Brook be reclassified in the Surface Water Quality Standards (SWQA) as a cold water fishery (MassWildlife 2001). The DFW, as part of the National Acid Precipitation Assessment Program, in cooperation with the U.S. Fish and Wildlife Service Energy and Land Use Team, embarked on a five-year research project in the late 1980s and early 1990s to investigate counteracting the effects of acidity. Monitoring was conducted four years prior to and three years following treatment of the brook with limestone. The density of brook trout was found to increase significantly during the limestone treatment (Simmons et al. 1996).⁶

Table 4-2: Acidification Status of Wendell’s Streams and Ponds in 1987

Type of Surface Water	Acidified	Critical	Sensitive
<i>Streams</i>	Skerry Brook	Red Brook	Millers River
	Fiske Brook	Lyons Brook	
	Tyler Brook	Mormon Hollow Brook	
	Plympton Brook	Osgood Brook	
	Wickett Brook	Whetstone Brook	
		W. Branch Swift River	
<i>Ponds</i>	Bowens Pond	Fiske Pond	
	Ruggles Pond	McAvoy’s Pond	
		Tyler Pond	
		Sibley Swamp Pond	

Source: Town of Wendell Open Space and Recreation Plan; 1987, 2002.

C.8.3 Other Sources of Potential Water Supply Contamination

There is one poultry farm and no dairy herds in Wendell. Disposal of agricultural waste is not a significant problem. There have not been major problems of erosion associated with forestry activities, though there may be temporary erosion and stream siltation problems at logging sites. Stormwater runoff from paved areas currently is minimal since Wendell is not highly urbanized. It is suspected that the volume of stormwater runoff will not be a problem in the near future with the exception of very local damage to unpaved roads. Contamination of surface or groundwater by runoff containing a high concentration of road salt may be a problem in some locations. There is, at present, no information on the nature of any salt contamination problem. Automobile salvage yards, service garages, and auto body shops can pose a threat to water quality, unless precautions are taken to avoid this. In the absence of zoning-defined commercial

⁵ A pH is a measure of the concentration of hydrogen ions. A pH of 7 is neutral, a pH below 7 is acidic and a pH above 7 is alkaline.

⁶ Millers River Watershed 2000 Water Quality Assessment Report.

and industrial land use zones and a Special Permit Process, the Select Board can only address water quality problems posed by these operations in a back-door fashion. The threat to groundwater quality is immediate, and Wendell should not rely on the indirect measures so far available for its protection. The Town's automobile salvage industry presents large challenges, both aesthetically and environmentally. Herbicide spraying along railroad and utility rights-of-way must be monitored to assure the safety of nearby private and public water supplies. Wendell no longer has a municipal landfill. In its place on the same site on New Salem Road, is a recycling and transfer station where all Wendell's waste is collected and sent out to either be recycled or deposited in a landfill. This should cause no local problems with hazardous leachate. However, the previous landfill has never been capped and the possibility of leachate from the old use cannot be ignored. To detect this, should it occur, inspection wells have been installed around the periphery of the old landfill. The Hazardous Waste Coordinator is currently involved in locating and identifying other sources of potential pollution.

C.9 Analysis

Water resources in Wendell are ample. This is an enviable condition in most respects, which Wendell residents can feel some pride in because they have not grown so fast as to remove more water from their aquifers than is currently being recharged. Wendell would appear to have a positive water supply. Unfortunately, acid rain compounds the natural non-buffering characteristics of the bedrock so that many of the Town's fishing places are too acidic for trout. And, unfortunately, the shallow wells are vulnerable to septic failures. This is one reason the Town has a three-acre minimum lot size in their zoning, so that a septic field can safely be separated from a private well. Perhaps in the future, Wendell residents may plan on establishing a public wastewater treatment facility and a public drinking water supply. For now, it may be important for Wendell residents to habitually test their water and check their septic systems.

There are a variety of opportunities for Wendell Residents and town departments to get involved the stewardship the Millers River and other local water bodies. The Millers River Watershed Council, Massachusetts Riverways, and the Massachusetts Water Watch Partnership offer ongoing programs as well as training and support for those interested in volunteering to support local water resources. There are also local stretches of stream and riverbanks that would benefit from inclusion in any local clean-up days.

D. VEGETATION

D.1 General Inventories

There are two fold-out tables in Appendix E which identify and categorize plant species by plant community and habitat type: dry and wet. Within the dry habitat type are found forest and field categories that are broken further into softwood, mixed softwood/hardwood, hardwood, old field and grazed field. The forest types are further defined as white and red pine, pitch pine, hemlock-

northern hardwoods, and oak-hickory. The tables also differentiate between vegetation layers: dominant over-story trees and associated and under-story trees, shrubs and herbs. In addition, a description of the habitat is included. The absence of documented rare and endangered species in dry habitats is curious but not uncommon. Most of the rare or endangered plant species in Massachusetts are associated with wetland habitats.

Within the wet habitat table, plants are separated into forestland and grassland that are broken further into types: bog, swamp and floodplain, marsh, and wet meadow. Again like the dry habitat table, these plant species are also categorized by layer: dominant over-story trees, and associated and under-story trees, and shrubs and herbs. In addition to habitat information, the table differentiates between rare or endangered species that are documented and those that are "associated" in Wendell, i.e., those for which suitable habitat exists.

The Environmental Habitat Map at the end of this section shows Priority Habitat of Rare Species, Biomap2 Core Habitats, and BioMap2 Critical Natural Landscapes identified by the Natural Heritage and Endangered Species Program (NHESP). The Biomap2 data was released in November 2010. In addition, the Environmental Habitat Map shows 1830's woodlands identified by the Harvard Forest in an effort to locate possible Primary Forest Areas.

D.2 Forests

Forest areas are considered the Town of Wendell's most important natural resource. As of 2005, forests comprised 90% of the Town's total land area. Between the years 1999 and 2005, the Town of Wendell experienced a net loss 207 acres of forest land (MassGIS).

Forests provide for many of Wendell's available recreational opportunities including walking, hiking, fishing, skiing, snowshoeing, horseback riding, hunting, snowmobiling, picnicking, and nature study. Access to the forests is primarily from numerous woodland roads throughout the Town, Wendell State Forest, and Whetstone Wood Wildlife Sanctuary.

Forests in Wendell are classified as transition hardwoods-white pine forest (USDA; 1992). Within this forest type, northern hardwoods such as yellow and paper birch (*Betula alleghaniensis* and *Betula papyrifera*), beech (*Fagus grandifolia*), and sugar and red maple (*Acer saccharum* and *Acer rubrum*) are the major species. On the dryer sites, oaks and hickories can be found with red oak (*Quercus rubra*) being the most abundant deciduous species. Hemlock (*Tsuga canadensis*) occurs in the moist cool valleys, north and east slopes, and sides of ravines of Wendell. White pine (*Pinus strobus*) is characteristic of the well-drained sandy sites. The transition hardwood-white pine forest type commonly occurs up to an elevation of 1,500 feet above sea level in upland central Massachusetts and southern New Hampshire, northward through the Connecticut Valley. An interesting minor shrub or small tree on uplands is *Eleagnus commutata*, the Silverberry. The Wendell population likely represents outlying southerly 'vagrants' from the species' main Canadian (Quebec, Ontario) range. Noteworthy is that the plant is one of the few non-legumes able to fix nitrogen in the soil.

The shallow, acidic soil of Wendell supports a fragile system of plants and animals easily degraded by human activity. Tree growth is slow where trees rarely reach a height over 75 feet. Slopes laid bare by the bulldozer stay clear for years with even the toughest annuals and grasses creeping in slowly. Logging and re-logging, with reproduction left to chance and stump sprouts, have left many areas with poor quality forest of low height and less species diversity than in earlier times. Environmental stressors such as air pollution have taken a toll on the forests of Wendell, particularly in the western and southern portion. It remains to be seen whether specimens (not to say populations) of all original indigenous plants still remain in Wendell, with one notable exception, the American chestnut that is only present in Wendell as stump sprouts.

Along the Millers River, in the Town of Wendell, there is an unusual example of floodplain forests (letter from DFW; 2000). Such floodplain forests are known to occur along main stem sections of large rivers and have silver maple (*Acer saccharinum*) strongly dominant in the overstory, with over 60 percent cover, mixed with lesser amounts of cottonwood (*Populus deltoides*). American elm (*Ulmus americana*) and/or slippery elm (*Ulmus rubra*) occur in the sub-canopy. Shrubs are generally lacking in the floodplain forest. The herbaceous layer is usually dominated by a three- to six-foot tall, dense cover of wood-nettles (*Laportea canadensis*), and ostrich fern (*Matteuccia struthiopteris*) is sometimes abundant. Whitegrass (*Leersia virginica*) is consistently represented but in low amounts. Other common associates are wood reed (*Cinna arundinacea*) and jack-in-the-pulpit (*Arisaema triphyllum*). Floodplain forests are insect-rich habitats that attract warblers, thrushes, and other songbirds. Raptors such as bald eagles and red-shouldered hawks also use riverbank trees as perch sites. Wood ducks and hooded mergansers are found along the shady edges of the riverbanks, as are Eastern comma butterflies and several species of dragonflies. Floodplain forests also provide sheltered riverside corridors for deer and migratory songbirds.

Several smaller areas of Wendell's many forests are among those throughout the state identified as possible Primary Forests. Primary forests are not Old Growth, they have been harvested and pastured, but the ground may not have been tilled. Such lands have greater biodiversity than those lands that have been tilled, according to Natural Heritage & Endangered Species Program Ecologist Patricia Swain (NHESP). A statewide map of possible Primary Forests was created after Harvard Forest digitalized maps from the 1830's. NHESP GIS staff took those data and combined them with information from MassGIS' landcover datalayer from 1999 aerial photos. Some of the areas that were forested in both the 1830's and 1999 will never have been tilled. Surveys of soil structures in the individual sites are necessary to determine whether those sites are primary forests. Such untilled areas retain more native biodiversity including soil fauna and flora, microorganism, plants that reproduce primarily vegetatively, and wildflowers. Swain suggests targeting such areas for areas of 1830's on private lands for conservation acquisition to maintain the biodiversity of the town and region.

With assistance from NHESP, the North Quabbin Regional Landscape Partnership produced a map in 2008 showing interior forest blocks in Wendell that are among either the largest 1% or 10% of interior forest blocks statewide. While these forest blocks cover a much larger area than the potential Primary Forests, together they comprise less than a quarter of the Town's forestlands. Large unfragmented forest blocks provide the best opportunities to maintain species and limit species loss from Town, according to Swain. There are four forest blocks in Town that

that are part of the largest 1% of the interior forest blocks statewide. Much of this land is permanently protected, but unprotected parcels scattered each of these areas. These areas are located in the far southwestern and southeastern corners of Town straddling Leverett and Shutesbury, in the northern central area of town south of Farley, and Erving, and along the boundary between Wendell and Orange. The bulk of the approximately 250 acres of Town Forest in the southwestern corner of Town are in that block of forest. Most of the rest of that forest block is managed by the DCR. Much, but not all, of the forest block to the south of Erving and the Millers River is permanently protected by the state. The largest area that is a part of the largest 1% of interior forest blocks that is not permanently protected is along the southern edge of the Town's eastern border. The majority of the lands within the largest 10% of interior forest blocks are permanently protected, but there are patches of unprotected parcels scattered throughout these forest blocks.

EOEEA has held seven "Forest Forums" with 35 leaders of the industry, professional foresters, landowners, and conservation organizations. This group endorsed and is working to achieve five goals for the forests of Massachusetts, according to the *Open Space Planner's Workbook*. These include protecting a base of forests, sustaining the economic viability of our forests, striking a balance between working forests and forest reserves, protecting the health of our forests, and educating key groups about the value of our forests. A variety of resources exist regionally and statewide to assist the Town and local forest landowners in furthering these goals.

NQRLP sponsored a series of Woods Forums in Eastern Franklin County in 2008 designed to help connect woods landowners with each other and foresters to discuss and share information about woodland ownership. Each forum included several neighboring towns and included information on issues such as timber harvesting, natural resource conservation, development of forestland, and the local forest economy. Also in 2008 the NQRLP sponsored a series of Conservation Forums focusing on important unprotected areas including forestland.

Western Massachusetts forest landowners have created the Massachusetts Woodlands Cooperative to foster sustainable forestry via Forest Steward Council "Green Certification" and cooperation on processing and marketing of local products. (www.masswoodlands.com) The state offers several programs related to forest stewardship. A website created by UMass Extension Service for forest landowners that is a clearinghouse of information on Massachusetts forests (www.masswoods.net). The Forest Legacy Program, a USDA Forest Service program offers grants for the acquisition of threatened forest tracts of statewide significance (www.mass.gov/dcr/stewardship/forestry/other). The Forest Stewardship Program, a USDA Forest Service and EOEEA program, offers cost-sharing for the cost of forest management plans and implementing sustainable forestry practices to landowners and municipalities (www.mass.gov/dcr/stewardship/service).

The *Open Space Planner's Workbook* created by EOEEA also recommends that towns reference the *Guide to Chapter 61 for Municipalities* created by the Mount Grace Land Conservation Trust. This document contains a sample town policy for responding to situations in which the Town has an opportunity to exercise the right of first refusal. This sample was used by the Wendell Open Space Committee in finalizing a policy for use by the Town.

Outside of state forests and the more prominent privately protected lands, the remaining forest lands in Wendell fit into a category called non-industrial private forest lands, or NIPF's. A 1998 article in the *Journal of Forestry*, "Ecosystem Management: Capturing the Concept for Woodland Owners" described the results of a survey of Franklin County NIPF owners. The results of the survey included the top five reasons for forest land ownership: privacy, personal use of wood products, aesthetics and beauty, part of residence, and recreation. The survey also provides selective information on a sample of woodland owners: most live less than a mile from the land; 60 percent have owned the land for at least 15 years; 60 percent own less than 50 acres; 62 percent have annual household incomes of less than \$55,000; and 48 percent are over 55 years of age. The main results of the study show that Franklin County NIPF owners may hold attitudes that are favorable towards three concepts of ecosystem management: one's land fits into a larger ecosystem; one's land has smaller parts important to their own property and the larger landscape; and, one's land should be managed for today's uses and for future generations. The results of this study also suggests that Wendell NIPF owners may be open to participating in cooperative conservation measures that would seek to protect natural resources that cross property lines, including drinking water supplies and wildlife.

D.3 Agricultural Land

Agricultural land in Wendell, which includes pasture and croplands, comprises less than two percent (1.25%) of the Town's total land area, and is a rare and valued aspect of the landscape resources in Town. Agricultural land can be found around the Town Center along Wendell Depot Road and Lockes Village Road; in the southern section of Town along Jennison Road, West Street and Locke Hill Road; in the northwestern section along Farley, Davis, and Mormon Hollow Roads; and in the eastern section along New Salem and Jennison Roads. (See the Prime Farmland and Development Restraints Map at the end of this section.) Valued not only for its contribution to the local economy, agricultural land is important in Wendell for its contrast to the predominance of forest land, providing scenic landscapes and open vistas. The Town's open fields also provide sustenance for many species of wildlife including migrating birds. Opportunities for recreational activities on these lands include sledding, snowshoeing, snowmobiling, and cross-country skiing.

Although Wendell's farmlands are not ideal for crop vegetables or turf as are fields in the Connecticut River floodplain, they still provide employment opportunities and incomes for residents and thus should be valued now and for the future. The 1999-2000 Winter issue of *Massachusetts Benchmarks* included an article by Holm, Lass, and Rogers, "The Changing Landscape of Massachusetts Agriculture." According to the study, which relies on Census of Agriculture information, trends in agriculture across the state over the past twenty-five years include decreasing agricultural acreage, decreasing farm size, increasing numbers of farms and increasing profitability. Franklin County, like many counties in the state, lost many of its dairy farms. However, roadside stands, pick-your-own crops, and subscription farms played a major role in increasing profitability of the remaining farms. In sum, farmland in Wendell, comprised mainly of small parcels, is a resource that residents should not allow to disappear.

D.4 Wetland Vegetation

The forested deciduous swamp is the predominant wetland type in the Town of Wendell. These areas are essentially red maple swamps, although in New England, the usual swamp hardwood type is referred to as elm-ash-red maple (*Ulmus americana- Fraxis* spp. -*Acer rubrum*). Black spruce (*Picea mariana*) can also be found. Also common in Wendell are mixed deciduous swamps that include eastern hemlock (*Tsuga canadensis*). Wetland understory shrubs are common in these swamps and can include mountain holly (*Nemopanthus mucronata*), high-bush blueberry (*Vaccinium* sp.), and winterberry (*Ilex verticillata*). Herbaceous vegetation such as sedges (*Carex* spp.), ferns, false hellebore (*Veratrum viride*) and skunk cabbage (*Symphlocarpus*) are also found. (USDA; 1992)

There are a number of shrub-scrub wetlands in Wendell. These include both shrub deciduous swamps and bogs. According to a letter from Massachusetts DFW (2000), Wendell has a good example of a kettle hole level bog in Wendell State Forest. Kettle hole level bogs have vegetation in a ringed zonation pattern. Often, the outer wet moat is dominated by a mixture of high-bush blueberry (*Vaccinium corymbosum*) and swamp azalea (*Rhododendron viscosum*) bordered to the interior by a ring of rhodora (*Rhododendron canadense*). The peat mat has a mixture of tall and short shrubs that are predominantly ericaceous (members of the Heath family). Leatherleaf (*Chamaedaphne calyculata*) is dominant. Other typical ericaceous shrubs include rhodora, sheep laurel (*Kalmia angustifolia*), bog laurel (*Kalmia polifolia*) bog rosemary (*Andromeda polifolia* var. *glaucophylla*), Labrador tea (*Ledum groenlandicum*), and low-growing large and small cranberry (*Vaccinium macrocarpon* and *V.oxycoccus*) occur throughout. Scattered, stunted coniferous trees, primarily tamarack (*Larix laricina*) and black spruce (*Picea mariana*), also occur throughout. A mixture of specialized bog plants grow on the hummocky sphagnum surface, including carnivorous pitcher plants (*Sarracenia purpurea*) and sundews (*Drosera rotundifolia* and *D. intermedia*) (Classification of Mass. Palustrine Natural Communities; 2000).

Emergent marsh wetlands in Wendell occur only in small isolated locations or intermixed with trees in the deeper more permanently flooded portions of swamps. Typical emergent marsh vegetation consists of cattail (*Typha* spp.), burreeds (*Sparganium eurycarpum*), and sedges (*Carex* spp.). Wetland areas in Wendell are popular sites for bird watching and habitat exploration.

D.5 Public Shade Trees

Wendell has a history of protecting public trees. In the 1970s, the Annual Town Meeting passed a bylaw that classified all town roads as scenic. The bylaw requires a hearing with the Tree Warden and Planning Board before cutting or removing any trees for road reconstruction, paving or maintenance. The number of residents who have attended hearings when significant roadside cuts have been proposed shows the town's continuing interest in roadside shade trees. Also in the 1970s, the Annual Town Meeting voted to use a low percentage of road salt for winter sanding of roads, minimizing salt damage to roadside trees.

Shade trees are important landscaping elements at the Town properties in the center of Wendell; the Town Offices property on Morse Village Road; the Common which is surrounded by Morse Village Road, Center Street, Wendell Depot Road, and Lockes Village Road; the Senior Center on Lockes Village Road; the Wendell Free Library on Wendell Depot Road; and the Center Cemetery on Center Street.

At the Town Offices property, the Landscaping Committee appointed by the Selectboard planted and maintains a crabapple tree on the north side of the building. A mature maple tree is located on the south side of the building and a locust was planted to shade the entryway to the building. A row of cedars west of the building was planted as a screen between the Town Office building and the abutting property. Also at the Town Office property, at the Community Garden, one cherry and two pear trees are part of the initial plantings in a half-acre permaculture garden. Additional plantings of fruit trees and nut trees is planned for this permaculture garden. The community garden committee appointed by the selectboard maintains the permaculture garden trees.

The Town Common is divided by Morse Village Road into a north section and a south section. In the north section, a row of crabapples is present along Wendell Depot Road. Mature maples line the perimeter along Center Street. The south section of the common has several oak trees, and maples of various ages. Some of the trees on the north section of the Common appear to need maintenance; there are dead limbs and insect damage. At the Senior Center property, across Lockes Village Road from the Common, there are maples north and east of the building.

At the Wendell Free Library, a tree is located east of the building, and a locust provides on the south side of the building provides shade for the building. At the playground area of the library property, two mature maples and a butternut provide shade. A young tree is located near the ball court.

Wendell has three large wooded town conservation areas where important public trees are located. These are: 1) the Fiske Pond Conservation Area; 2) the Montague Road Town Forest/Conservation Area; and 3) the Phelps Forest Conservation Area. There are also two smaller conservation areas to the north and south of Farley Road. The Fiske Pond Conservation Area and its vegetation are discussed below in Section F.1.2, Special Ponds.

The Montague Road Town Forest/Conservation Area consists of 144 wooded acres, predominantly oak and mountain laurel. A portion of this conservation area was deeded to the town by J.W.H. Phelps in 1888 for the purpose of supporting Wendell schools through wood and timber harvesting. This property is maintained by the Conservation Commission under a stewardship plan to protect wildlife habitat and improve timber growth for future generations. According to the 2006 forester's report, the trees on this property will take 35 to 65 years to reach harvesting maturity. Actions recommended in the plan include clarification of ownership and boundaries, developing habitat protection guidelines, conducting an initial demonstration thinning, and documenting vernal pool usage. The Wendell Open Space Committee has begun to implement the recommendations in this report. The largest vernal pool on the property was certified in 2008 and the initial demonstration thinning was completed in early 2009.

The three other lots that were also part of the 1888 Phelps deed to the town have also been designated as conservation land with the directive that proceeds from the wood and timber be used to support local schools. There is a landlocked 17.5-acre parcel north of Farley Road (tax Map 407, Lot 48), a parcel of approximately 39 acres south of Farley Road (tax Map 407, Lot 38.10), and a landlocked parcel of approximately 37 acres near Old Egypt Road (tax Map 401, Lot 17.2). The types of trees found at each lot are described in the forester's report prepared by Michael Mauri in 2008 for the Wendell Open Space Committee. These descriptions are summarized below.

- The 17.5-acre parcel north of Farley Road consists of maturing upland oak (red oak) with abundant beech and red maple and less black cherry and paper birch, with a hemlock and hardwood swamp mix with limited black gum.
- The 39-acre parcel south of Farley Road is a tall dense closed canopy forest with the exception of a small area of shrub swamp (blueberry swamp) and one interior shrub swamp/probable vernal pool. Forest types are either nearly pure mixed hardwoods or hemlock and hemlock-hardwood mixes. The hardwood portions include are area of sugar maple and ash, one area of oak, beech and red maple, and areas of red maple beech and birches.
- The 37-acre parcel off Old Egypt Road is predominantly a maturing red oak forest, probably dating to approximately 1900-1920. Other hardwoods mixed in the overstory are white oak, black oak, beech, red maple, paper birch, black birch and beech. Pine is not common at all.

The management recommendation presented in the 2008 forester's report for the 17.5-acre parcel north of Farley Road includes a focus on protecting an oak and beech knoll and the hemlock hardwood swamp and non-harvest cutting in the hemlock hardwood swamp to create small openings to regenerate hardwoods. The management recommendation presented for the 39-acre parcel south of Farley Road is a "selection system" in which no-cut areas and species that should not be reduced in abundance are identified. Trees would be selected for harvest either singly or in groups, thinning around the crowns of desirable trees. The selection system would remove firewood and limited hemlock.

The management recommendation presented in the forester's report for the 37-acre parcel off Old Egypt Road is to consider this parcel as a unit with other contiguous Town-owned land and develop a management plan for the entire area. Firewood thinning is recommended to create more space around the crowns of established oaks. Based on these recommendations the two lots adjoining the 37-acre lot were also designated as conservation land in 2008 to create the 126 acre Phelps Conservation Area.

D.6 Rare, Threatened and Endangered Plant Species

The Natural Heritage and Endangered Species Program, a program of the Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement, identified 259 native

plant species as rare in the Commonwealth. The Massachusetts Natural Heritage and Endangered Species Program has documented two vascular plants in the Town of Wendell as threatened

The Adders's-tongue Fern (*Ophioglossum vulgatum L.*) is a small terrestrial fern up to twelve (12) inches high, consisting of a single fleshy green stalk (stipe) bearing a simple leaf and fertile spike. No other fern looks like the Adder's-tongue. The plant appears anytime after early June. The Adder's-tongue is found in boggy meadows, acidic fens, borders of marshes, wet fields, and moist woodland clearings providing suitable open and sunny habitat. It was once a widespread species in Massachusetts during the century of extensive agricultural clearing. There are only eight known occurrences in the state; however, it is possible that undiscovered populations exist in Massachusetts, but the increasing rarity of appropriate open habitat appears to be a major factor in its decline.

The Pale Green Orchid (*Platanthera flava var. herbiola*) is a leafy, single-stemmed terrestrial orchid, six to twenty-four inches tall, growing from fleshy, tuber-like roots that spread slowly into small clumps or colonies. Flowering normally occurs from mid-June through mid-July. This orchid grows in swamps, floodplain forests, and more open habitats and requires full or partial sun. Forest succession of its open habitats and continued urbanization are thought to be a major cause for its decline.

Both Adder's-tongue Fern and Pale Green Orchid were more common when pastures and open fields were more abundant, and now tend to be found in places where there are periodic disturbances that keep the land open. Neither of these species has been reported in Wendell since the 1930's. The Mountain Wood-fern, on the NHESP Watch List, is a species of cool moist woods, usually with acidic soils—not an unusual habitat in Wendell.

D.7 Invasive Species & Introduced Pests

The Massachusetts Invasive Plant Advisory Group, (MIPAG) a collaborative effort of state and federal government agencies and private organizations that serves the Commonwealth in an advisory capacity, defines invasive plants as “*non-native species that have spread into native or minimally managed plant systems in Massachusetts. These plants cause economic and environmental harm by developing self sustaining populations and becoming dominant and or disruptive to those systems.*” Invasive plants can impact the Massachusetts environment by competing with native plants for natural resources, dominating habitats and reducing food and shelter for native wildlife, according to *A Guide for Invasive Plants in Massachusetts*, a 2006 guide by members of MIPAG. Invasive plants can also eliminate the host plants of beneficial resident native insects and compete with native plants for pollinators. At times this can cause biologically diverse forests, wetlands and meadows to be dominated by one of several non-native invaders.

Many invasive plants that can be found in neighboring towns and in the valley have not made their way up to Wendell, according to Paul Godfrey, retired professor of Botany at UMass. This is especially true of aquatic plants. This has occurred because invasive aquatic plants in the

lakes and pond in nearby towns including Lake Wyola and Leverett Pond towns spread primarily by the trailers that are used for motor boats which are commonly used in nearby towns, but not in local ponds. While Wendell has fewer problem species than many neighboring towns, several invasive plants have become problematic locally over the last decade. Several of these plants including the shrub Glossy Buckthorn (*Frangula alnus*) tend to move into newly cleared areas, such as the area of town North of Montague Road that were disrupted by the tornado in 2007. Godfrey said that glossy buckthorn, which has been moving into both the forests that were cleared by the tornado and heavily logged sections of state lands, grows in dense stands that block the light for hardwood seedlings as well as other forest plants. These newly open areas can serve as pathways for the plant, which must be manually removed, to spread through town. Some other invasive plants that Godfrey and his wife Melinda have noticed settling into locations in Wendell include: Japanese Barberry (*Berberis thunbergii*), Oriental Bittersweet (*Celastrus orbiculatus*), and Multiflora Rose (*Rosa multiflora*). The Conservation Commission is also concerned about the spread in local wetlands of the Common Reed (*Phragmites australis*), a clonal grass species which can grow up to six meters in height in dense stands, and the Mile-a-Minute Vine (*Persicaria perfoliata*), an herbaceous annual trailing vine.

Japanese Knotweed (*Polygonum cuspidatum*), an upright perennial herb, has also become a problem in Wendell over the last decade. This plant, grows to ten feet tall with bamboo-like stems, large heart shaped green leaves, and white flowers. It is often found near water sources, along streams and roadsides and once established it is very difficult to eradicate and can regenerate from a small piece of root. It suppressed the growth of native plants and in the process and degrades wildlife habitat. The Deerfield River Watershed Council has been working to eradicate this plant in their watershed and produced a fact sheet on Knotweed including methods for controlling it without the use of herbicides (www.deerfieldriver.org/invasives). Some strategies include pulling for small patches, repeated mowing, cover with black plastic for an entire growing season. Grazing livestock may help to control the plant from spreading, but will not eradicate it. Proper disposal of plants that have cut is critical to prevent further infestations. They must either be buried ten feet deep or dried out completely and composted or burned.

Information on managing other invasive species can be found online at www.invasivespecies.net. The website for the National Invasive Species Information Center at www.invasivespeciesinfo.gov/unitedstates/ma/shmtl is a clearinghouse for information on the general topic. The Massachusetts Introduced Pests Outreach Project is a collaboration between the Massachusetts Department of Agricultural Resources and UMass Extension Agriculture and Landscape Program aimed at increasing awareness about introduced pests among professionals in agriculture, horticulture, and government. Their website (www.massrcn.org/pests) has fact sheets on pests including, insects, weeds, diseases affecting vegetables, flowers, fruits, landscaping, forestry and natural areas and offers pest alerts.

A pest of special concern since 2008 is the Asian longhorned beetle, a destructive wood boring pest of Maple, Birch, Willow, Polar, and other hardwood trees. State officials have been on alert for this pest, especially since the first sighting of this beetle in Massachusetts in Worcester in August 2008. The larva of this shiny black beetle with white spots damage the tree by eating away at the outer sapwood creating hollowed out sections in the wood. The beetles drill ½ inch

round holes in trees and large amounts of coarse sawdust. Residents are encouraged to capture any beetles, freeze them to kill them, and contact state forest officials immediately. The Asian longhorned beetle was first discovered in the United States in 1996 in Brooklyn, New York in 1996 and has since been seen in several counties in New York and New Jersey, and even as far away as Chicago and Toronto. Some of these counties have since been declared free of this pest, according to a North American Plant Protection Organization's pest alert report (www.pestalert.org).

D.8 Analysis

Plants and animals are the visible 'citizens' of the ecosystems in Wendell. Plants convert solar energy into food. This food supports all animal life. Plants cycle energy through the ecosystem by decaying, by removing carbon, and by releasing oxygen. Plants help moderate temperatures. Plants act as shelter and as feeding surfaces for herbivores, omnivores, and carnivores.

It is easy to take plants for granted because they are the backdrop for our daily activities. Fields, a maintained stage of human-caused vegetation, are rare in Wendell and thus valued. Forests on the other hand are plentiful and may appear as common. However, everything that is discussed in this Open Space and Recreation Plan points to the importance of forests: they protect aquifers, first and second order streams, and edge and interior habitats; they clean the air and cleanse the water; and, they can provide us with materials, food, and medicines to support our human community. Forests of all types and habitats, densities, ages, and sizes are what would predominate in our absence.

Information contained in several MassGIS data layers produced in recent years can assist the Town and the Wendell Open Space Committee in further identifying areas of forest that warrant special consideration as high protection priorities (see the Environmental Habitat Map at the end of this section). These data layers include Possible Primary Forests, Interior Forest Blocks that are among the largest 1% and 10% forest blocks statewide. (These data layers are shown on the Protected Open Space Map at the end of Section 5.) Further study of soils in the 1830's forests would be helpful in positively identify possible Primary Forests. The Town can take steps to protect these special forests by determining which sections of these areas remain unprotected at a parcel level and noting which of these parcels are currently under Chapter 61, as well as participating in regional efforts to coordinate sustainable management of local forestlands. Further study on the ground will be needed in order to access which areas of Potential Primary Forests have actually not been tilled over the years. Indicators such as the presence of stone walls suggest that land has been tilled according to Wendell resident David Richard who is a Managing Forester for Bureau of Fire Control and Forestry of DCR. Finally soil samples can be collected from sites that appear to be primary forests and analyzed to determine if they are indeed from primary forests.

Agricultural land and especially land containing prime agricultural soils is very limited in Wendell at present and serves many vital roles including contributing to the local economy, providing scenic landscapes and opportunities for recreation, and providing sustenance to Wendell's human and non-human residents. Thus preserving our agriculture lands and open

fields is among the Town's most vital preservation priorities. As with forest lands the Town can make use of the GIS layers on the Maps included in this plan to identify unprotected parcels of agricultural land and those with temporary protection under Chapter 61 while developing a parcel level list of protection priorities. The amendments to the Town's Zoning Bylaws that are currently being crafted are designed assist in protecting both the Town's agricultural lands and its forests from intrusive developments. Town officials may wish to consider additional measures to protect our farmlands and prime agricultural soils.

Several invasive plant species have been occurring in increasing numbers in Town in recent years. Any attempts at effective containment of the spread of invasive species locally will depend on the ability of the WOSC and other local boards and committees to effectively educate local officials, highway department employees, and residents about these species and recommended management strategies. The same can be said regarding any introduced pests such as insects or diseases that may impact Wendell's forests and other local vegetation in coming years; effective public education will be essential to efforts to mitigate the impacts of such problems.

E. WILDLIFE

E.1 General Description and Inventory of Wildlife and Wildlife Habitats

A table entitled Wildlife Habitats: Representative Wildlife Species of Western Massachusetts is located in Appendix E and categorizes species by habitat type: woodland, open land, open water, and wetland. The table includes insects, fish, reptiles, amphibians, birds, and mammals. Rare and endangered species include both documented and associated species.

E.2 Vernal Pools

Vernal pools are small depressions that fill with water from snowmelt, spring rains, and high ground water in the spring. They are critical breeding areas supporting several species of wildlife totally dependent on the vernal pool habitat for their survival. These species include frogs, salamanders, and invertebrates. Vernal pools are also valuable for their role in water management as well as their habitat values. The Town of Wendell has seven certified vernal pools; many more await certification. Two certified vernal pools are located off Locke Hill Road northeast of South Cemetery and two are located off New Salem Road, one in the area near the power lines and one in the area of the intersection with Jennison Road. Two are located south of New Salem Road and east of Rush Place Road. The seventh is located in the Town Forest near Montague Road. (See the Water Resources Map at the end of this section.) The Wendell Wetlands Bylaws protect all vernal pools.

An additional twenty-six potential vernal pools have been identified from aerial photographs and are available as a GIS layer. These sites need verification on the ground. There are several clusters of potential vernal pools that provide extra habitat value for the species that use them as

each pool is somewhat different and provides alternate habitats in different years and seasons. It has been suggested that clusters of vernal pools that are located on “1830’s forests” are especially good areas for protection. (NHESP, letter)

E.3 Corridors for Wildlife Migration

Individuals of wildlife and fisheries populations move within a landscape. Why, when, and where wildlife and fish species move is not completely understood by wildlife biologists. What can be said with certainty is that given a mostly undeveloped landscape, animals do not pay attention to political boundaries. What can be also said with certainty is that in a developing landscape, wildlife seek natural cover for shelter and food, but willingly forage where human uses, such as horticultural and ornamental plantings, provide browse or food. As the land within the Town of Wendell continues to be developed, the remaining remote large blocks of forest land, and the parcels of land connecting them together, will become more important to area wildlife.

Wendell is located within several regional belts of protected open space that contribute to the value of the already protected land in Town. The Quabbin Reservoir Wilderness protected from development by the DCR, other state agencies and private land trusts, is a source of wildlife for surrounding communities. It is probable that wildlife moves from and into the Quabbin area by way of sparsely or undeveloped open space, crossing roads when necessary. Roads are a form of connection for humans but they are an impediment to wildlife movement. In addition, they also reduce the size of wildlife species populations through road kills. Roads are also barriers for such forest interior species as the Scarlet Tanager.

Connections between bodies of water and sub-watersheds are also important for wildlife and fisheries species. The more common animals that utilize the river and stream corridors are beaver, muskrat, raccoon, green heron, kingfisher, bittern, snapping turtle, and many species of duck, amphibians, and fish (Millers River Advisory Board; 1983). Since many species rely on a variety of habitats during different periods of their life cycle, species diversity is greatest in areas where several habitat types occur in close proximity to each other. With this in mind, the protection of all habitat types is vital for maintaining and enhancing biodiversity in Wendell.

How do we determine the quality of the wildlife habitat in Wendell and the most appropriate conservation strategies? There are three general paths to follow in conserving the health of wildlife populations. One way is to protect the habitat of specific species that are rare, threatened, or endangered. It is thought that while protecting their habitats other species will also benefit. A second path is to conserve certain landscape level resources like a large contiguous forest or riparian habitats along rivers. This helps to conserve the habitats of a large number of species but it might lose sight of some rare and endangered species. The third method is a combination of the two. Conserving the long-term biodiversity of the management area requires efforts to protect unique habitats, networks of habitats that assist population dynamics, and landscape level resources like large contiguous forest patches and riparian areas.

NHESP has produced a number of maps and GIS data layers to assist in the process of identifying each of these approaches to habitat conservation. In addition to maps identifying the largest tracts of forest lands, the BioMap2⁷ and Living Waters cores were produced by NHESP to identify the areas of most importance for biodiversity, based on known locations of rare species and uncommon natural communities, and incorporate the habitats needed for such species maintain their local populations. These maps were produced for conservation planning purposes, unlike Priority and Estimated Habitats that are regulatory maps used by the Conservation Commission. The BioMap2 focuses on upland and wetland species, and Living Waters focuses on aquatic species. There are several BioMap2 core habitats in Wendell. The large BioMap2 core around the Quabbin, which is a very important area for biodiversity protection, extends into parts of southeastern Wendell. Whetstone Brook and part of Mormon Hollow are core areas of importance to cold water fisheries. Other local core habitats include the Kettle Hole Level Bogs and Acidic Cliff Communities. (See the Environmental Habitat Map at the end of this section.)

Recognizing the general areas where wildlife mate, feed, and travel is often a first step in conserving the health of wildlife habitats. Large, round forest patches of more than 185 acres provide interior forest habitats for a variety of birds and mammals, as well as protection of first and second order stream tributaries (Formann; 1995). Networks or greenways of protected forestland or vegetated riparian corridors are resources that will help to sustain populations of animals that require diverse habitats over time and space. There is a great degree of forestland that is permanently protected, stretching from Warwick through the eastern half of Erving, to Wendell, Shutesbury, and New Salem. Wendell's sparsely populated terrain contributes to the wildlife value offered by permanently protected forestland.

The Town of Wendell therefore has the potential for sustaining wildlife species that require interior forest habitat. Wildlife biologists consider the areas traversed by roadways to be fragmented and therefore to be removed from consideration as interior forest habitat. Large forest patches should be maintained with connecting greenways to the riparian corridors of streams and rivers. Protecting large forest patches also will help to protect the first and second order streams that feed the Millers River. This is especially relevant for Osgood, Mormon Hollow, and Whetstone Brooks, the most promising recharge areas for Wendell's potential drinking water supply wells.

The Connecticut and Millers Rivers play a dual role for the region's wildlife. Riparian corridors often contain a greater degree of species diversity than any other portion of the landscape. The rivers also serve as important regional migration corridors. In 1996 the Conte Refuge sponsored a survey of migratory birds along the Connecticut River that revealed that 133 species, mostly woodland species, use the riverside habitat as a migratory corridor (Silvio O. Conte National Fish and Wildlife Refuge; 1997). The Natural Heritage and Endangered Species Program considers the riparian areas along the Millers and Connecticut Rivers as critical habitats for endangered, rare, threatened species, or those of special concern. Finally the rivers provide habitat for native freshwater fish as well as anadromous fish species.

⁷ Natural Heritage & Endangered Species Program (NHESP) and The Nature Conservancy, *Biomap2: Conserving the Biodiversity of Massachusetts in a Changing World*, November 2010. Data layers provided by NHESP.

Forests have always been known to play an important role in providing habitat for many plant and wildlife species. Throughout the 1970s and mid-1980s, it was commonly thought that New England forests lacked the diversity of stand age classes that existed in the earlier part of the century due to the presence of many old fields. One of the ways used to create more acres of young forest was by clear cutting trees in small patches throughout a woodland. Foresters considered this to be a choice treatment for producing early successional habitats within a managed woodland. Periodic heavy logging of forestland can also create early successional habitats.

The Massachusetts Division of Fisheries and Wildlife (DFW) uses a percentage of the income derived from hunting and fishing licenses for the purchase of wildlife habitat and important research into wildlife management. On some of their properties the DFW reclaims old fields with large brush cutting machinery for the purpose of creating habitats for wildlife that require young tree and shrub communities common to early successional landscapes. The species that inhabit these early successional landscapes include common game species targeted by hunters: ruffed grouse, whitetail deer, rabbit, and pheasant.

Beginning in the late 1980s, new information highlighted the importance, and relative scarcity, of interior forest habitats. Combined with a growing awareness of the indirect negative impacts of forest fragmentation from development, large forest blocks began to rise in importance in the eyes of the forest conservation community. Hence, there was a shift in attention away from the patch cut as the ideal wildlife habitat treatment for all occasions. It was replaced with the goal of protecting large blocks of contiguous forest.

NHESP encourages protection of large contiguous forest blocks and coordinated efforts between communities as the best opportunities to maintain populations of species and limit species loss from Town. Even with so much of Wendell being in the Wendell State Forest and the Audubon Sanctuary, there are fragments that if connected to other pieces would provide better habitat, according to Swain.

Wildlands and Woodlands: A Vision for the Forests of Massachusetts published by Harvard Forest in 2005 and updated in 2010 advocates a balance of both wildland reserves and managed woodlands. They suggest that wildland reserves should be large areas of 5,000 to 50,000 acres situated primarily on existing public lands selected to protect landscape level patterns, biodiversity, water supplies, old growth forests, opportunities for scientific study, as well as educational, recreational, and spiritual experiences. It suggest that a much larger area of managed woodlands can support the biodiversity of the wildlands, enable sustainable resource production, support life sustaining ecosystems such as productive soils, clean air, or flood control, as well as opportunities for education, recreation, and spiritual experience. Ongoing regional conservation efforts through forums such as the NQRLP have incorporated and continue to build on these ideas.

Careful timber harvesting as part of a forest management plan can provide a landowner with periodic income with the least amount of damage to the residual stand. Harvesting the best trees and leaving the rest without concern for future generations of trees within a stand is termed 'high grading'. It is in effect worse than clear cutting in some ways because the trees that are left to

help create the next generation are often inferior in form and health. On a small scale this practice may be considered as very damaging to the forest and wildlife. However, on a landscape scale, infrequent, poor forest harvesting practices may simply increase the diversity of forest conditions across tens of thousands of acres.

Residents with an interest in enhancing wildlife habitat on their property may wish to consult the *Landowner's Guide to Wildlife Habitat: Forest Management for the New England* at the recommendation of Wendell resident David Richard who is a managing forester for DCR. The authors, who include four U.S. Forest Service wildlife experts from Amherst and Durham NH, describe the book as “a ‘how to guide’ to forest wildlife habitat enhancement for private forest landowners and managers whose goals are primarily concerned with the non timber values of their land.” The authors stress the importance of early successional habitat to many species of wildlife and note that “for the first time since European settlement, early successional species are declining across eastern North America, and especially in New England.” They recommend enhancement of early successional habitats near cropland, old fields, orchards, and other open places and offer detailed information on the food values of a variety of plants.

It is impossible to predict how different habitats and vegetation types will shift across the landscape over time. Wendell is part of a much larger region with the Quabbin Reservoir being a significant part. Overall it is probably less important to be concerned with the landscape-level impact of forest cutting, than with how development fragments the edges of the Town's significant contiguous forests. If timber harvesting were very common throughout the region, but infrequently seen in Wendell, there would likely be a diverse range of immature and mature forests of various species, compositions, and ages, while the Town's forests would be more homogenous. However, if the opposite were true, the lack in forest stand diversity across the landscape would ultimately impact the numbers, variety, and species of the wildlife that are found in Wendell. Of course, changes to a forest's structure, age, and species composition occur through natural disturbances like hurricanes, ice storms, and fires.

The Connecticut and Millers Rivers have native freshwater fisheries and are being stocked with Atlantic salmon. American shad, blue-black herring, and shortnose sturgeon spawn within the local stretch of the Connecticut River. Historically, the Millers River has supported natural populations of salmon and trout, but due to the contamination by industrial and domestic wastes throughout this past century, the cold-water fisheries were eliminated in the lower stretches of the river (Millers River Advisory Board; 1983). Within the past few years Atlantic salmon restoration work has been accomplished each spring in the Millers River, and trout are stocked in various water bodies throughout the watershed (Department of Environmental Protection; Rojko personal communication; 2000).

The Massachusetts Division of Fisheries and Wildlife stocks a variety of trout species (non-native rainbow, eastern brook, and brown) for sport fishing in the Connecticut and Millers Rivers. Resident fish species in the Connecticut River include walleye, channel catfish, northern pike, small and largemouth bass, and pickerel.

Anadromous fish species (fish that are born in freshwater, migrate to salt water where they mature, and then return to freshwater to spawn) include striped bass, sea lamprey, blue-black

herring, American shad, Atlantic salmon and shortnose sturgeon. The river also contains a catadromous species of fish (fish that live in freshwater but return to saltwater to spawn), the American eel. The Silvio O. Conte National Fish and Wildlife Refuge and Connecticut River Atlantic Salmon Restoration Commission, both part of the US Fish and Wildlife Service, and nonprofit organizations like the Connecticut River Watershed Council and The Nature Conservancy are working to restore migratory fish to the Connecticut River and its tributaries.

Unfortunately dams on the Connecticut River and its tributaries threaten many species, especially Atlantic salmon, blue-black herring, and American shad by blocking fish passage and altering natural flows. During spawning season fluctuating water releases sweep away fish eggs and larvae. Dams also have a detrimental effect on young fish and place stress on older fish that must constantly alter their feeding and resting areas due to habitat changes resulting from fluctuating flows. Fish may be killed by turbines or stranded in isolated pools when high flow releases recede.

The construction of fishways at key points on the Connecticut River has reduced some of the harmful effects of dams. Regular stocking has led to marginal populations of Atlantic salmon and increased populations of American shad. Lamprey eel numbers have also increased significantly which indicates improving water quality throughout the Connecticut River watershed and more efficient fish passage installations (Franklin County Planning Department; 1990). Fisheries in the Massachusetts portion of the Connecticut River watershed are also threatened by sedimentation, erosion, toxicity, bacterial contamination, elevated stream temperatures, bioaccumulation, and low flow due to damming for hydroelectric operations (Connecticut River Forum; 1998).

E.4 Rare, Threatened and Endangered Species

There are several Priority Habitat areas in the Town of Wendell that are important to the conservation of a variety common and rare species. Priority Habitat is based on the known geographical extent of habitat for all state-listed rare species, both plants and animals, and is codified under MESA. Estimated Habitats are a sub-set of the Priority Habitats and are based on the geographical extent of habitat of state-listed rare wetlands wildlife and is codified under the Wetlands Protection Act, which does not protect plants.⁸ These Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife are located in Wendell State Forest, a roughly circular area of 3/8 miles radius from the intersection of Damon Camp Road and Laurel Drive; land all along Whetstone Brook; and along the Millers River in the Town of Wendell. According to the Mass. Division of Fisheries and Wildlife, most of the known rare species in the Town of Wendell are wetland species. Turtles, salamanders, and freshwater mussels are among a variety of species that can be found in both the Millers River and its tributary, Whetstone Brook. Marshes along the backwaters of both rivers support many other species. Also, Wendell State Forest has bogs that provide habitat for several rare species.

⁸ Department of Fish & Game, Mass Wildlife, Division of Fisheries & Wildlife, Natural Heritage and Endangered Species Website.

Several beaver ponds in the Town support colonies of Great Blue Herons, the largest member of the heron family. This wading bird may grow to four feet tall and has a wingspan of five and one half to seven feet. Although Great Blue Herons are considered secure and are no longer listed as rare and endangered, the rookeries of heron are tracked by the Division of Fish and Wildlife and are considered good environmental indicators. In Massachusetts, typical nesting areas for herons are beaver meadows and sites where beaver activity has flooded the area and created dead tree stands. In Wendell, rookeries are located in Whetstone Wood Wildlife Sanctuary and in a swamp along Mormon Hollow Brook (southeast of Perry Farm Road), but it is not expected they will always have herons, since the colonies move as the dead trees in which they nest decay and fall. Within the last thirty years, the reintroduction and restoration of beaver populations, accompanied by commensurate increases in the habitat they create, resulted in favorable conditions for the growth of the Great Blue Heron populations.

The Water Shrew (*Sorex palustris*), a Species of Special Concern that is rarely observed in the state was last sighted in Wendell in 2001. The water shrew is the largest long-haired shrew in New England. It measures 5.7-6.6 inches in length, with its long tail accounting for more than half of its total length. The unique feature of the Water Shrew is its big “feathered” hind foot. The third and fourth toes of the Water Shrew are slightly webbed, and all toes, as well as the foot itself, have stiff hairs along the sides. These animals show slight seasonal color variations. In winter it is glossy grey black above tipped with silver and silvery buff below. In summer its fur is more brownish above and slightly paler below, with less of a frosted appearance. The spring molt occurs during late May and early June.

This species is especially adapted for semi-aquatic life. Along with its large webbed hind feet, its fur or pelage is so dense that it is nearly impenetrable to water and traps air bubbles that shed wetness and enhance buoyancy. This trapped air also allows the Water Shrew to exhibit “water-walking” behavior. The Water Shrew is seldom found more than a few yards from water and prefers to be near heavily wooded areas. It may be found near beaver lodges and muskrat houses in winter. Because its reclusive habits make it difficult to encounter by chance, little is known about its actual distribution and abundance in the state. Between the years 1978 and 1994 there were only five sightings of the Water Shrew in the state at four locations including New Salem.

There are many threats to the Water Shrew such as fragmentation of their habitat, which leaves little opportunity for their movement, even in relatively small areas. Warming and siltation of headwater streams that result from logging, clearing for agriculture, and road building; acid rain, and potentially the introduction of new predators such as small-mouth and large-mouth bass.

The Triangle Floater (*Alasmidonta undulata*), a Species of Special Concern, was last observed in Wendell in 1997. The shell of this freshwater mussel is inflated with umbos extending well above the hinge line. A tightly curved ventral margin makes the length to height ratio roughly equal. The periostracum may be yellow to golden brown with rays, turning dark brown or black with age. There is one chunky pseudocardinal tooth in the right valve, two in the left valve. The lateral teeth are vestigial. Nacre color is bluish-white with an occasional salmon or pink wash. This species demonstrates no particular habitat preference across its range, having been collected from silt/sand in slower moving waters, gravel/sand in riffles and runs, and from crevices in bedrock. The triangle floater may be found gravid throughout the year.

The New England Bluet Damselfly (*Enallagma laterale*), a Species of Special Concern seen in Wendell in 2002, is a small semi-aquatic insect in the order Odonata, suborder Zygopt (the damselflies) and in the family Coenagrionidae (pond damsels). Like most damselflies, New England Bluets have large blue eyes on the side of the head, short antennae, and four heavily veined wings that are held folded together over the back. The New England Bluet averages just over an inch in length and have blue abdominal segments with black markings on some segments. They have been found in a variety of lentic habitats, including swampy open water in north-central Massachusetts, though they are most common at coastal plains. Natural upland habitats near ponds are important for them as like many damselflies, they spend several days or more away from the water maturing. The major threat to the New England Bluet is likely destruction of its breeding habitat from construction, or run-off from roads and sewerage.

The Spine-Crowned Clubtail (*Gomphus abbreviatus*), listed as Endangered by the state, are large, semi-aquatic insect that were seen in Wendell in 2005. They are members of the family Gomphidae, a large diverse group of dragonflies. Clubtails are named for a lateral swelling at the tip of the abdomen that produces a club-like appearance. Club tails are further distinguished from other dragonflies by their widely separated eyes and wing venation characteristics, and behavior. Spine-Crown Clubtails are dark brown/black dragonflies with pale to bright yellow markings on the body and green eyes. Adult Spine-Crowned Clubtails range in length from 1.3 to 1.4 inches with a wing span averaging 2.6 inches. They inhabit large streams and rivers with silty and sandy bottoms. The nymphs are aquatic, burrowing just under the sediment in the river bottom, and the adults inhabit the riparian areas, forested uplands, and fields. Thus upland border of the river systems are crucial to their well being as they are critical for feeding, resting, and maturation. They are imperiled by the wakes of high speed watercraft, but low-level recreational use such as canoes likely has little impact on their populations.

The Arrow Clubtail Dragonfly (*Stylurus spiniceps*) is a Threatened Species that was also sighted in Wendell in 2005. Also a member of the Clubtails The Arrow Clubtail is in the genus *Stylurus*, the so-called “hanging clubtails”, a group characterized by having moderately flared clubs and relatively short legs. They typically perch high in tree tops on the upper surface of the leaves, in a vertical position. Arrow Clubtails are brownish with pale yellow to green markings on the body and bright green eyes. They range in length from 2.1 to 2.55 inches with a wingspan averaging about 2.75 inches in length. They are elusive and little is known about their life history. The aquatic nymphs spend at least a year, probably more, maturing, undergoing several molts during this period. Soon after they cast off their skins and emerge as adults, they wings harden and they fly off to seek refuge of adjacent uplands.

Several species occurring in Wendell have been delisted since the Wendell Open Space and Recreation Plan was last updated in 2002. The Spotted Turtle (*Clemmys guttata*), the Spring Salamander (*Gyrinophilus p. porphyriticus*), and the Four-toed Salamander (*Hemidactylium scutatum*), have been determined to be more abundant and better protected than they were previously thought to be, according to Swain. All of these species are found in wetlands.

The Spotted Turtle, known to occur in Wendell, was once one of the most common turtles in Massachusetts. The spotted turtle is a member of the largest turtle family, (Emydidae). It is a relatively small turtle (three to five inches). It gets its name from the bright yellow circular spots

that dot its smooth, black carapace (upper shell). Spotted turtles inhabit a variety of wetland habitats in Massachusetts, including forested and non-forested types. They dwell in marshy meadows, bogs, small ponds and brooks, ditches, and other shallow unpolluted bodies of water. They are also found in Red Maple and Atlantic White Cedar Swamps and woodland vernal pools. The greatest threat to the spotted turtle is development and habitat fragmentation. Increased residential development, construction of new roads, alteration of wetlands, and destruction of upland habitats all severely impact the spotted turtle. Protecting wetland, upland corridors between wetlands and potential nesting areas are vital to the continued existence of this reptile.

The Northern Spring Salamander, sometimes called the Purple Salamander, it is the largest of the lungless salamanders in New England. The adult length is five to eight inches (5-8 in.). The habitat of the Northern Spring Salamander is clear, cold, alkaline or slightly acidic waters of springs, streams and lakes, and logs or stones under which to hide. It will not survive in warm or muddy waters or in streams that have been polluted by commercial wastes. The principal threat of the Northern spring salamander is degradation of its cold-water habitats. Road and agricultural run-off and siltation from construction and logging must be discouraged. Erosion into streams that would bury rocks, logs, etc., that provide cover should also be avoided as well as timber harvesting in known habitats, due to increased sunlight causing thermal pollution of needed cold water habitat.

The Four-toed Salamander, known to occur in Wendell, is the smallest salamander found in Massachusetts and is easily identified by three distinctive characteristics. As its name implies, this salamander has only four toes on the hind feet. It also has a very distinct constriction at the base of its tail and its belly resembles bright white enamel speckled with black. The females range in length from 2.8 to 3.5 inches, whereas the males are slightly smaller (2-3 inches). The breeding habitat of the four-toed salamander in Massachusetts is in bogs, swamps dominated by red maple and Atlantic White Cedar, vernal pools, and perennial wetlands with sphagnum moss. As a result of their preference for wetlands dominated by sphagnum, they are quite tolerant of acidic conditions. The greatest threat to the four-toed salamander is habitat destruction resulting from road construction, development, and timber harvesting in and around boggy wetlands, peatlands, and forested wetlands. Given its preference for nesting sites in bogs with sphagnum moss, every effort must be made to protect the natural state of the bog areas throughout the state.

Table 4-6: Rare Wildlife Species Found in the Town of Wendell

Common Name	Taxonomic Group	Scientific Name	MESA Status	Federal Status
Adder's-tongue Fern	Vascular Plant	<i>Ophioglossum pusillum</i>	T	1931
New England Bluet	Dragonfly/Damselfly	<i>Enallagma laterale</i>	SC	2008
Pale Green Orchis	Vascular Plant	<i>Platanthera flava var. herbiola</i>	T	1936
Spine-crowned	Dragonfly/Damselfly	<i>Gomphus abbreviatus Clubtail</i>	E	2004
Triangle Floater	Mussel	<i>Alasmidonta undulata</i>	SC	1997
Water Shrew	Mammal	<i>Sorex palustris</i>	SC	2001

Source: Division of Fisheries and Wildlife; 2010.

E.5 Analysis

Wendell is close to a huge wildlife source, the Quabbin Reservoir. To its north, the Millers River is a corridor for both fish and terrestrial and amphibious wildlife. Large blocks of forestland are protected from development and several major stream corridors provide habitat and recharge to streams and potential future drinking water supplies. Linkages and connections are important to consider as Wendell plans for its current and future open space and recreation resources. Recreational trails may be inappropriate for some areas due to proximity to sensitive areas containing erodable soils and/or rare and endangered species. On the other hand, trails laid out with care and sensitivity can be a popular basis for the protection of linked parcels of open space that in turn serve area wildlife.

F. SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

Wendell is distinguished from neighboring towns by unique and special places that its residents know well. This section identifies scenic resources and special environments that most residents agree represent the Town's unique essence. Rivers, mountains, wetlands and village centers comprise the physical markers of our sense of place distinguishing Wendell from its neighbors. Wendell's scenic landscapes are also important by virtue of special wildlife habitats. Our purpose in inventorying scenic resources and unique natural environments is to provide a basis for prioritizing our efforts at protecting them.

For this reason the following section includes information about the different values associated with each scenic resource and natural environment and also demonstrates the areas where there are multiple values represented in one landscape. Those landscapes that contain, for example, scenic, wildlife, and cultural values may be seen as having a higher priority for protection than a landscape that contains only one value.

A few of these scenic resources also include significant historic structures and landscapes. This historical information is included and is based on a formal landscape survey done in 1992. The 1992 Franklin County Rural Historic Landscape Preservation Plan Report was created by the Franklin County Commission (now the Franklin Regional Council of Governments). It describes the status of historic landscapes in the region, the historic context that was used in its determination, and the methodology used in rural historic landscape reconnaissance. It distinguishes between the types of landscapes assessed (*agricultural, community development, recreational, conservation, industrial, transportation, scientific, religious, and engineering*), identifies in general terms the locations of rural historic landscapes in each town, and provides examples of direct and indirect preservation strategies.

The methodology used for identifying significant historical landscapes was based on the National Park Service criteria, including area of significance, period of significance, and historical integrity. The National Park Service classifies landscapes into four different categories: landscapes that reflect major patterns of a region's history (e.g. agricultural landscapes), landscapes that are associated with historically significant individuals (e.g. institutional grounds

and buildings), landscapes that are important due to their design or physical characteristics (e.g. an 18th century Colonial Period Connecticut Valley rural farm), and landscapes that yield or have the potential of yielding significant information on pre-history or history (e.g. a native American encampment site).

Table 4-7 lists different landscapes and sites and describes their scenic, natural/ecological, and cultural/historical values. This list represents a summary of resources reported in the 2002 Wendell Open Space Plan, the 1990 Community Vision of the Future, and other planning documents used throughout this Open Space and Recreation Plan. The Scenic Resources Map at the end of this section shows the overlap of these scenic, ecological, and cultural values where different hatching patterns are layered. The numbers in Table 4-7 correlate with the map showing the location of each scenic and unique environmental feature in Wendell. The text that follows the table addresses the common themes associated with the greatest concentration of values as displayed in both the map and the table. For example, the relationship between the high elevation points and the wildlife habitat values of these areas is important. The wildlife value is in part due to the presence of large contiguous blocks of undisturbed forest that are more prevalent along the region's higher elevation plateaus than anywhere else.

In a few cases, the landscapes are described in the table as being a *Significant Historical Agricultural or Conservation Landscape*. When these words are in italics, it means that this landscape has been documented as a significant historical landscape based on the National Park Service standards, which are different than those applied by the Wendell Open Space Committee.

In the far right column of Table 4-7, the landscape's protection status is estimated. For the purposes of this Open Space Plan, a landscape is defined as a land area with a particular land use pattern (farmland), or a physiological landform (monadnock) distinguishable from adjoining areas. Often ownership patterns do not coincide with the boundaries of a landscape. A ridgeline may have both protected and unprotected sections. Landscapes that contain parcels in the Ch. 61, 61A, or 61B programs are important because the Town has the right of first refusal to purchase these properties for 120 days from the point at which the owner has signed a purchase and sale agreement. This right may be passed on to a third party, such as a conservation land trust.

Table 4-7: Significant Scenic/Ecological/Recreational/and Historic Landscapes/Environments in Wendell

Map #	Scenic Resource	Ecological/ Geological Value	Recreational Value	Historical Value	Protection Status
<i>Stream Corridors</i>					
1	Millers River	NHESP Priority Habitat for Rare Species: Unusual Natural Communities	High		Much within the State Land on the Wendell side of the Millers River is Partially Protected with the Rivers Protection Act
2	Whetstone Brook	Rare and Endangered Habitat			Mostly Protected within the Whetstone Wood Wildlife Sanctuary and Wendell State Forest
3	Osgood Brook	Associated Aquifer			Protected within the Wendell State Forest

Map #	Scenic Resource	Ecological/ Geological Value	Recreational Value	Historical Value	Protection Status
4	Mormon Hollow Brook	Associated Aquifer			Partially Protected within the Wendell State Forest
5	Lyons Brook and Scenic Falls (unprotected)	Wildlife Habitats			Partially Protected on Wendell side by DCR
6	West Branch of the Swift	Within Quabbin Watershed			Protected through the Watershed Protection Act, as well as by DCR and DFW
7	Plympton Brook	Wildlife Habitats			Protected within Wendell Wildlife Area and adjacent to Ch. 61 land
Ponds					
8	Ruggles Pond	Unusual Natural Communities	High	<i>Significant Historical Recreation/Conservation Landscape</i>	Protected within the Wendell State Forest
9	Wickett Pond	Wildlife Habitats and it is the only non-human made pond in Wendell		<i>Significant Historical Recreation/Conservation Landscape</i>	Protected within the Wendell State Forest
10	Fiske Pond	Unusual Natural Communities	High (Potential)		Protected by Town as Fiske Pond Conservation Area
11	Bowens Pond	Wildlife Habitats			Surrounded by Ch. 61 lands
12	MacAvoy's Pond	Wildlife Habitats			Unprotected
13	Porter's Pond (a.k.a. Twin Ponds)	Wildlife Habitats			Unprotected
14	Zak's Pond	Wildlife Habitats			Unprotected
15	Stillwater Ponds	Wildlife Habitats			Surrounded by Mass. Division of Fisheries and Wildlife lands
Swamps					
16	Plain Road Swamp	Wildlife Habitats/Heron Rookery			Permanently Protected by Mass. Audubon Society
17	Catamount Swamp	Wildlife Habitats			Partially Protected by DCR
18	Farley Road Swamp east of Perry Farm Road	Wildlife Habitats/Heron Rookery			Partially Protected within Wendell State Forest
19	Sibley Swamp	Wildlife Habitats/ Heron Rookery			Partially Protected within DCR lands
20	Swamps along West Branch of the Swift east of Cooleyville Road	Wildlife Habitats			Protected through the Watershed Protection Act, DCR and DFW
21	Wetlands within Wendell State Forest	NHESP Priority Habitat for Rare Species; Unusual Natural Community; Wildlife Habitat		High Recreational Value	Permanently Protected
Recreational Resources					
22	Bear Mountain	Geologic -Monadnock Ridgetop; Wildlife Habitats	High	Recreational Value and <i>Significant Historical Recreation/Conservation Landscape</i>	Permanently Protected
23	M&M Trail		High	Major Recreational Trail System	Partially Protected within Wendell State Forest
24	Wendell State Forest	Wildlife Habitat	High	<i>Significant Historical Recreation/Conservation Landscape</i>	Permanently Protected

Map #	Scenic Resource	Ecological/ Geological Value	Recreational Value	Historical Value	Protection Status
Cultural Areas					
25	Wendell Town Common/with Northeast Long Range View			Significant Historical Agricultural/Community Development Landscape Historical Cross-road Village Center	National Historic Register/ Protection Status Unknown
26	Old Stoneville			Historic Industrial Heritage Site	National Historic Register/ Unprotected
27	Mormon Hollow Historic Area			Historic Village Site / Mill Foundation	Unprotected
28	Farley Bridge and Views of Millers River			Historical Structure	Unprotected
29	Town Pound on Montague Road opposite the intersection with Bullard Pasture Road			Historical Structure	Town-Owned/ Unprotected
30	Wendell Center Cemetery			Historical Site	Permanently Protected
31	Locke's Village Cemetery			Historical Site	Permanently Protected
32	Small Pox Cemetery			Historical Site	Permanently Protected
Scenic Roads					
33	Wickett Pond Road			Significant Historical Agricultural Landscapes	Partially Protected by Wendell State Forest
34	Bullard Pasture Road		Discontinued portion Used for hiking & skiing	Cellar hole	Discontinued portion Protected by Div. Of Fisheries & Wildlife
35	West Street				Unprotected
36	Locks Hill Road				Partially Protected by DFW
37	Cooleyville Road				Unprotected
38	Jennison Road			Significant Historical Agricultural Landscapes	Unprotected
39	Bear Mtn. Road		Discontinued portion Used for hiking & skiing		Permanently Protected by DCR
40	Woods roads off Stone Road and Depot Road				Partially Protected
41	Hemmiway Road				Permanently Protected by DCR
42	Rockwell Hill Road				Potentially discontinued/ Partially Protected by DCR land
43	Montague Road				Partially Protected by Wendell State Forest
44	New Salem Road				Partially Protected by Whetstone Wood Wildlife Sanctuary and DCR
45	Gate Lane				Partially Protected by Wendell State Forest and DCR
46	Rush Road				Partially Protected by MAS and DCR lands
47	Lockes Village Road/Scenic View of McAvoy's Pond				Partially Protected by DFW Lands/View, Unprotected
48	Old Egypt Road		Discontinued Used for hiking &skiing		Partially Protected by Wendell State Forest

Map #	Scenic Resource	Ecological/ Geological Value	Recreational Value	Historical Value	Protection Status
49	Wendell Depot Road/Long Range View at Common				Unprotected to Stone Road/Mostly Protected from Stone Road to the Depot
50	Stone Road				Mostly Protected by Wendell State Forest
51	Farley Road/Long Range View				Partially Protected by Wendell State Forest
52	Mormon Hollow Road/Long Range View westward				Unprotected
53	Davis Road/ Long Range View westward				Partially Protected by Wendell State Forest
Unusual Geological Features					
54	Jerusalem Road Ledge also has a Scenic Long-range View				Protected by Wendell State Forest
55	Whales Head				Protected by Wendell State Forest
56	Steep Hill Off Wendell Depot Road				Partially Protected by DCR
Unusual Natural Communities					
57	High Energy Riverbank -Millers River	Unusual Natural Community			Permanently Protected abutting State Forest and DFW Land
58	Floodplain Forest - Millers River	Unusual Natural Community			Permanently Protected abutting State Forest and DFW Land
59	Kettlehole Level Bog - Wendell State Forest	Unusual Natural Community			Permanently Protected, State Forest
Significant Historical Agricultural Landscapes					
60	J. C. Holston Property, Depot Road			<i>Significant Historical Agricultural Landscapes</i>	Unprotected
61	J. Wyman Property, Wickett Pond Road			<i>Significant Historical Agricultural Landscapes</i>	Unprotected

Source: Franklin County Rural Landscape Preservation Plan Report, Franklin County Commission; 1992. Community Vision of the Future, Conway Design Associates; 1990; Wendell Open Space and Recreation Plan, 2002.

Several themes emerge from both Table 4-7 and the Scenic Resources Map. While many of the places listed on the table and map are protected by the state or the Audubon Society, a number of Wendell’s scenic resources and unique environments remain unprotected. Most of the banks of the Millers River are protected by the DFW, but neither of the access points to the river from Wendell is protected. While the Town’s largest ponds are protected, several smaller ponds are privately owned and unprotected and are a majority of the town’s *Significant Historical Agricultural Landscapes*. Many of the Town’s historical sites including Old Stoneville, Mormon Hollow Historic Area and the Town Pound remain unprotected. While much of the M&M Trail is protected, some areas are not. The Scenic resources and valued natural environments naturally fall into several categories as described in the following sections.

F.1 Scenic Water Resources

Scenic water resources for the Town of Wendell are shown on the Scenic Resources Map at the end of this section.

F.1.1 Rivers and Brooks

Millers River and its Tributaries

The Millers River is Wendell's largest and most historically significant river, providing whitewater boating and fishing. Tributaries of the Millers River include Whetstone Brook, Osgood Brook, Mormon Hollow Brook and Lyons Brook. Whetstone Brook is particularly scenic and flows through both Wendell State Forest and Whetstone Wood Wildlife Sanctuary for most of its length. Whetstone Brook is remote and possesses numerous wetlands and beaver ponds making the area an excellent wildlife habitat. Whetstone Wood Wildlife Sanctuary protects most of the headwaters for Osgood Brook, which flows for much of its length within Wendell State Forest. This stream provides scenic views along Wendell Depot Road, which parallels it for most of its course to the Millers River. Both Mormon Hollow Brook and Lyons Brook flow out of ponds located within Wendell State Forest and flow for most of their length within the Forest. Lyons Brook is part of the Wendell/Montague Town line. It also contains Lyons Brook Falls, considered one of the most scenic falls in Wendell.

West Branch of the Swift River

The two headwater streams of the West Branch originate respectively near the Town Salt Barn on Lockes Village Road, and near private property on Morse Village Road. The West Branch flows southeast into Shutesbury. The beaver ponds located along the West Branch provide excellent wildlife habitat. The Division of Conservation and Recreation regulates land use within four hundred feet of all tributaries in this sub-basin. All the land within this sub-basin drains into the Quabbin Reservoir. Therefore, Wendell's treatment of these headwater areas directly affects water quality in the Quabbin reservoir.

F.1.2 Special Ponds

One of two ponds lying within Wendell State Forest, Ruggles Pond contains nineteen (19) acres and is especially picturesque. The pond is bordered by a scenic shrub swamp and marsh providing excellent habitat for wildlife viewing. This shallow pond was created when the Civilian Conservation Corp rebuilt a mill dam at the foot of an abandoned field.

The second pond lying within Wendell State Forest is Wickett Pond, about thirty (30) acres in area, surrounded by hardwood forest, and reached by (unpaved) Wickett Pond Road. This natural pond features very deep peat beds, and is nearing the end of its natural succession process, making it uniquely beautiful and ecologically dynamic.

Fiske Pond, created by damming Fiske Brook, flows south from Wendell State Forest, is noted for its natural beauty and formerly was a favored recreation spot for residents. Of ten (10) acres in surface area, it is an ecologically special place, constituting a rare example of 'fusion' between Coastal Sand Plain and Western Prairie vegetation types. Located near West Road and Lockes

Village Road and permanently protected by the Town as the Fiske Pond Conservation Area in 2005, it is surrounded by stands of large white pine and eastern hemlock, and there is a ten-acre marsh where Fiske Brook enters the basin.

There are several other water bodies noted for their scenic qualities. Bowens Pond is located on Wendell Depot Road and is surrounded by hardwood forest and some open grassland. This pond once furnished water to run a grist mill whose remains are still visible below the pond's dam east of Wendell Depot Road. MacAvoy's Pond and Stillwater Ponds were created by a series of small dams. Privately owned and unprotected, MacAvoy's Pond is a 15-acre lake with swampland on the northeast shore. The Stillwater Ponds, located along Lockes Village Road, are surrounded by Massachusetts DFW lands. An attractive former mill pond of several acres, bisected by Jennison Road near the New Salem town line, privately owned and unprotected, is Porter's Pond or Twin Ponds, which can be circumambulated by a path that also connects to a woods trail. Zak's Pond is a privately owned unprotected pond located along Plympton Brook between MacAvoy's Pond and Stillwater Ponds. There is a scenic waterfall at the site where Lyons Brook empties into the Millers River (just before the railroad). There is also a scenic pond on private property owned by the Diemand Farm, located on Mormon Hollow Road.

F.1.3 Wetlands

Wendell residents consider all of our wetlands to be of scenic value, enjoyed for bird watching, nature walks, and hunting. Important forested swamps in Wendell include Plain Road Swamp, Catamount Swamp and a large unnamed swamp bordering Farley Road east of Perry Farm Road. Smaller swamps are common along streams and in low-lying areas that form the headwaters for many of the small streams in Wendell. Important smaller swamps include the scenic fifteen-acre Sibley Swamp located on DCR land off Rockwell Hill Road, unnamed swamps near Wickett and Ruggles Ponds in Wendell State Forest, swamps along the West Branch of the Swift River east of Cooleyville Road, and swamps bordering Whetstone Brook.

F.2. Resources Associated with Large Blocks of Protected Contiguous Forest

F.2.1 Whetstone Wood Wildlife Sanctuary

Whetstone Wood Wildlife Sanctuary is located in the eastern section of the Town of Wendell. Owned by Massachusetts Audubon Society, it comprises a total of 1,940 acres with 1,648 acres in Wendell with the remaining acreage in the towns of Orange and New Salem. This includes about 20 acres in New Salem protected by conservation restrictions. The Sanctuary contains various habitat types including mixed hardwood and softwood forests, ponds and wet meadows, open fields and stream-side thickets. Many varieties of plant and wildlife can be found in Whetstone Wood. Nesting sites, called heronries, of the Great Blue Heron, exist in Whetstone Wood. The Sanctuary also protects a significant portion of the headwaters of Whetstone Brook and Osgood Brook, major tributaries of the Millers River. Portions of Whetstone Wood Wildlife Sanctuary are listed as Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife by the Natural Heritage and Endangered Species Program, Mass. Division of Fisheries and Wildlife.

F.2.2 Wendell State Forest, Bear Mountain, and the Metacomet-Monadnock Trail

Wendell State Forest, managed by the DCR, is our most notable scenic landscape. Located south of the Millers River, Wendell State Forest covers 7,900 acres of scenic forested hills, with streams, ponds and wetlands, and includes an extensive trail system with connection to the Metacomet-Monadnock Trail. Wendell State Forest lies within the viewshed of the Millers River and includes some steep slopes adjacent to the river. Land purchases for Wendell State Forest began in the 1920s and continue today. Some park development at Ruggles Pond, and most of its road system, were built by the Civilian Conservation Corps (CCC) in the 1930s.

Wendell State Forest includes Bear Mountain, an area of valuable forest land, excellent wildlife habitat and several streams including a brook with a cascading waterfall. Thompson Road, which runs from Farley Road to Old Farley Road, passes near the peak of Bear Mountain. At this location there is a stand of large white pine trees and the remains of a cabin. From here, one can hike west through the woods to the top of Bear Mountain, whose summit view is blocked by large trees.

Approximately three miles of the Metacomet-Monadnock Trail (M&M Trail) pass through Wendell State Forest. The M&M Trail is 117 miles long, beginning at Hanging Hills in Meriden, Connecticut and continuing to Mount Monadnock in New Hampshire. The trail corridor links several state forests including Montague, Wendell, Erving, Northfield, Mount Grace, and Warwick State Forests. Local hikers can access the M&M Trail by way of a trail that connects to the Fiske Pond Loop Trail.

F.3. Significant Cultural, Archeological, and Historical Sites and Landscapes

F.3.1 Cultural and Historical Sites

Wendell Town Common

Located near the geographic center of the Town, the Wendell Town Common Historic District is a well-preserved, rural village center, which is considered by residents as the heart of the Town of Wendell. It is also a documented *Significant Historic Community Development/ Agricultural Landscape* representing a typical crossroads village center. The Town Common Historic District encompasses approximately 26 acres and includes 24 contributing buildings, sites and objects comprising the historic, civic, commercial and residential core of Wendell. The Town's incorporation and the establishment of a meetinghouse on the Common in 1781 marked the beginning of the use of the Historic District as the civic center of the Town.

The Town Common is a roughly rectangular piece of open land bounded by Wendell Depot and Lockes Village Roads on the west and Center Street on the north, east and south, and bisected by Morse Village Road. The adjacent properties, Greek Revival residences and institutional buildings, generally face the Town Common. The boundaries of the Historic District generally follow property lines that conform to visual and natural boundaries. All buildings in the district are located close to the road. Several farmhouses are set on large parcels of twelve to seventy acres and have pastures extending behind. Most of the remaining buildings are on lots of

approximately one-quarter acre. All of the primary buildings, with the exception of the Wendell Senior Center, date to the late Federal-early Industrial periods. The Greek Revival Style predominates with individual examples existing of the Federal and Colonial Revival Styles. Residential construction around the Common was most intense during the 1830's and 1840's, when five new houses were built in the Greek Revival Style. The most substantial of these Greek Revival houses is the Luke O. Leach House built ca. 1839 and shown as site A.5 in Table 3-1. Other significant buildings on the Common include the Baptist Church/Town Hall and the Central Congregational Church. The Town Hall/School House that later contained the Town Offices and Senior Center was destroyed following damage from a tornado in 2006 during construction of the new Wendell Free Library. The Wendell Senior Center, built in 1921 and of Colonial Revival/Shingle Style, is the only institutional building in the Historic District representing a style other than Greek Revival. The Wendell Town Common continues to retain its historic integrity and fulfills the criteria for the National Register of Historic Places at the local level.

Old Stoneville

Sitting directly opposite Stoneville, on the Wendell side of the Millers River, is the nineteenth century mill village site of Old Stoneville. Built in 1851, it was the location of J.E. Stone and W. Washburn's piano and billiard case factory. Due to the fact that it remains unaltered, Old Stoneville has been determined to be of great archeological value and is eligible for listing in the National Historic Register according to the U.S. Dept. of the Interior. This property is unprotected. Part of it is owned by the Town and part of it is privately owned.

Farley Bridge

The Farley Bridge, built in 1889, spans the Millers River at Farley. Built by the team of Dean and Westbrook, the bridge is a pin connected iron truss bridge. It is the only known example in Massachusetts to use the Phoenix Iron Company's wrought iron "Phoenix Columns". The bridge also retains its two richly ornamented nameplates. The Farley Bridge was economically important to both the Towns of Wendell and Erving. The Town of Erving had numerous manufacturing mills for which Town of Wendell supplied wood and the personnel to run the mills.

Town Pound

The Town Pound, constructed in 1846, is located on Montague Road opposite the intersection with Bullard Pasture Road. A round stone enclosure, it was used to contain stray animals.

Town Cemeteries

The Wendell Center Cemetery is situated on the Town Common and was established in 1782. It was associated with the Congregational Church and is still in use. A Victorian cast iron fence (pre-1871) with carriage gate and pedestrian gate extends along the Common side of the cemetery. While the grounds are well maintained, little attention has been paid to condition of older graves stones. Wendell is fortunate to live in close proximity to the Greenfield based Association for Gravestone Studies that offers a wealth of information on preservation techniques for historic cemeteries that could benefit many of the aging headstones.

The Locke's Village Cemetery, located on Jennison Road, contains an unusual earth covered vault as well as free stone wall. There are approximately 250 gravestones in this cemetery, most of which appear to be late 19th Century or 20th Century.

The Small Pox Cemetery was especially created to receive the bodies of those who died in the small pox epidemic in Wendell in March 1833. The cemetery also received the family members of those who died in the epidemic. Local oral tradition states the bodies were transferred to the cemetery from some holding place at night and that the cemetery was deliberately placed far from the center of town to avoid possible "contagion" from the corpses.

F.3.2 Archeological Sites and Landscapes

Mormon Hollow Historic Area

Located along Mormon Hollow Brook and unprotected, the Mormon Hollow Historic Area consists of a large number of nineteenth century and possibly eighteenth century foundations as well as a cemetery located on a cliff above the brook. The Mormons allegedly had a settlement here in the mid-nineteenth century. It is believed the foundations, one of which may have been a gristmill, may have been from this Colonial settlement. It is possible that the foundations were the homes of a known family, Charles Woods (died 1795) and Charles Woods, Sr. (1797) who are buried in the cemetery. In addition, there are 42 granite gneiss stones that could be burial markers. The foundations and stones are considered significant, as they are predominantly granite, most likely taken from the only outcropping of granite in the Town of Wendell, located at Bear Mountain.

F.3.3 Historical Landscapes

Wendell State Forest

The Wendell State Forest was established in 1921 as part of a statewide effort to reclaim cut-over land throughout the state. In 1933, the CCC, created by President Roosevelt, provided economic recovery employment to improve the forest and recreational resources of the country. In May of 1933, at the north end of Ruggles Pond, CCC Camp S-62 (Company 116) was established. Like most state forests in the early 1930's, Wendell was largely undeveloped and inaccessible by land. One of the first tasks of the CCC was constructing a network of truck trails, followed by a number of waterholes for fire suppression. Forestry work undertaken by the CCC included planting, forest stand improvement, trail maintenance, and pest control. The major recreational improvements were at Ruggles Pond, a former mill pond that had been in poor repair for years. The CCC dug out the pond to make it more useful for recreation, improved the fieldstone-faced concrete dam, repaired a fieldstone-faced bridge over Lyons Brook, built a dry-laid stone retaining wall, and several parking areas. The Ruggles Pond area is an outstanding example of CCC stonework with many different types of resources in one location. The camp closed in December 1937, and in 1938, the famous New England hurricane devastated extensive timber stands in the forest. Few changes have been made at the forest since that time other than construction of a new headquarters building on Montague Road at the western edge of the forest.

F.4 Scenic Roads

In many parts of Wendell, historic landscapes blend with scenic viewsheds. Scenic roads, which access these special places, overlap both. In 1974, the Town of Wendell designated all eligible roads as scenic pursuant to Chapter 40, Section 15C of the Massachusetts General Laws. Local scenic road designation provides limited protection to historic and scenic resources along local byways. Once designated, the Planning Board must give written approval before any repair, maintenance, construction, or paving of the road is allowed if that activity would involve the cutting or removal of trees, or the tearing down or destruction of stone walls in the public right of way. To obtain further protection under the Scenic Roads Act, the Town needs to adopt a local bylaw.

F.5 Unusual Geological Features

Jerusalem Road Ledge is a ledge outcropping in Wendell State Forest. It provides not only potential for geology study, but also an excellent view to the north and west including Mt. Greylock when weather permits. In addition, below the ledge is a small, protected valley with a reliable stream of fresh water. This area could have been an early Colonial farm site or settlement of native peoples.

Whales Head is a rock shaped like an elephant's head and is visible from Damon Camp Road. Also visible from the air is a hilltop shaped like a whale's head.

Mormon Hollow Road, near the junction of Farley Road, provides access to Mormon Hollow Brook. The ledge bottom of the brook and the ledge outcropping on the hillside are of interest for geologic study.

There is a steep unnamed hill off Wendell Depot Road visibly prominent from the Millers River Bridge. It has an elevation of one thousand and twelve feet (1,012 ft.) and is considered suitable for rock climbing.

F.6 Significant Scenic Views

Wendell's rugged terrain offers scenic views of forests and streams, but long-distance views are few because they are obstructed by trees. The available long-distance vista occur on Farley Road, which gives excellent views of the hills and valleys to the northwest, including the Northfield Mountain Pumped Storage Dam. Wendell Depot Road north of New Salem Road provides excellent views of Osgood Brook, which can be especially impressive during periods of heavy runoff. Within Wendell State Forest, from the top of the ledges on the easterly side of Jerusalem Road, there is a fine long-range view. From vantage points on the Town Common, both Mount Grace and Mount Monadnock can be seen.

Shorter views of interest abound along most of the roadways in the Town of Wendell. Some of the more scenic roads include Wickett Pond Road, Bullard Pasture Road, West Road, Locke Hill

Road, Cooleyville Road, and Jennison Road. Wickett Pond Road and Jennison Road have fields and old farm houses or foundations that represent historical land use patterns. The two properties on Jennison Road contain fields and historic structures. One is located on the corner of Old Stage Road and Jennison. Short and long-range views are available from Jennison Road in front of the house, a two-door historic residence that is very well maintained. Pasture land covered with creeping juniper across Jennison Road to the south is still used today for this purpose. The second agricultural landscape on Jennison Road exists on the north side and appears with a southern aspect and a large barn.

There are many scenic woods roads in Wendell that support recreational activities such as hiking and snowmobiling. Some of the more notable include Bear Mountain Trail, off Stone Road. Crossing this is Thompson Road, which is now more like a woods trail. It travels north from Farley Road to Old Farley Road which run along the Millers River. An old woods road off Stone Road and Wendell Depot Road provides access to a marsh. Hemmiway Road, unpaved, passes near the eastern end of the large hardwood swamp named Catamount, and continues on to Locks Village at Lake Wyola. Rockwell Hill Road, an unpaved, discontinued road off Cooleyville Road, passes through largely DCR land to New Salem. It has large hemlock and white pine with an understory of mountain laurel.

F.7 Unusual Natural Communities

F.7.1 High-Energy Riverbank and Floodplain Forest Environments on the Millers River

According to the Mass. Division of Fisheries and Wildlife, there are unusual examples of a floodplain forest and high-energy riverbank environments along the Millers River in Wendell. The floodplain forest is a silver maple dominated community. Such forests attract migratory songbirds, raptors such as bald eagles and red-shouldered hawks as well as wood ducks and hooded mergansers. The Millers River also supports a variety of wetland species such as turtles, salamanders, and freshwater mussels that are good indicators of improving conditions along the river. The high-energy riverbank environment is created by the alluvial deposition of cobbles, sand, and silt during high spring floods. Vegetation within the high-energy riverbank community depends on substrate type and the severity of flooding. On open cobbles, one will find false dragonhead, cocklebur, beggar's ticks and lady's thumb. As the sand increases, water horsetail and clasping dogbane occur. In still sandier areas, mixed grasslands are found. In the sandiest areas, which typically border the floodplain forest, short shrubs such as shadbush, silky dogwood, sand bar willow, and sand bar cherry are found. The entire section of the Millers River in Wendell is considered both a Priority Habitat of Rare Species and an Estimated Habitat of Rare Wildlife by the Natural Heritage and Endangered Species Program.

F.7.2 Kettle Hole Level Bogs

A Kettle Hole Level Bog can be found within Wendell State Forest, north of Montague Road. These bogs occur in iceblock depressions in sandy glacial outwash. The vegetation in these areas includes high bush blueberry and swamp azalea in the outer areas and rhodora in the interior moat areas. The mat areas of the bog have a mixture of tall and short shrubs that are

predominantly ericaceous (members of the Heath family). A mixture of specialized bog plants including pitcher plants and sundews grow on the hummocky sphagnum. Highly acidic standing water in the moats, without fish populations, functions as vernal pool habitat, providing important amphibian breeding sites.

F.8 Significant Historical Agricultural Landscapes

Wendell loves its old fields because they remind us of how this land was first settled by Europeans. Some of the existing old fields have been documented as *significant historical agricultural landscapes*. There are three specific agricultural landscapes that were identified in the 1992 Franklin County Rural Historic Landscape Preservation Plan: Town Common, J. Wyman Farm on Wickett Pond Road, and the J.C. Holston property on Depot Road. The protection status of the landscape surrounding the Town Common is unclear and primarily in private hands and unprotected, as are the Wyman and Holston properties. The fields around the Town Common are mostly to the north, south, and east of the Common. While old stonewalls, foundations, and a lone silo help to maintain the character of this landscape, the recent placement of a grey painted colonial style house in the field north of the Common has reduced the historical value of this scenic landscape. The J. Wyman Farm on Wickett Pond Road appears to have the original farmhouse and outbuildings and a small open and maintained field surrounded by forest and fields filled with white pine saplings and other early successional vegetation. The J. C. Holston property, c. 1871, burned down recently and its main house has been replaced with a new modern one. The Holston property is surrounded to the north with open fields. The modern built home may detract from the significance of this agricultural landscape. There are also multiple agricultural properties along Jennison Road, which are described in the scenic roads section.

G. ENVIRONMENTAL CHALLENGES

G.1 Acidification

Of thirteen streams sampled, five are classified as “acidified”, the most seriously impacted category, and seven are classified as “critical”, the next most impacted ranking. Only the Millers River does not appear to be in serious immediate danger of acidification. Two ponds in Wendell are ranked as acidified. The remaining five are critical. Chronic acidification has probably reduced the productivity of aquatic insects in all of Wendell’s ponds and streams and affects their recreational uses, especially fishing. Wendell’s streams are at the borderline of conditions that are capable of supporting trout. In fact, trout populations have shown considerable declines in Whetstone Brook and Mormon Hollow Brook. The very low alkalinity in streams and ponds makes them susceptible to flushes of acidic water, especially during heavy rains and during snowmelt. These pulses of low pH water are extremely damaging to fish eggs and young fish. Some streams in Town still support trout, but years of continued acid rain pose a threat to their future as places to fish. By affecting insects, amphibians and even soil fungi, acid rain can affect

the whole food chain. It is not known the extent to which acid rain is damaging forest growth or affecting the numbers and varieties of other forms of plant and animal life in Wendell.

G.2 Unplanned Residential Development

Although there may not be agreement as to its severity or solution, the overarching environmental problem for the Town of Wendell is the potential for future growth in the region and the negative impacts of unplanned residential development. New unbridled residential development will produce negative fiscal impacts on the municipal budget. This would be due to the costs of community services like education, being greater than the revenues that would be received through property taxes.

Some people argue that current environmental constraints, mainly related to soil characteristics, are sufficient to control development. The depth to the groundwater, depth to bedrock, and the occurrence of standing water are three characteristics that restrict where people may build. Others would point to changes in technology and regulations that have the potential for reducing those limitations on development. One example is Title 5 which prohibits development in areas that cannot produce particular conditions. According to one long-term Wendell resident and environmentalist, Title 5 actually worked to increase the number of lots that could be built in some areas, because the regulations allowed for the building of raised mounds to create the difference in elevation between the leach field and the groundwater. Additional technologies (for example neighborhood treatment plants) may become more common and may expose previously undevelopable sites to exploitation, the main rationale for our planning process.

New residential development across Town may increase the prevalence of non-point source pollution, reduce the rural character and cause a reduction in the acreage, and value of remaining, wildlife habitat. Sprawl will also increase runoff (potentially including contaminants such as road salt), decrease the amount of water available as ground water, decrease stream flow, and probably result in excess erosion. It will diminish biodiversity in first and second order streams and reduce water quality Town-wide. The solution to the problem may be a combination of zoning techniques to encourage development in ecologically suitable areas and further open space protection to keep houses away from the areas with the greatest scenic, ecological, cultural, and historical values.

Within this larger environmental concern of unplanned growth are two critical environmental issues requiring specific action. The first concerns water quality in the Millers River. Currently, the Millers River contains high levels of poly-chlorinated biphenyls (PCB's) and mercury that impair its full potential as a Class B fishable and swimmable water body. Every stream, brook, and river in Wendell continues to be threatened by non-point source pollution from acidification to sedimentation. In addition, the Mormon Hollow landfill is an issue that is receiving a lot of attention regionally and by the state, although it appears that there are long-term issues still to be resolved, including monitoring and stabilization. Continuing to work cooperatively with the Millers River Watershed Team and the Millers River Watershed Council may be an excellent way of putting stewardship ideals into action since the ultimate cleanup of the river will need to be a continuous, watershed-wide effort.

The second critical environmental issue concerns the danger of contaminating local untapped but still very important aquifers. There is a link between shallow aquifers of stratified drift, shallow wells, and local septic leach fields. Although there has not been a study directly linking the three in Wendell, contamination of groundwater supplies is a common enough occurrence to warrant the Massachusetts Department of Environmental Protection to create the Source Water Assessment Program (SWAP). Through SWAP, DEP assists communities in identifying the “above-ground” boundaries to recharge areas for their community water supplies. Recharge areas represent the lands where use regulations have the most impact at protecting a source from contamination. The Town of Wendell should increase its efforts to identify the recharge areas for its future water supplies.

G.3 Imported Pests and Invasive Species

Climate models project rising temperatures and increased precipitation in the Northeastern United States in coming years which is likely to impact local forests as well other vegetation and public health partially as a result of related impacts on pests, pathogens, and nuisance species. Periods of rapid climate change, such as we are presently experiencing, are especially favorable for rapidly reproducing species such as insects and diseases and promote conditions that can enhance the spread of problematic species. By contrast species with longer life cycles, such as trees, are inherently less well equipped to adapt to rapid climate change.

A 2008 study co-authored by 16 scientists including Wendell resident Kristina Stintson used ecological principles to predict the potential response of several pests, pathogens, and invasive species to climate change in the forests of North America. Of the six species studied the authors were most confident in their ability to predict that the Hemlock woolly adelgid, a small insect that attacks and kills Hemlocks and has been sighted at several locations in Wendell, may spread unimpeded, leading to widespread hemlock mortality.

Thus the town would be wise to take a proactive approach to environmental problems related to the spread of introduced pests, including invasive species, and stay abreast of the latest information about related problems that may impact local vegetation, agriculture, forestry wildlife, and public health, as well as related strategies for sustainable management. Such efforts will require cooperation with state and regional efforts and may involve several Town boards and departments including the open space committee, the board of health, the agricultural commission, the tree warden, and the conservation commission, as well.

G4. Landfills and Hazardous Waste Disposal Sites

Wendell has had two landfills, one public and one private, both of which are now inactive. The municipal landfill on New Salem Road was closed in 1990 and is neither capped nor lined. The private landfill on Mormon Hollow Road was used for demolition waste and is lined and partially capped after being closed in 1999. The Mormon Hollow Landfill was the subject of a release reportable to the Department of Environmental Protection (DEP) in 2000 when it was

found to be unstable and sliding down the hillside.⁹ In 2007, it was deemed by the DEP to be adequately regulated and is still being monitored.

The DEP Searchable Waste Site also lists a reportable release of hazardous materials in November 2009 of 20 gallons of hydraulic fluid on an unpaved road in the A127 transmission right of way. This site's compliance status was deemed in January 2010 to be "RAO," meaning that a Response Action Outcome statement was filed asserting that response actions were sufficient to achieve a level of no significant risk. One of the Town-owned lots by the Millers River at Wendell Depot has been identified as an apparent hazardous waste disposal site and may be a potential brownfield.

G.5 Chronic Flooding

According to members of the Open Space and Recreation Planning Committee, there are several areas of Town that are subject to chronic flooding, primarily as a result of beavers. These areas are located on Farley Road near the school, on a feeder brook into Plympton Brook that is near Lockes Village Road and the Stillwater Ponds, and in Wendell Depot where Whetstone Brook crosses Wendell Depot Road.

G.6 Erosion and Sedimentation

There are currently no problems with erosion and sedimentation in the Town of Wendell.

G.7 Regional Environmental Issues

Several regional environmental issues are of special concern to Wendell residents and officials. The potential for environmental contamination resulting from problems with the aging Vermont Yankee nuclear power plant has been a concern for decades as Wendell lies just over the border of the primary emergency response zone. In recent years, the potential environmental impacts of the proposed Greenfield biomass facility has become such an important environmental issue for Wendell that the Selectboard wrote to Governor Patrick in 2009 to raise concerns about how the project could impact the town's environment. As the Wendell State Forest covers such a large area of town, residents and local officials have a variety of concerns about the possible environmental impacts of the various management strategies that the Commonwealth is considering for the state forest as part of the Forest Futures Visioning process.

In their letter to Governor Patrick, the Wendell Selectboard cautioned about potential environmental impacts related to the use of biomass in general and the proposed Greenfield facility in particular. They reviewed the potential impacts for all citizens of the Commonwealth and surrounding states as well the direct impacts that a plant in Greenfield could have on the town. More general concerns include the release of carbon from incineration accelerating global

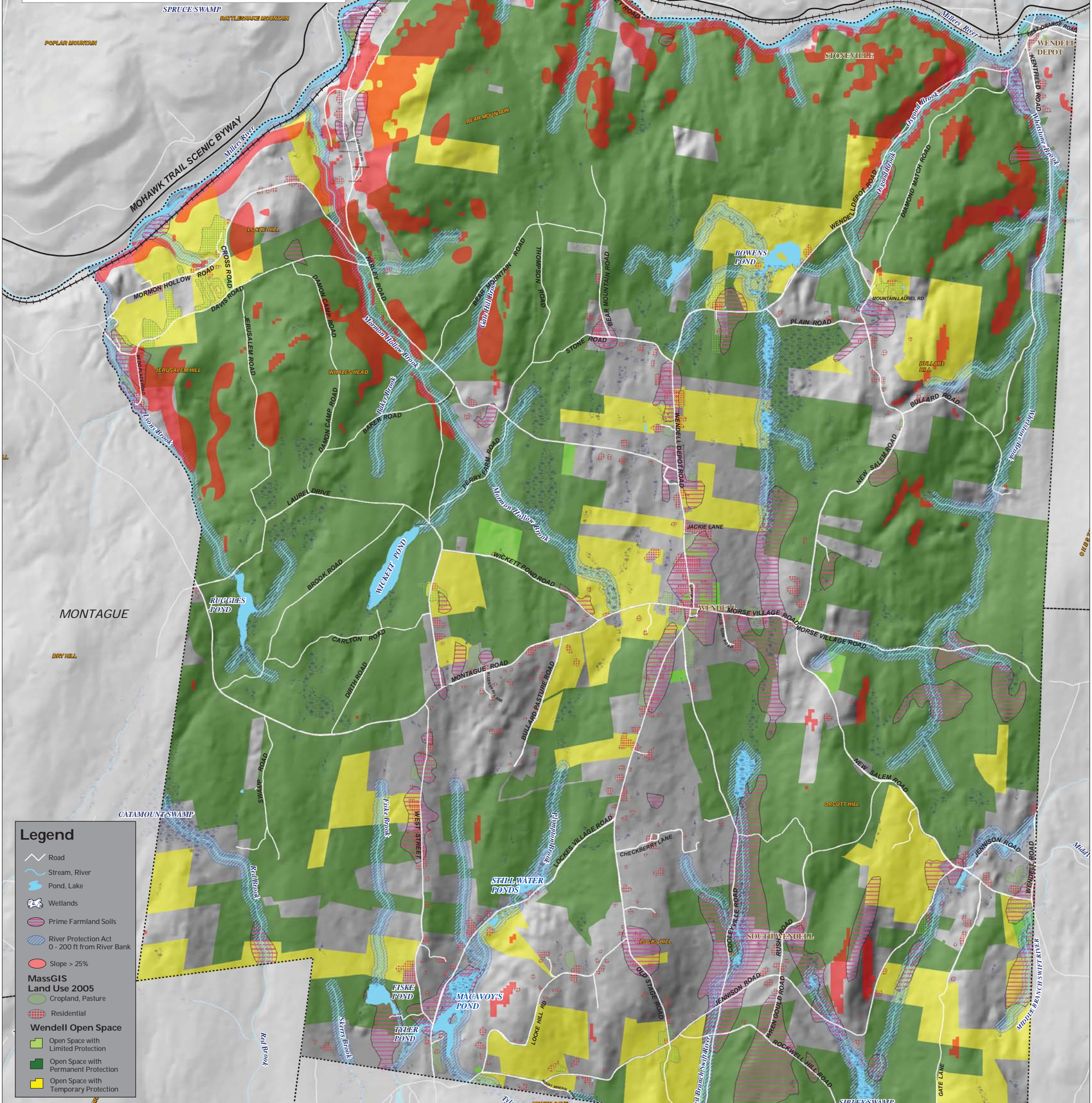
⁹ Department of Environmental Protection, Searchable Waste Site List:
<http://db.state.ma.us/dep/cleanup/sites/search.asp>.

warning, increased consumption of forest resources, pollution of the air with carcinogens, the health of local forests, and public health. Their letter stated that “Wendell’s air quality would decline precipitously as the Wendell State Forest is logged, and the prevailing winds bring emissions from the proposed Greenfield plant into Wendell.”

The Commonwealth’s Forest Futures Visioning process that is ongoing in 2010 has sparked concerns among Wendell residents and officials about the potential environmental impacts of the designation of the non-parkland areas of the Wendell State Forest as either reserves or woodlands. As the forest comprises such a large area of town, this designation could have significant repercussions for town and local forests. In September of 2010, residents favoring both reserve and woodlands status have raised concerns to the Selectboard about the environmental impacts of either course of action. Advocates of the reserve designation cite ecological benefits of leaving areas undisturbed for natural systems and preserving forests to buffer against climate change. Opponents of the reserve designation suggest that a lack of active management could leave the forest vulnerable to severe weather damage, forest fires, and other problems. Thus, local officials are considering hosting a public forum on the subject to further explore these potential impacts. They are also looking forward to learning about plans that the state might have to allow the town to offer more comprehensive input into this decision. (See Appendix D for statements regarding forest designations in Wendell.)

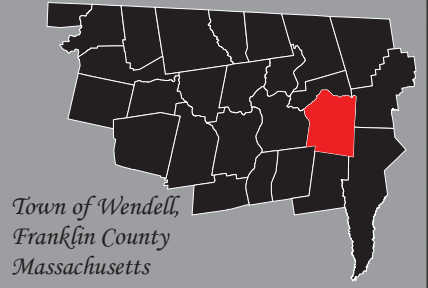
Town of Wendell Open Space & Recreation Plan

Prime Farmland & Development Constraints



Legend

- Road
- Stream, River
- Pond, Lake
- Wetlands
- Prime Farmland Soils
- River Protection Act 0-200 ft from River Bank
- Slope > 25%
- MassGIS Land Use 2005**
 - Cropland, Pasture
 - Residential
- Wendell Open Space**
 - Open Space with Limited Protection
 - Open Space with Permanent Protection
 - Open Space with Temporary Protection



Map Sources:
Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FROCG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEIA maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEIA maintains records regarding all methods used to collect and process these digital data and will provide this information on request. Executive Office of Environmental Affairs, MassGIS EOEIA Data Center, 251 Causeway St., Suite 900, Boston, MA, 02114-2610.
Note: Depicted boundaries are approximate and are intended for planning purposes only.
Open Space data digitized by FROCG Planning staff based on assessment records 2008-2009.



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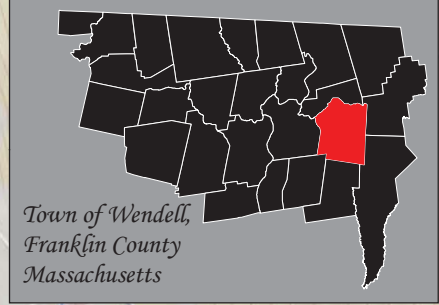
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Town of Wendell Open Space Plan

Water Resources



- Road
- Rail Line
- Certified Vernal Pool
- Stream, River
- Pond, Lake
- Wetlands
- Public Water Supply
- Watershed Boundary
- Interim Wellhead Protection Area
- Aquifer Potential Yield 0 - 50 Gallons Per Minute



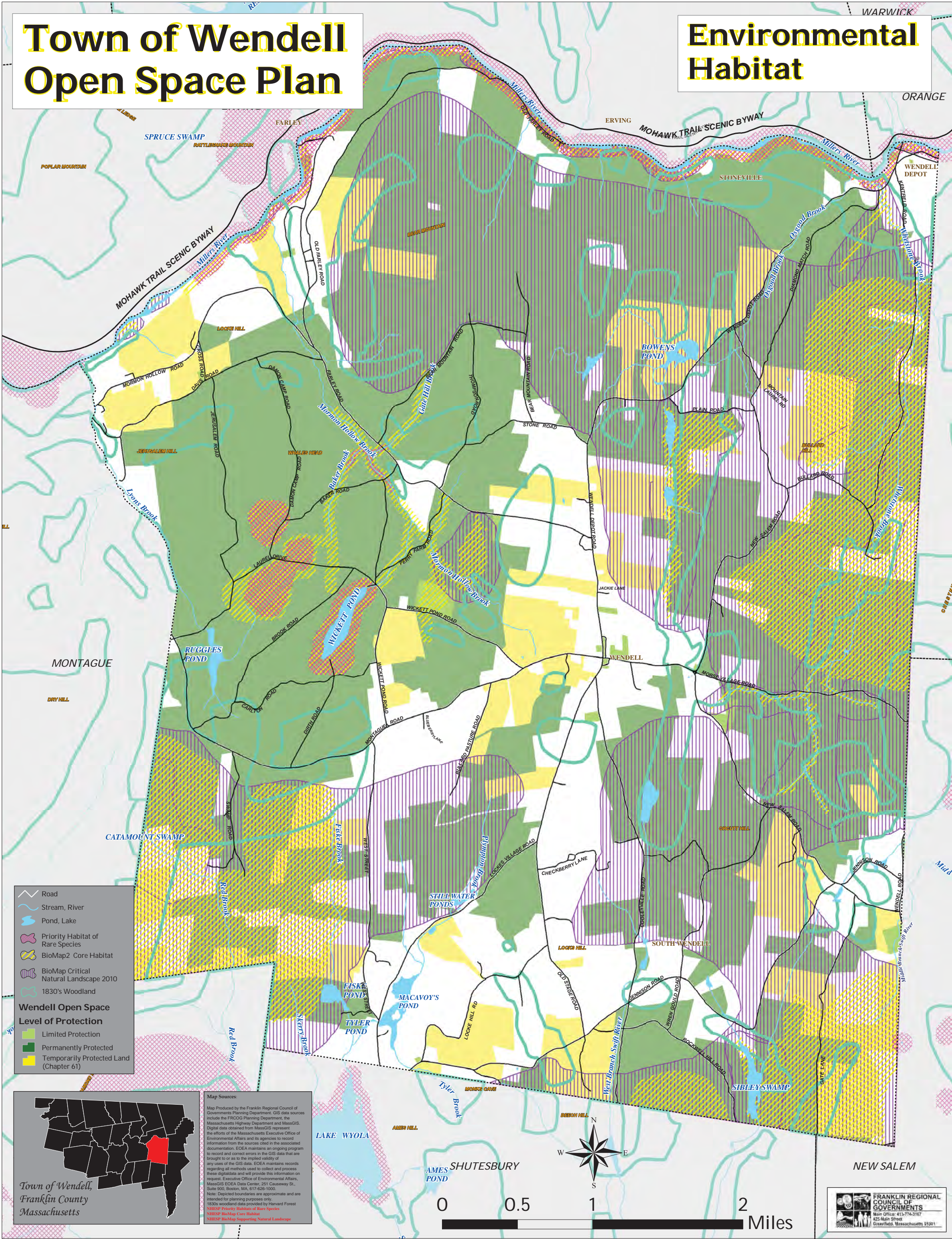
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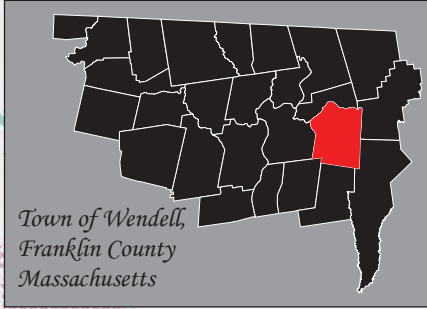
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Town of Wendell Open Space Plan

Environmental Habitat



Road
 Stream, River
 Pond, Lake
 Priority Habitat of Rare Species
 BioMap2 Core Habitat
 BioMap Critical Natural Landscape 2010
 1830's Woodland
Wendell Open Space Level of Protection
 Limited Protection
 Permanently Protected
 Temporarily Protected Land (Chapter 61)



Map Sources:
 Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FRCOG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEA maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEA maintains records regarding all methods used to collect and process these digital data and will provide this information on request. Executive Office of Environmental Affairs, MassGIS EOEA Data Center, 251 Causeway St., Suite 900, Boston, MA, 617-626-1000.
 Note: Dotted boundaries are approximate and are intended for planning purposes only.
 1830s woodland data provided by Harvard Forest
 NHESP Priority Habitats of Rare Species
 NHESP BioMap Core Habitat
 NHESP BioMap Supporting Natural Landscape

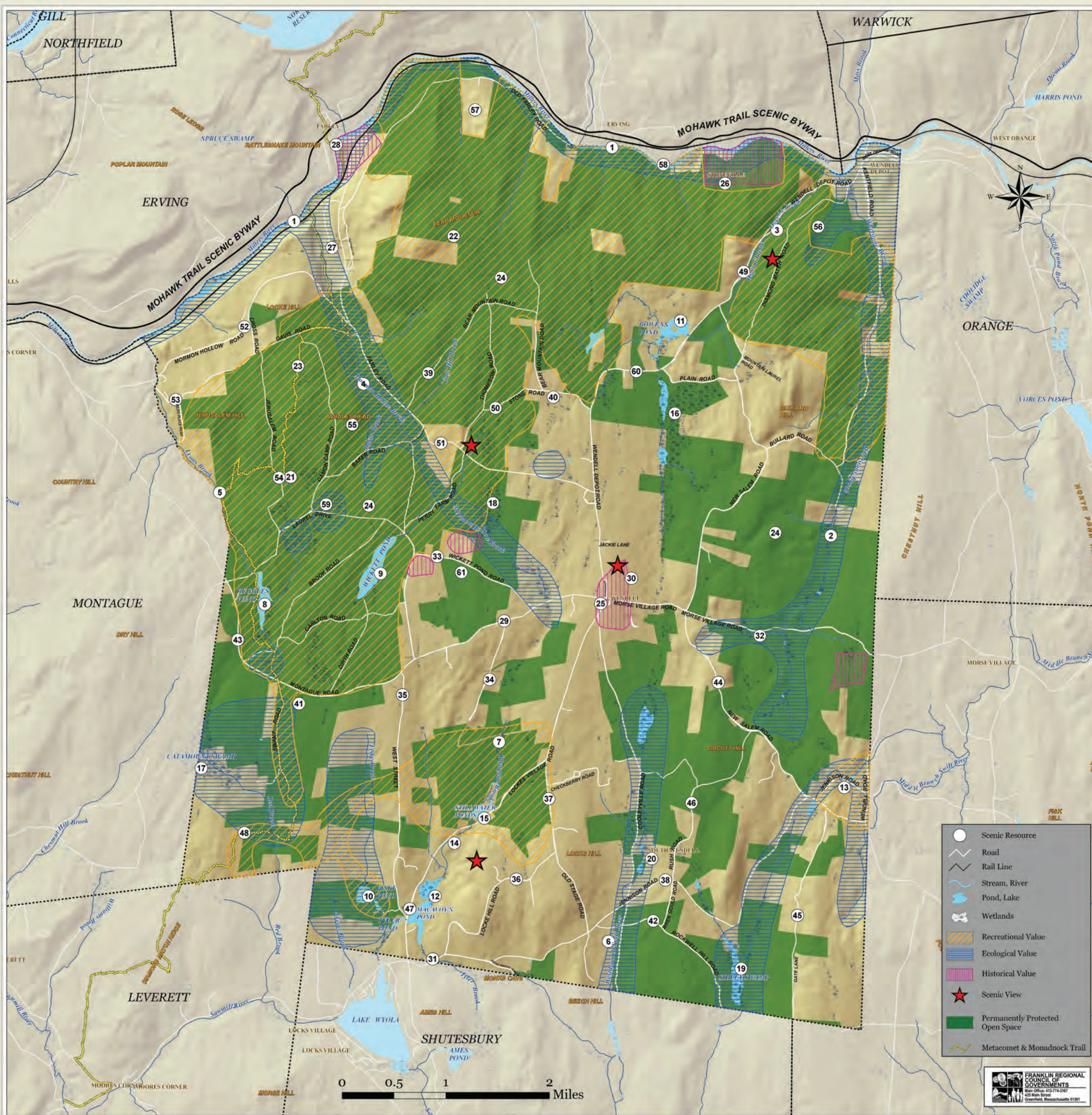


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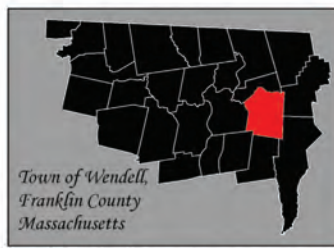
Town of Wendell Open Space Plan

Scenic Resources

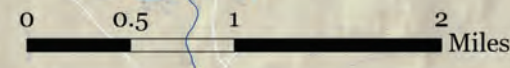


Map #	Scenic Resource
Stream Corridors	
1	Millers River
2	Whetstone Brook
3	Osgood Brook
4	Mormon Hollow Brook
5	Lyons Brook and Scenic Falls (unprotected)
6	West Branch of the Swift River
7	Plympton Brook
Ponds	
8	Ruggles Pond
9	Wickett Pond
10	Fiske Pond
11	Bowens Pond
12	MacAvoy's Pond
13	Porter's Pond (a.k.a. Twin Ponds)
14	Zak's Pond
15	Stillwater Ponds
Swamps	
16	Plain Road Swamp
17	Catamount Swamp
18	Farley Road Swamp east of Perry Farm Road
19	Sibley Swamp
20	Swamps along West Branch of the Swift east of Cooleyville Road
21	Wetlands within Wendell State Forest
Recreational Resources	
22	Bear Mountain
23	Metacomet-Monadnock (M&M Trail)
24	Wendell State Forest
Cultural Areas	
25	Wendell Town Common with Northeast Long Range View
26	Old Stoneville
27	Mormon Hollow Historic Area
28	Farley Bridge and Views of Millers River
29	Town Pound on Montague Road opposite the intersection with Ballard Pasture Road
30	Wendell Center Cemetery
31	Locke's Village Cemetery
32	Small Fox Cemetery
Scenic Roads	
33	Wickett Pond Road
34	Ballard Pasture Road
35	West Street
36	Locke Hill Road
37	Cooleyville Road
38	Jennison Road
39	Bear Min. Road
40	Woods roads off Stone Road and Depot Road
41	Hemmiway Road
42	Rockwell Hill Road
43	Montague Road
44	New Salem Road
45	Gate Lane
46	Rush Road
47	Lockes Village Road/Scenic View of McAvoy's Pond
48	Old Egypt Road
49	Wendell Depot Road/Long Range View at Common
50	Stone Road
51	Farley Road/Long Range View
52	Mormon Hollow Road/Long Range View westward
53	Davis Road/ Long Range View westward
Unusual Geological Features	
54	Jerusalem Road Ledge (also has a Scenic Long-range View)
55	Whales Head
56	Steep Hill Off Wendell Depot Road
Unusual Natural Communities	
57	High Energy Riverbank - Millers River
58	Floodplain Forest - Millers River
59	Kettlehole Level Bog - Wendell State Forest
Significant Historical Agricultural Landscapes	
60	J. C. Holston Property, Depot Road
61	J. Wyman Property, Wickett Pond Road

Scenic Resource
 Road
 Rail Line
 Stream, River
 Pond, Lake
 Wetlands
 Recreational Value
 Ecological Value
 Historical Value
 Scenic View
 Permanently Protected Open Space
 Metacomet & Monadnock Trail



Map Source:
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SECTION 5

INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

A. INTRODUCTION

This section of the Open Space and Recreation Plan provides an inventory of the undeveloped parcels in Wendell, including their ownership, use, and level of protection from development. Land parcels of conservation interest are important either because they are already protected from development or because they could be granted priority for protection. Such parcels are considered of interest, either individually or in the aggregate, because they help conserve ecosystems and their services, scenic landscapes, rural character, and/or current and future recreation needs.

Communities across the country are protecting land from development to ensure that the scenic, recreational and resource-based aspects of the landscape remain unchanged. Open space can be protected from development in several ways that differ in the level of legal protection they provide, the method by which they are protected, and by the type of landowner. Section 5 will deal with open space under four levels of protection: permanently protected, temporarily protected, limited protection, and unprotected. These are briefly defined below:

- Land is considered to be **permanently protected** if it is 1) owned by a state conservation agency, a nonprofit conservation land trust or other conservation organization, or by the Town of Wendell under the care and control of the Conservation Commission; or 2) the land is subject to a conservation (or other) restriction in accordance with M.G.L. Ch. 184, section 31;
- Privately owned land is considered to be **temporarily protected** if it is enrolled in one or more of the state's Chapter 61, Chapter 61A or Chapter 61 B current use tax abatement programs;
- All land owned by the Town of Wendell except for cemeteries and land under the care and control of the Conservation Commission is considered to have **limited protection**; and finally
- All privately owned which is neither permanently nor temporarily protected, but in the opinion of the authors should be protected, is considered to be **unprotected**.

These different levels of protection will be discussed in more detail as this section progresses. Areas of Wendell under these different levels of protection are shown on the Protected Open Space Map at the end of this section.

Table 5-1 is a comprehensive inventory of all land in town that provides open space, wildlife habitat, agricultural and forest products, watershed protection, scenic landscapes and recreation opportunities for Wendell residents. The inventory, combined with the Open Space Inventory Map, shows the location, types and distribution of conservation lands in Wendell. These lands have been grouped into two main categories: private and public/nonprofit lands. Within each major category, parcels are differentiated by use (farm- or forestland), by ownership and/or management, and by level of protection (permanent, temporary, limited, and unprotected). The table also shows what percentage of the total land area in Wendell (20,615 acres) each category represents. According to Table 5-1, there are a total of 14,923 acres of open space in Wendell, representing 72% of the Town's total land area. Over three-quarters of the open space is either publicly owned or owned by nonprofit conservation agencies. Wendell's protected lands form a ring of forested land that abuts Orange, Erving, Montague, Shutesbury, Leverett and New Salem.

Table 5-2 includes only the open space in Wendell with some form of protection, either permanent, temporary, or limited. (This table does not include unprotected yet important privately owned farmland and forestland that is included on Table 5-1.) Fifty-seven percent, or 11,833 acres, of Wendell's land is open space that is permanently protected from development. Fifty-five percent of the Town's area is permanently protected open space that is publicly owned (including nonprofits), and 3% is under private ownership. Open space with temporary and limited protection comprises 12%, or 2,497 acres, of land in Wendell. Twelve percent of the Town's land is open space under temporary protection that is privately owned, and less than 1% is publicly owned under limited protection. Overall there are approximately 14,330 acres of open space in Wendell under some form of protection, comprising 70% of the total land area in town.

Table 5-1: Summary Areas of Farmland and Forest Open Space by Ownership and Level of Protection from Development

PRIVATELY OWNED OPEN SPACE	Acres	% of Total Land Area
FARMLAND		
<i>Temporarily Protected</i>		
Chapter 61A (see Table 5-3)	437	2%
<i>Unprotected Yet Important Privately Owned Farmland</i> (see Table 5-4)		
	90	<1%
TOTAL PRIVATELY OWNED FARMLAND	527	3%
FORESTLAND		
<i>Permanently Protected by Conservation Restriction</i> (see Table 5-5)		
	560	3%
<i>Temporarily Protected</i>		
Chapter 61 (see Table 5-6)	1,825	9%
Chapter 61B (see Table 5-7)	149	<1%
<i>Total Temporarily Protected Forestland</i>	1,974	10%
<i>Unprotected Yet Important Privately Owned Forestland</i> (see Table 5-8)		
	503	2%
TOTAL PRIVATELY OWNED FORESTLAND	3,037	15%
TOTAL PRIVATELY OWNED OPEN SPACE	3,564	17%
PUBLICLY OWNED AND NONPROFIT OPEN SPACE		
FORESTLAND		
<i>Permanently Protected by State Conservation Agencies</i> (see Table 5-9)		
Department of Conservation and Recreation	7,638	37%
Division of Fisheries and Wildlife	640	3%
DCR/Division of Water Supply Protection	585	3%
<i>Total Permanently Protected by State Conservation Agencies</i>	8,863	43%
<i>Land with Permanent Protection by Town of Wendell</i> (see Table 5-10)		
Conservation Commission	442	2%
Cemeteries	6	<1%
<i>Total Permanently Protected by Town of Wendell</i>	448	2%
<i>Land with Limited Protection by Town of Wendell</i> (see Table 5-11)		
	86	<1%
<i>Permanently Protected by Nonprofit Conservation Organizations</i>		
Mount Grace Land Conservation Trust (see Table 5-12)	76	<1%
Massachusetts Audubon Society (see Table 5-13)	1,886	9%
TOTAL PUBLICLY OWNED AND NONPROFIT LAND	11,359	55%
TOTAL OPEN SPACE IN WENDELL	14,923	72%

Source: Wendell Assessor's Records and Maps, 2008, 2009 & 2010; MassGIS Open Space data, 2005.

Table 5-2: Summary of Protected Open Space by Ownership and Level of Protection

LEVEL OF PROTECTION	Acres	% of Total Land Area
PERMANENTLY PROTECTED OPEN SPACE		
Private		
Forestland (CR)	560	
Total Permanently Protected Private Open Space	560	3%
Public & Nonprofit		
State Conservation Agencies	8,863	
Town of Wendell	448	
Mount Grace Land Conservation Trust	76	
Massachusetts Audubon Society	1,886	
Total Permanently Protected Public & Nonprofit Open Space	11,273	55%
TOTAL PERMANENTLY PROTECTED OPEN SPACE	11,833	57%
OPEN SPACE UNDER TEMPORARY AND LIMITED PROTECTION		
Private		
Farmland (Chapter 61A)	437	
Forestland (Chapter 61)	1,825	
Recreation (Chapter 61B)	149	
Total Temporarily Protected Private Open Space	2,411	12%
Public		
Town of Wendell	86	
Total Limited Protection Public Open Space	86	<1%
TOTAL TEMPORARY AND LIMITED PROTECTION OPEN SPACE	2,497	12%
TOTAL OPEN SPACE WITH SOME LEVEL OF PROTECTION	14,330	70%

Source: Wendell Assessor's Records and Maps, 2001, 2008 & 2010; MassGIS Open Space data, 2005.

The permanently protected parcels in Wendell are owned by the Commonwealth of Massachusetts and managed by various state conservation agencies, including the Department of Conservation and Recreation (DCR), DCR's Division of Water Supply Protection, and the Division of Fisheries and Wildlife (DFW). In addition, open space is owned and/or managed by private groups such as the Mount Grace Land Conservation Trust (MGLCT) and Massachusetts Audubon Society (MAS), as well as by private citizens who have sold or donated their development rights to one of these other conservation groups or agencies. Land owned and managed by the Conservation Commission and cemeteries owned by the Town of Wendell are also considered to be permanently protected. Permanent protection is afforded under Article 97 of the Amendments to the Massachusetts Constitution, and requires a two-thirds vote of both the legislature and of Town Meeting to convert open space for development use. Lands with limited protection are Town-owned open space parcels which could be developed by decision of the Selectboard or Town Meeting (excepting lands under the authority of the Conservation Commission). Temporarily protected lands are privately owned lands enrolled in the Chapter 61, 61A and 61B land classification and taxation programs.

Wendell contains 1,825 acres of forestland that are enrolled in the Chapter 61 land classification and taxation program, representing 9% of the Town's total land area.

Owners of forestland enrolled in the Chapter 61 program enjoy a reduced property tax assessment if the land is managed for forest products under a ten-year management plan. This program provides temporary protection from development. Landowners may terminate Chapter 61 enrollment at any time, but will then be required either to pay a percentage of the sale price or land value (conveyance tax) or to pay back the difference between the reduced tax assessment and the taxes that would have been levied on the normal assessed value of the land over the last five years, plus 5% interest (rollback tax). A true benefit for Wendell is that once a landowner accepts a formal offer to buy a parcel in the Chapter 61 program, the Town enjoys the right of first refusal for one hundred and twenty days.

Wendell's agricultural lands are unique landscapes that significantly enrich the Town's rural character, although they are limited in number. A total of 437 acres of farmland is currently enrolled in the Chapter 61A farmland program, representing just 2% of the Town's total area. This is an increase of 85 acres (or 24%) over the 352 acres that were enrolled in Chapter 61A in 2002. Like Chapter 61, which temporarily protects forests under production, Chapter 61A similarly provides agricultural land protection for parcels of 5 acres or more, but those landowners must apply yearly to the Board of Assessors for 61A enrollment. If a parcel faces a change of use, such as conversion to residential housing, payment of back taxes is required (similar to the Chapter 61 program described above) and the Town's 120-day right of first refusal applies. But farmland can be permanently protected through sale of the right-to-develop to a land trust or state agency. The Massachusetts Department of Agricultural Resources (MDAR) purchases the development rights of farmland in the county regularly through the Agricultural Preservation Restriction (APR) Program. The APR Program offers to pay farmland owners the difference between the "fair market value" and the "agricultural value" of their farmland in exchange for a permanent deed restriction that precludes any use of the property that will have a negative impact on its agricultural viability. The Town of Wendell currently had no farmland that is permanently protected through the APR program.

Similar to other Chapter 61 programs, 61B promotes the private ownership of open space and recreation land, with the requirement that the land be used for public and private recreation purposes, or be left as open space. No management plan is required, but the tax savings are smaller. Timber harvesting is allowed on lands in the Chapter 61B program, but only if the property has an approved management plan. The Town has the right of first refusal on 61B parcels, similar to other Chapter 61 programs. Currently, there are just 149 acres enrolled in Chapter 61B, representing an approximately 56% reduction since 2002 when there were 339 acres. This is the result of a significant transfer of lands into permanent protection under conservation restrictions in recent years, both through private transfers of development rights and public purchases of conservation lands.

Chapter 61, 61A and 61B lands are regarded as temporarily protected. A landowner with enrolled parcels is constrained from selling and/or developing the land only by the Town's capacity to exercise its first refusal right. Wendell would likely be more

successful in taking advantage of this opportunity to acquire open space by partnering with DCR, DFW, MGLCT, MAS, or by working with a willing Conservation Commission. Private conservation trusts often have the ability to conduct successful fundraising campaigns in a short period of time, while DCR and DFW may be interested in purchasing the land in the near future. This negotiating process between landowner, land trust and State agency can often be carried through in shorter time than if the Town brought the purchase proposal before a Special Town Meeting. Ideally the Town would have worked on this relationship beforehand so that it would be able to assign its first refusal right to the land trust as soon as the landowner accepted an offer to buy from a developer.

The Open Space Inventory Map at the end of this section shows many potential and possible linkages between existing permanently protected lands. These connecting lands are likely to be privately owned. Helping interested landowners in selling and/or protecting linking parcels or corridors may depend on the Town's ability to work quickly with potential land or conservation easement buyers. It would benefit the Town to formalize working relations with DCR, DFW, MGLCT and MAS, given their continuing interest in protecting large greenways between the North Quabbin Region and the Connecticut River Valley. The Wendell Selectboard or Planning Board could appoint a member or resident as Special Liaison to these groups.

Such a liaison could network efficiently with conservation groups by joining the North Quabbin Regional Landscape Partnership (NQRLP). The Partnership is an informal working group of forty federal, state and municipal agencies and nonprofit boards and organizations which seeks to protect the ecological, cultural and historical resources of the area through collaborative conservation planning. The Special Liaison would be able to solicit aid from NQRLP members to assist in land protection projects.

B. PRIVATELY OWNED PARCELS

Although much open space in Wendell is permanently protected by state and conservation organizations, the rest is owned by persons, resident and non-resident, or by associations or trusts, which are not conservation land trusts. Some parcels are permanently protected because owners have sold or donated partial property rights to land trusts or conservation organizations. Other parcels are temporarily protected through enrollment in Chapter 61 programs. The remaining private lands are unprotected from development, and are included in this Open Space Plan for their conservation values: wildlife habitat, possible unique recreational opportunities, or potential connections between permanently protected parcels. Some unprotected parcels may be valued highly enough by the community as to consider protecting them, depending on landowner interest and the ability of concerned parties to reach agreement on acceptable prices and conditions.

Private landowners control approximately 24 percent of the open space in Town, some in pasture (15%), but most (85%) in forest. These parcels are on the tax rolls whether

protected or not. Many landowners take advantage of the Chapter 61 program: there are 2,411 acres of open space in the 61, 61A and 61B program combined. As already mentioned, Chapter 61 programs offer Wendell possible opportunities to buy enrolled properties when they are put up for sale.

In Tables 5-3 through 5-8, privately owned agricultural and forest lands are listed by level of protection: permanent, temporary, and unprotected. Their ownership is provided along with Assessor's map and lot numbers, and acreage. Current use is based on vegetation. Farmland is primarily pasture while forest is presumed to be so used whether managed for timber or not. Public access is not guaranteed and is subject to change. State agencies may require some level of public access before buying parcels or conservation restrictions. State-wide conservation organizations such as Massachusetts Audubon Society may limit access because providing sanctuary is important to their mission. Public access is not required for Chapter 61 enrollment, including the Chapter 61B Recreation program. Private unprotected land may or may not be open to public access. Given the nature of these open space parcels, access by people with disabilities is also not guaranteed or expected. The recreational potential of these privately owned parcels is identified only if reflected in the far right column, "Important characteristic." Parcels without significant recreational potential may show either another attribute in this column, or none.

Important characteristics that might encourage Wendell to purchase land from willing owners, or to act on its right of first refusal to Chapter 61 parcels, might include: prime farmland soils, pasture, wetlands, aquifer recharge areas, or rare or endangered species habitats. In addition, such parcels may constitute important links for establishing greenway corridors, or may protect additions to large blocks of contiguous forest.

B.1. Privately Owned Agricultural Land

According to the 2005 Massachusetts Geographical Information Systems (MassGIS) land use coverage and the Town Assessor's records, there are no permanently protected agricultural lands in Wendell. This is not surprising, as most agricultural lands are protected only after being granted priority by MDAR, the main source of farmland preservation funds in Franklin County and throughout the state. Candidates for protection normally must be actively farmed and contain prime farmland soils. Relatively little of the land in Wendell currently used for pasture contains prime farmland soil, and much of the land which does (a total of 1, 416 acres) is largely unavailable for agricultural use and/or unprotected.

About 437 acres of Wendell farmland are in Chapter 61A. All this land has value for food production, thus for residents' livelihoods, and for scenic vistas. Some parcels are important by virtue of stream corridors and prime farmland soils. Others represent our historical roots and have been named Significant Historical Agricultural Landscapes. (See Section 4, subsection on Scenic Resources and Unique Environments). "Landscape significance" in this plan is based on National Park Service criteria and is related to particular landscape-level usage, such as agriculture, transportation or community development.

Table 5-3: Agricultural Land with Temporary Protection from Development Enrolled in the Ch. 61A Land Classification and Taxation Program

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristics
Bowers, R. F.	402	20	1.00	Part of farm that is a <i>Significant Historical Agricultural Landscape</i>
Diemand Family Trust	404	13	47.00	Gap between DCR parcels
Facey, W. A.	404	18, 23, 24.1, 25, 26	70.20	
Diemand, A. J. Jr. & E. G.	404	32.1	96.00	Contains stream corridor
Wilder, D.E. & J.A.	406	38	20.00	
Wilder, D.E. & J.A.	406	39	11.90	
Bowers, R.F.	407	2	56.00	<i>Significant Historical Agricultural Landscape</i>
Wilder, D.E. & J.A.	407	50.1	55.00	
Dunn, J. & Fyler, J.	408	109	5.10	
Senn, M. A.	408	20	42.00	<i>Significant Historical Agricultural/Community Development Landscape</i> and contains Prime Farmland Soils
Senn, M. A.	408	74.2	3.03	Adds to and provides link between Center and Wendell State Forest
Senn, M. A.	408	74.3	4.74	Adds to and provides link between Center and Wendell State Forest
Pooser, J. & A.	409	25	3.80	
Pooser, J. & A.	409	26.1	15.00	
Woodward, J. & K.	411	39	3.41	
Overing, L. & J.R.	411	42	2.53	Contains Prime Farmland Soils
Total			436.71	

Source: Wendell Assessor's Records and Maps, 2010 and MassGIS Open Space data, 2005.

Not all Wendell farmland is enrolled in Chapter 61A. The parcels listed in Table 5-4 are unprotected and contain small pasture or crop lands within them. Their value as open areas may be of significance to residents interested in land protection. Many of these parcels contain prime farmland soils and are situated above known aquifers.

Table 5-4: Unprotected yet Important Agricultural Lands Not in the Ch. 61A Program

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Cappelluzzo, E.	402	1.3	37.02	Prime Farmland Soils
Schley & Laur	404	41.2	6.56	Abuts Mormon Hollow Brook
Schley & Laur	404	41.3	8.95	Abuts Mormon Hollow Brook
Lake Grove Maple Valley, Inc.	407	45	12.40	
Marceau	408	4.2	3.74	Prime Farmland Soils
Sundell	408	71	10.80	Prime Farmland Soils
Compagnone & Piazza	408	72	5.60	Prime Farmland Soils
Von Ranson	408	74	5.05	
Total			90.12	

Source: Wendell Assessor's Records and Maps, 2008 and MassGIS Open Space data, 2005.

B.2. Privately Owned Forested Land

Most natural processes do not respect political boundaries, but different types of ownership can affect the forest through varying development and management practices. Permanently protected forestland (itemized in Table 5-5) is that for which landowners have donated or sold development rights to a state conservation agency or land trust in return for placement of a conservation restriction on the deed. Those landowners retain all other property rights not conveyed by deed, and they pay property taxes, which will, however, be lower due to reduced value of the land. Temporarily protected forestland includes parcels enrolled in Chapter 61 and 61B (see Tables 5-6 and 5-7). This inventory also includes other unprotected parcels if they contain significant attributes deemed important by the community in Table 5-8.

Table 5-5: Privately Owned Forestland Permanently Protected from Development with a Conservation Restriction

Land Owner	Holder of the Conservation Restriction	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Bennett, T.M.	DFW	401	9.0	3.56	Protects Fiske Brook
Waters, P.J. Jr.	DFW	401	9.3	7.60	Protects Fiske Brook
Robinson, N.T & M.	DFW	401	9.4	6.40	Protects Fiske Brook
Murphy, K.	DFW	401	9.5	9.70	Protects Fiske Brook
Gallant, P. & Richardson, P.	DCR	405	22	57.00	Adds to Bear Mountain DCR lands
Phelps, M.& I.	MAS	406	31.5	6.01	Protects Osgood Brook; adjoins WWWS; Prime farmland soils
Swallow Rise, Inc.	MAS	406	34	15.00	Buffers Osgood Aquifer
Wulfkuhle, L.M.	MGLCT	407	7.1	64.00	Contains extensive wetlands & Mormon Hollow Brook & aquifer
Kusmaul, A.M.	MGLCT	407	7.2	3.00	Contains extensive wetlands & Mormon Hollow Brook & aquifer
Wulfkuhle, L.M.	MGLCT	407	7.3	3.02	Contains extensive wetlands & Mormon Hollow Brook & aquifer
Paulino, M.J.	MGLCT	407	7.4	3.43	Contains extensive wetlands & Mormon Hollow Brook & aquifer
Caruso, B. & Compagnone, D.	MGLCT	408	79	48.00	Contains Mormon Hollow Brook headwaters; Adds to DFW land
Kish, G.A.	MGLCT	408	85	3.79	Adds to DFW land
Gensler, S.A. & Smith	MGLCT	408	86.2	4.04	Adds to DFW land
McBride, M.V.	FLT	409	4	16.00	Frontage on tributary to Lake Wyola
Richard, D.A & B.A.	FLT	410	29	5.11	Stream corridor in Quabbin watershed
Richard, D.A & B.A.	FLT	410	30	40.00	Stream corridor in Quabbin watershed
Richard, D.A & B.A.	FLT	410	31	14.97	Stream corridor in Quabbin watershed
Richard, D.A & B.A.	FLT	410	26.1	2.65	Stream corridor in Quabbin watershed
Richard, D.A & B.A.	FLT	410	26.2	10.00	Stream corridor in Quabbin watershed
Phelps, M.& I.	MAS	411	4	4.02	Fills in WWWS
Phelps, M.& I.	MAS	411	7	10.00	Fills in WWWS
Phelps, M.& I.	MAS	411	26	8.00	Potential link between blocks of contiguous protected forest North and south of New Salem Road (WWWS & DCR)

Land Owner	Holder of the Conservation Restriction	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Phelps, M.& I.	MAS	412	7.2	21.22	Contains Prime Farmland Soils, stream corridor, overlays the aquifer to Osgood Brook, & adjoins WWWS
Doughty, F.M. & L.	MAS	412	7.3	13.21	Adjoins WWWS; Life estate
Stanton, C. & Holmgren, F.	MAS	412	7.4	5.07	Adjoins WWWS
Doughty, F.M. & L.	MAS	412	7.5	5.11	Adjoins WWWS
Phelps, M.& I.	MAS	412	24.1	122.00	Contains stream corridor and aquifer associated with Whetstone Brook and adjoins WWWS
Phelps, M.& I.	MAS	412	30	46.00	Contains stream corridor and aquifer associated with Whetstone Brook and adjoins WWWS.
Phelps, M.	MAS	414	32	1.20	Protects Whetstone Brook
Phelps, M..	MAS	414	38	0.65	Protects Whetstone Brook
Total				559.76	

Source: Wendell Assessor's Records and Maps, 2010; Masslandrecords.com, 2010; and MassGIS Open Space data, 2005.

Note: DCR=Department of Conservation & Recreation; DFW=Division of Fisheries & Wildlife; FLT=Franklin Land Trust; MAS=Massachusetts Audubon Society; MGLCT=Mount Grace Land Conservation Trust; WWWS=Whetstone Wood Wildlife Sanctuary.

Table 5-6: Privately Owned Forestlands with Temporary Protection from Development Enrolled in the Ch. 61 Forestland Classification and Taxation Program

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristics
Weiss, R.S.	401	3	37.20	Contains portion of Catamount Swamp
Heyes, F.	401	8	57.00	Abuts Fiske Brook and adds to contiguous protected forest south of Montague Rd.
Walker, R.W. & M.L.	401	15	21.00	Near Catamount Swamp & Red Brook
Calagione, S.A. & M.E.	401	16	39.00	Near Catamount Swamp & Red Brook
Calagione, S. & M.	401	18	15.70	Abuts Red Brook
Lewis, T.E. & M.J.	401	22	74.00	Contains Fiske Brook and portion of the aquifer
Stinson, K.A.	402	1.1	53.90	Farmland/Prime Farmland Soils
Casilio, J. & S.	402	5	23.00	Adds to contiguous protected forest south of Montague Rd.
Chapman, P.	404	39.1	52.5	Borders Mormon Hollow Brook at its confluence with Millers River
Mann Lumber Co., Inc.	405	18	110.00	Some Prime Farmland Soils and adds to contiguous protected forest around Bear Mountain
Lewis, D.L.	406	31.1	10.70	Between 2 properties owned by MAS
Porter, A.H. & Jakob, E.M.	406	31.2	12.51	Frontage on Bowens Pond
Godfrey, P. & M.	407	7.0	14.78	Some Farmland Soils, wetlands, ponds, Mormon Hollow Brook, and it is an aquifer
Judice, F.R.	407	8	30.00	Abuts Mormon Hollow Brook and its Aquifer
Drohen, R. & Spittle, N.	407	22	44.00	Adds to contiguous protected forest north of Montague Rd. and overlays Mormon Hollow Brook; aquifer
Arsenault, D.A. & M.J.	407	47	42.10	Wildlife habitat

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristics
Tenney, P. & K.	407	58	30.54	Some Prime Farmland Soils and abuts Osgood Brook Aquifer
Tenney, P. & K.	407	58.1	15.49	Some Prime Farmland Soils and abuts Osgood Brook Aquifer
Choiniere, R. & D.	408	4.3	1.06	Adds to contiguous protected forest north of Montague Rd.
Choiniere, R.W. Jr. & D.A.	408	4.4	5.25	Adds to contiguous protected forest north of Montague Rd.
Choiniere, R.W. Jr. & D.A.	408	4.5	5.77	Adds to contiguous protected forest north of Montague Rd.
Hickman, L. A.	408	62	28.10	Abuts Plympton Brook and its Aquifer
Caruso, B.L. & Compagnone, D.	408	79	11.72	Adds to and provides link between Center and Wendell State Forest and between north and south forest blocks across Montague Rd.; Buffers headwaters of Mormon Hollow Brook and Plympton Brook
Godfrey, P. & M.	408	81	37.70	Adds to and provides link between Center and Wendell State Forest and between north and south forest blocks across Montague Rd. and contains vernal pools
Houghton, M.B.	408	82.1		Adds to and provides link between Center and Wendell State Forest and between north and south forest blocks across Montague Rd.
Putnam, H. S. III & J.	408	83	12.8	Adds to and provides link between Center and Wendell State Forest and between north and south forest blocks across Montague Rd.
Burstein, J.	408	84	12.13	Adds to DFW lands and contains vernal pools
Putnam, H. III	408	96.4	0.96	Adds to and provides link between Center and Wendell State Forest and between north and south forest blocks across Montague Rd.
Maiella, E.C. & Radner, J.P.	409	45.1	10.00	Abuts DFW land
Kramer, G.	409	57.4	39.50	Abuts DCR land
Haddad, H.	409	67	4.77	
Arnold, G.D.	409	68	25.00	Contains portion of an aquifer
Haddad, H.	409	70	68.00	Contains portion of an aquifer
Afferika, J.M. (aka Bialer, J.M.)	409	74	26.00	<i>A Significant Historical Agricultural Landscape</i>
Afferika, J.M. (aka Bialer, J.M.)	409	87	113.00	<i>A Significant Historical Agricultural Landscape</i> and abuts the West Branch of the Swift River
Haddad, H.	409	90	8.14	
Mauri, M. & S.B..	409	99	7.50	Overlays the Plympton Brook Aquifer
Plourde-Gagnon, L.J.	410	32	24.80	Stream corridor and aquifer in Quabbin Watershed
Killay, J.M. Jr. & K.T.	410	68	103.00	Within Quabbin Watershed and could link blocks of protected forest south of New Salem Rd.

Section 5 – Inventory of Lands of Conservation and Recreation Interest

Wendell Open Space and Recreation Plan 2010

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristics
W.D. Cowles, Inc.	410	69	137.00	Adds to contiguous protected forest south of New Salem Rd.
Overing, H. & E.J.	410	74	39.00	Contains Prime Farmland Soils and stream corridor of Middle Branch of Swift River
Overing, H. & E. I.	410	77	20.00	Contains Prime Farmland Soils and stream corridor of Middle Branch of Swift River; part of property is a field.
Feltman, N.G. & L.M.	411	13.0	126.71	Abuts WWWS
Craddock, J.W. & B.L.	411	13.1	13.29	Abuts WWWS
Wilbur, P. & C.	411	50	28	Surrounded by WWWS
Robinson, J.D. & C.V.	413	1	183.00	Surrounds Bowens Pond and adds to the Bear Mountain protected forest block and overlays the Osgood Brook Aquifer
WD Cowls, Inc.	413	22	49.20	Adds to contiguous protected forest east of Wendell Depot Rd.
Totals			1,824.82	

Source: Wendell Assessor's Records and Maps, 2010 and MassGIS Open Space data, 2005.

Table 5-7: Forestlands with Temporary Protection from Development Enrolled in the Ch. 61B Recreational Open Space Lands Classification and Taxation Program

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristics
Putnam, H.S. III & J.	401	7.0	14.00	Adds to contiguous protected forest south of Montague Rd.
Phelps, M.M. & I. L.	401	19	13.50	Contains Prime Farmland Soils And Red Brook
Quinnehtuk Co.	405	19	51.00	Abuts Wendell State Forest
Hudson, R.D. & Gorzocoski, J.	406	8.4	16.29	Abuts Wendell State Forest
Mangan, T.F. Jr. & Forward J.	407	26	1.10	Abuts Phelps Forest Conservation Area
Mangan, T.F. Jr. & Forward J.	407	27	29.60	Abuts Phelps Forest Conservation Area
Cadorette, M.S. & Lafrance, P.W.	413	20	18.00	Abuts Wendell State Forest
Phelps, M.M. & I.L.	413	47	5.80	A potential link to east-west corridor across Wendell Depot Rd. and adjoins WWWS
Totals			149.29	

Source: Wendell Assessor's Records and Maps, 2010 and MassGIS Open Space data, 2005.

Table 5-8: Unprotected yet Important Forestlands Not in the Ch. 61 or 61B Programs

Owner	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Laclaire, R.	401	2	55.0	Catamount Swamp
Eckhardt, K.	401	21	81.00	East West Link between protected forest Blocks part of southern section of the Ring of Open Space around Wendell
Kowacki & Botkin	405	13	59.00	Gap in protected forest in and around Bear Mountain
Fornas	408	37	62.00	Potential east west link between blocks of protected forest on either side of Locke's Village Rd.
Mattson	409	53	34.50	Potential east west link between blocks of protected forest on either side of Locks Hill Rd.
Kelley	409	84	34.00	Potential east west link between blocks of protected forest on either side of Locks Hill Rd.
McAvoy	409	33.1	87.00	Surrounds McAvoy's pond and is situated above an aquifer
Brenneman	413	27	90.00	Significant sized addition to large protected forest block north of New Salem Rd.
Total			502.50	

Source: Wendell Assessor's Records and Maps, 2008 and MassGIS Open Space data, 2005.

C. PUBLIC AND NONPROFIT PARCELS

State conservation agencies, the Town of Wendell, nonprofit land trusts and conservation organizations own substantial areas in Wendell. Many of those lands represent the ring of protected open space surrounding Wendell Center. Nearly all this land is permanently protected. The following inventory comprises parcels owned by the Commonwealth and the Town, by the Mount Grace Land Conservation Trust, and by one statewide conservation organization, the Massachusetts Audubon Society.

C.1. Publicly Owned Open Space

Public open space includes lands owned by the Commonwealth and the Town. Three agencies manage the state owned lands: the Department of Conservation and Recreation, the Division of Fisheries and Wildlife, and DCR's Division of Water Supply Management (DCR/WSM), as shown in Table 5-9.

DCR lands are spread throughout Town as part of the Wendell State Forest (WSF), and are managed for recreation, timber cutting and fire protection. From woodland surrounding Swamp Road in the southwest corner of Town, north across Montague Road, the WSF incorporates most of western Wendell, as well as Bear Mountain to the north and along the south bank of the Millers River, east across Wendell Depot Road to the

Orange town line. DCR also owns parcels interspersed with DCR/WSM forest in the southeast of Town, within the Quabbin watershed. These lands are open to the public free of charge (except for Ruggles Pond State Park) and are the most extensively used recreational lands in Wendell. Hiking, swimming, running, canoeing, hunting, fishing, birdwatching, horseback riding and cross-country skiing are enjoyed by many residents and visitors on the many trails, including the Metacomet-Monadnock Trail as well as Ruggles and Wicket Ponds. These forested areas include extensive wetlands and stream corridors as well, and some have prime agricultural soils.

The DFW lands in the Wendell Wildlife Management Areas are mainly in southern Wendell, on and surrounding wetlands, and thus form large blocks of protected contiguous forest. They include forest land between Locke's Village Road and West Street, around Plympton Brook and near Bullard Pasture Road. Another block of DFW forest lies between Farley and Montague Roads and protects part of the Mormon Hollow Brook aquifer. A third DFW assemblage lies west of Cooleyville Road near the West Branch of the Swift River. DFW also owns five parcels that protect approximately 6,500 feet of the southern banks of the Millers River. DFW lands are open to the public though normally the level of recreation facilities management is low. DFW lands are managed for multiple uses but hunting, fishing, kayaking and canoeing enthusiasts are more likely to be able to utilize sites with the least amount of established trails and facilities.

DCR's Division of Water Supply Management (DCR/WSM) manages its forest land principally for protection of the Quabbin Watershed. Limited recreational use is permitted but not encouraged; public access is not supported with physical facilities that encourage use. People with disabilities, therefore, will not find accessible recreation open space provided in DCR/WSM properties.

Table 5-9: State-Owned Permanently Protected Land: Wendell State Forest, Wildlife Management Areas, and Quabbin Watershed Lands

Name of Property	Manager	Assessors Map	Assessors Lot	Assessors Acres
WENDELL STATE FOREST	Department of Conservation & Recreation (DCR)			
	DCR	401	1	42.40
	DCR	401	5	44.70
	DCR	401	13	69.87
	DCR	402	4	10.87
	DCR	402	8	81.00
	DCR	402	10	43.76
	DCR	402	11	73.00
	DCR	402	12	70.00
	DCR	402	14	23.00
	DCR	402	18	221.00
	DCR	402	19	1,339.00
	DCR	402	21	5.70
	DCR	402	22	19.00
	DCR	403	5	47.00
	DCR	403	6	76.10
	DCR	403	7	19.00
	DCR	403	8	334.00
	DCR	403	9	18.00
	DCR	403	10	20.00
	DCR	403	11	1.70
	DCR	404	1	40.00
	DCR	404	2	113.00
	DCR	404	10	18.00
	DCR	404	40	7.50
	DCR	404	71	20.00
	DCR	404	73	53.00
	DCR	404	74	108.00
	DCR	404	75	58.00
	DCR	405	1	25.00
	DCR	405	2	66.00
	DCR	405	8	55.00
	DCR	405	12	78.00
	DCR	405	14	58.28
	DCR	405	15	30.80
	DCR	405	16	34.80
	DCR	405	17	44.50
	DCR	405	20	87.04
	DCR	405	21	7.50
	DCR	405	23	42.00
	DCR	405	24	369.00
	DCR	405	25	60.00
	DCR	405	26	8.40
	DCR	405	27	17.00
	DCR	405	28	17.00
	DCR	405	29	13.20
	DCR	405	30	28.00

Name of Property	Manager	Assessors Map	Assessors Lot	Assessors Acres
	DCR	405	31	68.50
	DCR	405	32	20.00
	DCR	405	34	12.20
	DCR	405	35	10.60
	DCR	406	2	424.00
	DCR	406	15	24.00
	DCR	406	16	31.00
	DCR	406	24	67.00
	DCR	406	25	32.58
	DCR	406	26	248.50
	DCR	406	26.1	108.00
	DCR	407	1	40.00
	DCR	407	3	9.00
	DCR	407	5.2	6.28
	DCR	407	38.2	13.20
	DCR	407	39	168.00
	DCR	408	6	129.00
	DCR	408	27	43.10
	DCR	410	62	103.77
	DCR	411	1	188.30
	DCR	411	18	146.00
	DCR	411	19	8.90
	DCR	412	33	74.05
	DCR	413	2	1.4
	DCR	413	3	57
	DCR	413	4.1	51
	DCR	413	35	469.00
	DCR	413	36	21.00
	DCR	413	37.1	12.8
	DCR	413	38	7.5
	DCR	413	39	17
	DCR	413	40	13.9
	DCR	413	41	106.9
	DCR	414	2	368
	DCR	414	3	5.6
	DCR	414	4	59.757
	DCR	414	5	271.94
	DCR	414	6	17
	DCR	414	42	19
	DCR	414	46.1	78.77
	DCR	414	61	18
	DCR	414	62	48.00
TOTAL WENDELL STATE FOREST (DCR)				7,637.67

Name of Property	Manager	Assessors Map	Assessors Lot	Assessors Acres
WENDELL WILDLIFE MANAGEMENT AREAS	Division of Fisheries and Wildlife (DFW)			
	DFW	405	3	18.00
	DFW	405	4	20.84
	DFW	405	5	5.80
	DFW	405	6	8.20
	DFW	408	56.1	280.80
	DFW	408	86.1	103.58
	DFW	408	110.4	10.50
	DFW	409	23.1	107.00
	DFW	409	83	4.61
	DFW	410	16	14.28
	DFW	410	18	13.39
	DFW	411	2	40.238
	DFW	414	10	13.00
TOTAL WENDELL WILDLIFE MANGEMENT AREAS (DFW)				640.24
QUABBIN WATERSHED LANDS	DCR/Division of Water Supply Protection (DCR/WSP)			
	DCR/WSP	409	82	49.80
	DCR/WSP	409	85	5.00
	DCR/WSP	409	85.1	4.50
	DCR/WSP	409	86	5.92
	DCR/WSP	409	88	20.00
	DCR/WSP	410	34	38.30
	DCR/WSP	410	35	11.00
	DCR/WSP	410	47	27.00
	DCR/WSP	410	49	170.70
	DCR/WSP	410	51	16.90
	DCR/WSP	410	52	3.50
	DCR/WSP	410	53	37.00
	DCR/WSP	410	54	37.00
	DCR/WSP	410	55	0.30
	DCR/WSP	410	56	30.90
	DCR/WSP	410	57	28.00
	DCR/WSP	410	59	4.10
	DCR/WSP	410	60	18.50
	DCR/WSP	410	61	11.00
	DCR/WSP	410	65	35.60
	DCR/WSP	410	70	3.40
	DCR/WSP	410	72	0.44
	DCR/WSP	411	33	25.60
	DCR/WSP	411	47	0.48
TOTAL QUABBIN WATERSHED LANDS (DCR/WSP)				584.94
TOTAL STATE-OWNED PERMANENTLY PROTECTED LAND				8,862.85

Source: Wendell Assessor's Records and Maps, 2009 and 2010.

The Town of Wendell owns approximately 448 acres of permanently protected open space, the vast majority of which is under the authority of the Conservation Commission, as shown below in Table 5-10. All of these properties have been acquired by or transferred to the Conservation Commission since the publication of the 2002 Open Space and Recreation Plan. Many of these Town-owned open space parcels help protect wetlands and streams, provide access to other protected land, and thus help extend the habitat and recreational value of the state lands. All of these town-owned permanently protected properties are located in the Residential Agricultural District, the single district which encompasses the entire Town.

Table 5-10: Town-Owned Permanently Protected Land

Name/Location of Parcel	Assessors Map/Lot	Assessors Acres	Current Use/Condition	Public Access	Type of Grant Received	Recreation Potential/Important Characteristic
CONSERVATION COMMISSION						
Montague Rd. Town Forest/ South of Montague Rd./East of Hemmiway	401/6	15.00	Wetlands good for hunting	No trails/ access via Montague Road.	None	Extends block of contiguous forest south of Montague Rd.
Phelps Forest Conservation Area	401/14	34.00	Good	Yes	None	Harvest timber for benefit of schools
Phelps Forest Conservation Area	401/17.2	37.00	Good	Yes	None	Harvest timber for benefit of schools
Fiske Pond Conservation Area	401/26	124.79	Excellent	Yes	DCR Self-Help Grant	DCR holds CR; 10-acre pond & wildlife habitat
Phelps Forest Conservation Area	401/19.1	55.00	Good	Yes	None	Harvest timber for benefit of schools
Montague Rd. Town Forest/ South of Montague Rd./East of Hemmiway	402/6	74.00	Wetlands good for hunting	No trails/ access via Montague Road.	None	Extends block of contiguous forest south of Montague Rd.
Montague Rd. Town Forest--South of Montague Rd./East of Hemmiway	402/7	55.00	Wetlands good for hunting	No trails/ access via Montague Road.	None	Extends block of contiguous forest south of Montague Rd.; Contains a vernal pool
South of Farley Rd. & North of Wickett Pond Rd.	407/38.1	30.00	Used for shooting practice & logged to fund schools	Off Farley Rd.	None	Buffers wetlands and aquifer associated with Mormon Hollow Brook; another 9 acres under limited protection
North of Farley/South of Stone Rd.	407/48	17.50	Level & swampy	Via Wendell State Forest	None	Buffers wetlands and aquifer associated with Mormon Hollow Brook
Total Conservation Commission		442.29				

Name/Location of Parcel	Assessors Map/Lot	Assessors Acres	Current Use/Condition	Public Access	Type of Grant Received	Recreation Potential/Important Characteristic
CEMETERIES						
Center Cemetery	407/68	1.00	Good	Yes; closed for burials	None	Significant Historical Community Development Landscape
Locke's Village Cemetery	409/36	0.51	Good/Mowed	Yes; closed for burials	None	Historical site
Cemetery on New Salem Rd. near intersection with Wendell Depot Rd.	413/4.2	4.75	Good	Yes; open for burials	None	Protects tributary of Osgood Brook
Total Cemeteries		6.26				
TOTAL PERMANENTLY PROTECTED TOWN LAND		448.55				

Source: Wendell Assessor's Records and Maps, 2009 and 2010; MassGIS Open Space data, 2005; and data provided by Open Space Planning Committee, 2010.

The Town also owns a number of properties that are considered to have limited protection, as shown in Table 5-11. The National Historic District status of the Town Common would likely not prevent removal of portions of it for such uses as parking or a community center. Swift River School open space may be used for classrooms or other purposes. Many communities set aside land for future expansion of schools, sports fields, police and fire stations and drinking water supplies. None of the properties currently owned by the Town of Wendell would be suitable for these recreational and other purposes. If such needs were identified and prioritized, the Town would have to acquire additional land that would be appropriate for recreational and community purposes and that would also have to be accessible to physically handicapped and older residents.

Table 5-11: Town-Owned Land with Limited Protection from Development

Name/Location of Parcel	Assessors Map/Lot	Assessors Acres	Condition	Public Access	Type of Grant Received	Important Characteristic
Davis Rd.	403/1.1	0.04	N/A	N/A	None	Bridge reconstruction
North of Davis Rd. near intersection with Jerusalem Rd.	404/12	1.70	N/A	From Davis Road in Wendell State Forest	None	Unknown
Farley Rd.	404/45	2.60	Steep	None	None	On Mormon Hollow Brook
Near Farley Bridge	404/52	4.00	Good as fishing area and as a canoe put-in	Across VT/MA Railroad & M&M Trail passes by	None	Access to Millers River
Herrick Homestead	407/5.1	30.72	Good	From Wickett Pond Rd.	None	Adds to contiguous protected forest north of Montague Rd.
Wendell Depot. Rd.	407/13	1.13	N/A	N/A	None	Site of new Library

Name/Location of Parcel	Assessors Map/Lot	Assessors Acres	Condition	Public Access	Type of Grant Received	Important Characteristic
South of Farley Rd. & North of Wickett Pond Rd.	407/38.1	9.00	Used for shooting practice & logged to fund schools	From Farley Rd.	None	Buffers wetlands and aquifer associated with Mormon Hollow Brook; 30 acres of site are permanently protected
Jackie Lane	407/65.2	2.91	N/A	N/A	None	Fire Station/Town Garage
Town Common	407/66	0.92	Good	Full	State grant for beautification	Significant Historical Agric./Community Development Landscape
Morse Village Rd.	407/71	3.28	N/A	N/A	None	Site of new Town Offices
Pound	408/8	0.02	Overgrown	Good	None	Historical site
Town Common	408/17	0.34	Good	Full	None	Significant Historical Agric./Community Development Landscape
Center St.	408/18	0.17	N/A	N/A	None	Police Station & Town Hall
Cooleyville Rd.	408/31.2	3.13	N/A	N/A	None	Site of Town Well
Locke's Village Rd.	408/73	0.46	N/A	N/A	None	Site of Salt Shed
Locke's Village Rd.	408/75	0.17	N/A	N/A	None	Former Library; site of new Senior Center
Union School	410/76	10.30	Very good condition, well used	Excellent	None	Contains stream corridor of the Middle Branch of the Swift River
Recycling & Transfer Staation	411/24	12.60	Old landfill	Limited	None	May contain headwaters of Whetstone Brook
Intersection of New Salem Rd. & Morse Village Rd.	412/4	0.75	Roadside acreage	Not applicable	None	Historical Site: This is Original location of the Baptist Church.
Wendell Depot	414/18	0.95	Good for fishing, access on Millers River	Good from Wendell Depot Rd.	None	Access to Millers River from Wendell Depot Rd.
Wendell Depot	414/19	0.11	Good for fishing, access on Millers River	Good from Wendell Depot Rd.	None	Access to Millers River from Wendell Depot Rd.
Wendell Depot	414/24	0.34	Vacant land near Rte. 2	Not applicable	None	
Total		85.64				

Source: Wendell Assessor's Records and Maps, 2009/2010; Town Auction Records, 2008; data provided by Open Space Planning Committee, 2010.

C.2. Nonprofit-Owned Open Space

Nonprofit conservation land trusts and conservation organizations that protect open space as part of their mission protect more land than they actually own by purchasing development rights from cooperating landowners. By holding conservation restrictions, these land trusts prevent development even though the parcels remain the property of the

landowners. Mount Grace Conservation Land Trust (MGCLT) also owns open space outright “in fee.” Its holdings in Wendell are itemized in Table 5-12. MGCLT works with landowners interested in full protection of their lands by negotiating with state agencies to locate potential buyers of the development rights. Additionally, if a landowner wants to sell the land in fee, land trusts can often bring together funding from many sources, public and private, to negotiate an acceptable sale agreement.

Table 5-12: Permanently Protected Land Owned by Mount Grace Land Conservation Trust

Property Name/ Location	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Hidden Valley Memorial Forest/Northwest Wendell Near Lyons Brook on Montague Town Line	403	4.0	65.00	Adds to contiguous block of Wendell State Forest and contains tributary to Lyons Brook
Ellis Lot/West of Grohowski Lands	407	28.1	11.20	Adds to block of forested wetlands that overlay productive aquifer
Total			76.20	

Source: Wendell Assessor’s Records and Maps, 2009/2010; personal communication with MGLCT staff, August 2010.

Wendell residents are beneficiaries of the Massachusetts Audubon Society, Inc. (MAS), which is a major conservation organization active in Town. In addition to holding conservation restrictions for several landowners in Town, MAS presently owns about 1,886 acres of land in the Whetstone Wood Wildlife Sanctuary (WWWS), as shown in Table 5-13. The Sanctuary is, for the most part, one contiguous block of land located in the easterly part of Wendell with some land also in Orange and New Salem. It protects most of the headwaters of Whetstone Brook from which it took its name. It also protects a considerable portion of the headwaters of Osgood Brook, one of the few potentially high yielding aquifers in Wendell.

Table 5-13: Permanently Protected Land Owned by Massachusetts Audubon Society, Inc.

Property Name/ Location	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Depot Rd.	406	28	3.00	
West of Bowens Pond	406	31.3	4.93	Buffers Bowens Pond Aquifer
West of Bowens Pond	406	31.4	25.82	Buffers Bowens Pond Aquifer
West of Bowens Pond	406	31.6	3.40	Buffers Bowens Pond Aquifer
West of Bowens Pond	406	31.7	7.31	Buffers Bowens Pond Aquifer
South of Wendell Depot Rd.	406	33.4	15.00	Buffers Osgood Brook
Rush Road frontage lots	410	9.2	4.63	Helps to create greenways connecting the tributaries of the Swift River to those of Whetstone and Osgood Brooks.
Rush Road frontage lots	410	9.3	4.63	Same as above
Rush Road frontage lots	410	9.4	3.00	Same as above
Follows West Branch of Swift River	410	11	9.50	Same as above

Property Name/ Location	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Follows West Branch of Swift River	410	12	35.00	Same as above
Rush Rd.	410	13.2	3.00	
Frontage on Rush Road	411	3	15.79	Same as above
Rush Rd.	411	5	50.00	Adds to contiguous protected forest south of New Salem Rd.
Rush Rd.	411	6	52.00	Same as above
Whetstone Wood Wildlife Sanctuary (WWWS)	411	14	19.00	Protects tributary to Whetstone Brook
WWWS	411	15	4.30	Same as above
WWWS	411	16	16.00	Same as above
WWWS	411	29	2.10	Same as above
North of New Salem Rd.	411	30	0.37	Buffers tributary to Whetstone Brook
WWWS	411	31	410.00	Protects Whetstone Brook, wetlands, Prime Farmland Soils, and the Whetstone Aquifer
WWWS	411	32	48.00	Same as above
WWWS	411	49	19.00	Same as above
WWWS	411	51	44.00	Same as above
Osgood Brook Aquifer west of New Salem Road	412	7.6	10.00	Protects Osgood Brook and associated wetlands and aquifer
Osgood Brook Aquifer	412	8	70.00	Protects Osgood Brook and associated wetlands and aquifer
Osgood Brook Aquifer	412	8.1	48.00	Protects Osgood Brook and associated wetlands and aquifer
Osgood Brook Aquifer	412	9.1	66.29	Protects Osgood Brook and associated wetlands and aquifer
Osgood Brook Aquifer	412	9.2	47.91	Protects Osgood Brook and associated wetlands and aquifer
Osgood Brook Aquifer	412	10	10.60	Protects Osgood Brook and associated wetlands and aquifer
WWWS	412	17	16.00	Protects Whetstone Brook, wetlands, and the Whetstone Aquifer
WWWS	412	22	60.40	Protects Whetstone Brook, wetlands, and the Whetstone Aquifer
WWWS	412	24.2	43.00	Protects Whetstone Brook, wetlands, and the Whetstone Aquifer
Southeast of New Salem Road	412	25	17.00	Connects Osgood Brook lands with the WWWS
New Salem Rd.	412	26.2	17.18	Connects to WWWS
East of New Salem Road, north and south of the transmission line	412	26.4	22.26	Connects Osgood Brook lands with the WWWS & has Prime Farmland Soils
East of New Salem Road, north and south of the transmission line	412	26.5	36.50	Connects Osgood Brook lands with the WWWS & has Prime Farmland Soils
Intersection of New Salem Rd. and Morse Village Rd.	412	26.7	14.30	Adds to protected block of forest north of New Salem Rd. and adjoins WWWS
WWWS	412	26.8	7.70	Protects Whetstone Brook
Morse Village Rd.	412	28.1	27.88	Headwaters of Whetstone Brook
WWWS	412	29	402.00	Protects Whetstone Brook
Plain Rd.	413	15	2.75	Connects to State Forest and WWWS
Osgood Brook Aquifer	413	52	69.00	Protects Osgood Brook and associated wetlands and aquifer

Property Name/ Location	Assessors Map	Assessors Lot	Assessors Acres	Important Characteristic
Kentfield Rd.	414	50	9.20	Contains Whetstone Brook
Old County Rd.	414	60	88.00	Adds to contiguous protected forest east of Wendell Depot Rd.
Total			1,885.75	

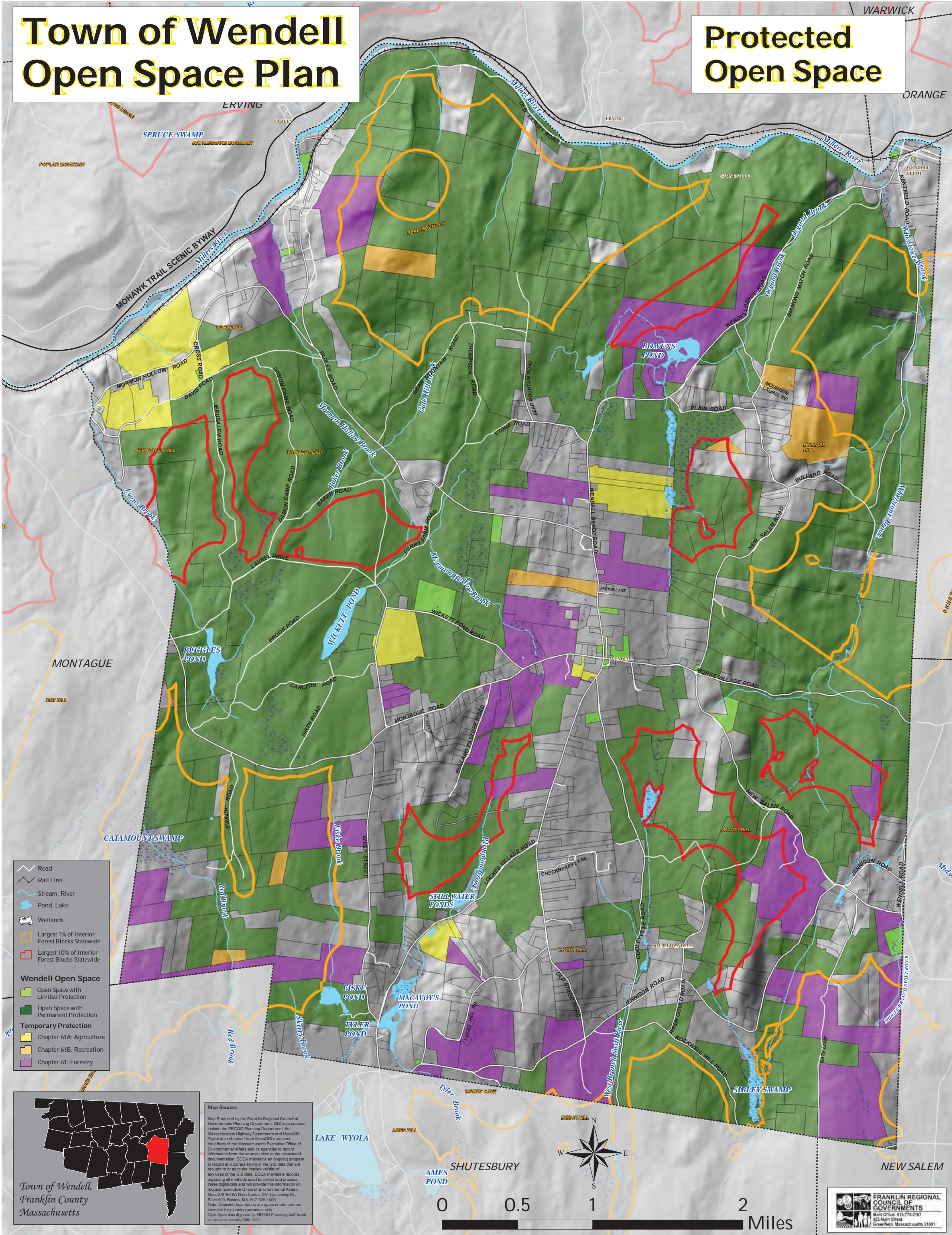
Source: Wendell Assessor's Records and Maps, 2009 and 2010.

D. OPEN SPACE EQUITY

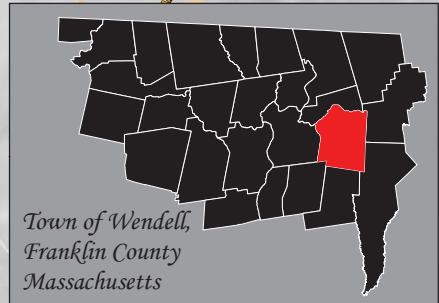
Open Space Equity means taking a look at conservation and recreation opportunities available in the town and determining if there are areas of the town that seem to be lacking resources. This is somewhat difficult to do in a town the size of Wendell, with only a few areas recognized by residents as discrete neighborhoods. It is true that there is a heavier concentration of people in Wendell Depot and in the Town Center. Wendell has very few recreational facilities, which is not unique among rural western Massachusetts towns. There are park or playground areas at the Swift River Elementary School and the Library. There are ball fields at Ruggles Pond, a basketball court at the Library, and people often use the Town Common for celebrations and fairs. The Council on Aging provides recreational programs for older residents of Town, and the Library provides a broad range of programs for children of all ages. It is unclear from the 2008 Open Space Survey whether residents feel that additional recreational facilities are needed. Survey respondents felt that the following facilities were at least adequate to meet their needs: tot lots and playgrounds, swimming areas, hiking trails, and community events and celebrations. The most popular activities according to the survey were walking, hiking, bird watching, gardening, bicycling, and canoeing and they all can be done throughout the Town of Wendell. Town efforts such as the purchase of the Fiske Pond Conservation Area reflect this recreational focus of the Town's residents. Given Wendell's community setting and traditions, there is no area of town that is deprived of recreational opportunities relative to other areas.

Town of Wendell Open Space Plan

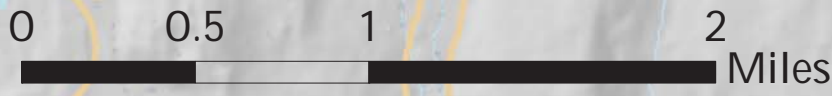
Protected Open Space



Road
 Rail Line
 Stream, River
 Pond, Lake
 Wetlands
 Largest 1% of Interior Forest Blocks Statewide
 Largest 10% of Interior Forest Blocks Statewide
Wendell Open Space
 Open Space with Limited Protection
 Open Space with Permanent Protection
Temporary Protection
 Chapter 61A: Agriculture
 Chapter 61B: Recreation
 Chapter 61: Forestry



Map Sources:
 Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FROG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEa maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEa maintains records regarding all methods used to collect and process information from the sources cited in the associated documentation. Executive Office of Environmental Affairs, MassGIS EOEa Data Center, 251 Causeway St., Suite 900, Boston, MA 01742-1000.
 Note: Depicted boundaries are approximate and are intended for planning purposes only.
 Open Space data digitized by FROG Planning staff based on assessment records 2008-2009.



FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS
 Main Office: 413-774-3167
 425 Main Street
 Greenfield, Massachusetts 01301

SECTION 6

COMMUNITY VISION

A. DESCRIPTION OF PROCESS

The Town of Wendell's open space and recreation goals were developed through the following planning process:

- In 2008, an Open Space and Recreation Survey was prepared and sent to all the households and landowners in Wendell. Of these, 53 surveys were returned from Wendell residents, which represented a five percent return rate (See the survey form and an analysis of the responses in the Appendix).
- Beginning in September 2008, the Open Space and Recreation Planning Committee and developed this Open Space and Recreation Plan with the assistance of the Franklin Regional Council of Governments Planning Department. The following methods were used to foster public participation in the planning process:
 - The 2008 Open Space and Recreation Survey results were used as the basis for the development of Section 8: Goals and Objectives, as well as the overall open space and recreation goals or vision.
 - Three residents in their early 20's assisted with the initial collection of information for the Plan during the summer of 2008.
 - A total of 12 public meetings were held by a volunteer Open Space and Recreation Planning Committee between September 2008 and December 2010.
 - Two to three drafts of each section of the plan were mailed to a broad range of reviewers representing key town boards, community groups, and non-profit organizations for their comments and suggestions for revisions. This process was followed both in 2008 and in 2010.
 - Several sets of the Open Space and Recreation Plan maps have been displayed during regular meetings of the Open Space and Recreation Planning Committee, in map review sessions held at the Town Offices, as well as at the Public Forum. All comments have been incorporated into the Plan.
 - A public forum was held in November 2010, where 17 people reviewed and discussed the inventory, analysis, community goals, objectives, and

seven-year Action Plan, including assisting with the prioritization of action items. All public comments have been recorded and incorporated into the Plan.

- There was table with information about updating the Plan with an emphasis on the goals and objectives at the Earth Day Celebrations in both 2009 and 2010.
- There was information about the planning process in the Town newsletter and at Old Home Day in 2010 focusing on the objectives and proposed action steps including opportunities for community feedback.
- The Chair of the Open Space and Recreation Planning Committee met with the Planning Board, Agricultural Commission, and Selectboard in 2009 to review the goals and objectives and gather action steps. In 2010, the Chair met with the Selectboard, Conservation Commission, the Tree Warden, and the Open Space Committee to discuss their concerns and review the new draft Action Plan.
- The Planning Board and Agricultural Commission reviewed the Action Plan at their meetings in 2010 and provided valuable feedback that was incorporated into the Plan.

B. STATEMENT OF OPEN SPACE AND RECREATIONAL GOALS

People live in Wendell because they like its rural, small town character. On the whole, Wendell residents value peace and quiet, clean air and water, and open fields, forests, and trails. According to the 2008 Open Space and Recreation Survey, 75% of respondents felt that these aspects of Wendell were the most important factors influencing their decision to move to and/or live in Wendell. In addition, large majorities of survey respondents identified clean air (89%), clean drinking water (89%), lakes/streams/ponds (83%), rural character (81%), and forests (81%) as well as its open fields, wildlife habitat, wetlands, and wilderness (all at 75%) as important and worth conserving. Significant majorities also identified the Town's farmland (68%), scenic views (67%), historic structures (63%), dirt roads (62%), and stone walls (60%) as worthy of conservation.

According to the Open Space and Recreation Survey and the Open Space and Recreation Planning Committee, the ideal Wendell would have managed to conserve the majority of its uninterrupted forests and with that ensure the presence of diverse wildlife habitats, the purity of its water and air, and the use of an easily accessed trail system connecting public and privately owned open space. People would be living lightly on the land so that groundwater, wetlands, aquifers, and drinking water would be able to support all of life in Wendell. The dark night sky in Wendell would be free from light pollution. Though the majority of residents would live far apart they would gather through the seasons at popular recreation sites around town: Fiske Pond, Lyon's Brook, Wendell State Forest, Ruggles Pond, and Wickett Pond. The Town Hall, Town Offices, Wendell Free Library, and the Recycling and Transfer Station would continue to be places where

residents would catch up on local events. Wendell would encourage local entrepreneurship and a sustainable local economy by providing a rural setting and strong sense of community, which would attract and nurture home businesses and agricultural enterprises through the natural interactions of people who want to spend time in the Town and environment of their choice.

SECTION 7

ANALYSIS OF NEEDS

The Wendell Open Space and Recreation Plan incorporates the inventory of all natural, scenic, and cultural resources that are available in Town (Section 4), and identifies the most important parcels of land containing these resources (Section 5). Based on the community's general goals outlined in Section 6, this section makes comparisons between the supply and the demand of resources. In the following subsection, a Summary of Natural Resource Protection Needs, the environmental values that have already been addressed in Sections 4 and 5 are summarized. In the Summary of Community's Needs section, the recreation and open space needs of residents are discussed, using the 2008 Open Space and Recreation Survey and specific elements of Section 3, Community Setting. Finally, in Management Needs, the obstacles to the effective resolution of these needs are addressed, including organizational barriers and the most significant land use conflicts concerning open space and natural resource use.

A. SUMMARY OF NATURAL RESOURCE PROTECTION NEEDS

Wendell residents value their forests and the ways in which the Town still feels rural. They want to keep it that way. According to the 2008 Open Space Survey, 90 percent of survey respondents stated that it was important to protect forests, clean drinking water, clean air, lakes, streams, and ponds, open fields, rural character, wetlands, wildlife habitats, farmland, and wilderness. Unfortunately, the quality of these resources is threatened indirectly through humans' use of the landscape. New development, if poorly planned, could have a negative impact on both the quality and quantity of all of these resources. Residents are well aware of these threats. The 2008 Survey results described the two most significant threats to Wendell's sense of community and rural character as being residential development and commercial/institutional development.

The four things that are most important to Wendell residents, according to the 2008 Survey, may all be potentially impacted by unplanned development:

- Clean streams and water bodies
- Moose, bobcat, deer, and other wildlife
- Large forested areas
- Quiet

Large areas of forest unbroken by roads and development support the other three of these important values. Much of Wendell's land is already protected from development by virtue of being under the control of the Commonwealth of Massachusetts and of the nonprofit Massachusetts Audubon Society. The Town has been involved in several land

conservation projects in recent years, such as the purchase and protection of the 125-acre Fiske Pond Conservation Area in 2005. Wendell residents have been involved in large private land conservation efforts, including the donation by Mason and Ina Phelps in 2009 of a conservation restriction on over 220 acres of land to MassAudubon's Whetstone Wood Wildlife Sanctuary. Other private properties in Town are protected by conservation restrictions held either by the state or by local land trusts, such as the Mount Grace Land Conservation Trust and the Franklin Land Trust.

The Town of Wendell has been actively planning for both appropriate growth and open space protection for decades. Past plans have consistently identified the need to protect intact ecosystems and large blocks of forest land and have made broad efforts to identify appropriate areas for development. Beginning with the 1987 Open Space and Recreation Plan, the Town has worked to develop a vision of future development through the "Wendell Places of the Heart Plan" in 1990, the 2002 Western Millers River Watershed Growth Management Plan, the 2002 Open Space and Recreation Plan (of which this plan is an update), the 2004 Wendell Community Development Plan, and the 2007 Pelham Hills Forest Conservation Project.

Since the publication of the 2002 Open Space and Recreation Plan, the Town of Wendell has evolved from having zero acres of Town-owned, permanently protected conservation land to designating a total of 444 acres as conservation lands. This includes the Fiske Pond Conservation Area, which the town acquired with the help of a Self Help Grant, the Montague Road Town Forest, the Phelps Forest Conservation Area, and several smaller lots which were already owned by the Town. The Town has completed stewardship plans for Fiske Pond and the Montague Road Forest and preliminary studies of the other conservation areas are ongoing. With the help of the Mount Grace Land Conservation Trust, the Fiske Pond Advisory Committee, and local volunteers, many improvements have been made to protect and enhance the Fiske Pond Conservation Area. The trail system has been marked to connect Fiske Pond with the Phelps Forest Conservation Area and the Metacomet-Monadnock (M&M) Trail which currently passes through this conservation area.

Along with establishing and managing a variety of conservation areas since completing the 2002 Open Space and Recreation Plan, the Town has also accomplished many of the goals and objectives outlined in the 2002 Action Plan. This includes the establishment of the Open Space Committee in 2002 by Town Meeting; development of a draft policy for exercising the Town's right of first refusal to purchase land under the Chapter 61, 61A and 61B tax reduction programs; review by a consulting forester of all Town-owned parcels greater than 10 acres; sponsorship by the Open Space Committee of combined recreational and educational Earth Day Celebrations in 2008, 2009, and 2010; establishment of a community garden in 2009; and the auctioning off of smaller Town-owned parcels not deemed to be of significant conservation value.

The land conservation and planning efforts undertaken by the Town over the last several decades put Wendell in a unique position in regard to open space planning and priorities compared to Towns that have not been as active in land conservation. In the coming

years, the Town may want to prioritize the protection of more accessible land and open agricultural fields, since so much land has already been protected for wildlife habitat. For many Wendell residents, it is important to preserve the working landscape including farmland, woodlots, and areas of early successional habitats that provide food for wildlife and support a diversity of small game for hunting. Preserving agricultural lands and especially prime agricultural soils is of special importance because there is such a small amount of it in Town. The recent increase in local lands being actively farmed, and growing concern about increasing local food self reliance that was emphasized in the June 2010 report of the Energy Task Force to Town Meeting, suggests that open fields and farmland are of special concern to many residents. Due to the Town's abundance of permanently protected land, some residents are concerned about also preserving some areas to site additional housing. The Pelham Hills Forest Conservation Project focused on allowing for a balance of land preservation, working landscapes, and housing. However, it is important to retain the core values identified in the 2008 survey and to expand on previous land conservation and planning efforts, as future development, without adequate planning, could continue to fragment the surrounding landscapes and further isolate protected lands.

Overall, rising costs and the expenditure of money seemed to be on the minds of survey respondents. Rising residential taxes are a concern for many Wendell residents. In the survey, it was the second most important threat to the valued natural resources. Continuing this theme, it was clear that survey respondents wished to be proactive towards open space conservation, but were concerned about costs associated with such actions. The top two most strongly supported actions to protect open space do not require any town funding. According to the 2008 Open Space survey results, at least 80% of the respondents support the Town using the following methods to protect open space:

- Accept donated conservation land and development rights; and
- Encourage conservation by state agencies or a combination of parties.

Sixty-one percent of survey respondents also supported making zoning changes for open space protection (although, conversely, 28% of respondents said they would not support this measure). Town purchase of conservation land and development rights were also supported at 72% and 50%, respectively. However, 21% and 32% (respectively) of respondents also said that they would not support these measures.

The ways in which lands are protected from development produce different values. For example, lands that are protected through the use of a conservation restriction can stay in private ownership. This places decisions regarding the property's management in the hands of individuals, instead of a large non-profit or a state or federal agency, which may not be able to respond as well to local concerns. In the case of a conservation restriction, the land also remains on the local property tax rolls. Although public access is sometimes required in conservation restrictions purchased by state conservation agencies and land trusts, it is not guaranteed. Lands that are purchased in fee by state agencies and large land trusts are likely to provide access to the general public and sometimes offer payments in lieu of taxes.

The questions of connectivity, management, and public access will gain importance as the population of Wendell grows. Additional residential development will undoubtedly decrease the connectivity between existing blocks of protected open space. Most of the permanently protected land in Wendell is surrounded by unprotected properties. Right now, the differences between protected and unprotected land are not visibly significant. Often it is only when a residential subdivision is proposed near protected parcels that residents are made aware of the value of the surrounding landscape, but it may well be too late then to protect it. Identifying key parcels for protection that make significant contributions to connectivity, management, and public access is an important part of open space planning. Further, identifying locations that would be appropriate for residential development and providing for types of development that promote the conservation of open land (such as the proposed Conservation Development Bylaw currently under development by the Planning Board) will allow for growth while also continuing to protect the rural nature of the Town of Wendell.

New home construction along the Town's major roads could also diminish the quality of significant historic landscapes and the future use of prime farmland soils. Many of Wendell's remaining open vistas are dependent on the maintenance of farm fields, the scenic value of which could be severely diminished by the construction of homes. Agricultural land also provides wildlife habitats that (along with forests, wetlands, and stream corridors) create a diversity of habitats across the landscape. Finally, the value of prime agricultural soils is reduced once the land is developed.

Water is probably the most valuable resource because all of life depends on it. Water in the form of precipitation recharges the ground water, which fills streams, ponds, wetlands, and rivers. Even without the human use of water, natural periods of drought produce changes in plant and animal species populations. Therefore, as people consume water from shallow wells and aquifers, it is logical that they could negatively impact animal and plant communities, which are naturally water-dependent. Much of the water consumed by Wendell residents is deposited back into the groundwater after having been treated by their own on-site septic system. The Board of Health's regulations limiting development to soils with a minimum of eighteen inches to groundwater is one tool for protecting residents' drinking water supplies. Another approach to be considered would be the development of a Water Supply Protection Overlay District that would impose stricter zoning requirements in these sensitive areas. For the long-term, Wendell may want to do what other larger communities have done to protect their ground water supplies: permanently protect the land covering the Town's most significant aquifers.

As previously noted, periods of rapid climate change such as we are presently experiencing are especially favorable for rapidly reproducing species such as insects and diseases and promote conditions that can enhance the spread of problematic species. For this reason we are likely to see increasing problems related to introduced pests, invasive species, and the spread of diseases that impact the health of local forests, crops, wildlife, and public health. In the years to come it will become increasingly important for the Town to stay abreast of the latest information about related problems that may impact local vegetation, agriculture, and forestry and related strategies for sustainable

management. Such efforts will require cooperation with state and regional efforts and may involve several Town boards and departments including the Open Space Committee, the Board of Health, the Agricultural Commission, the Tree Warden, the Conservation Commission, and the Highway Department.

B. SUMMARY OF COMMUNITY'S NEEDS

Planning for a community's open space and recreation needs must work to satisfy the present population's desires for new facilities, spaces, and services and also interpret and act on the available data to prepare for the future needs of Wendell residents. Although the Town plans to update the Wendell Open Space and Recreation Plan every seven years, the types of actions that are identified in Section 9 will take into account the needs of the next generation as well.

The 2008 Open Space and Recreation Survey, discussions at Open Space Committee meetings, and research into the ownership, protection status, and use of existing open space parcels in Wendell, helped to identify several potential community needs relating to open space and recreation resources: recreation facilities and programming; preservation of the town's rural character; and protection of large forested areas for recreational and wildlife use.

An Open Space and Recreation Plan typically includes an inventory and discussion of recreational facilities other than open space. Wendell has very few of these types of facilities, which is not unique among rural western Massachusetts towns. As was shown in Section 5, Inventory of Lands of Conservation and Recreation Interest, there are park or playground areas at the Swift River Elementary School and the Library. There are ball fields at Ruggles Pond, a basketball court at the Library, and people often use the Town Common for celebrations and fairs. The Council on Aging provides recreational programs for older residents of Town, and the Library sponsors a variety of programs for residents of all ages. The Library also received a grant from the Massachusetts Board of Library Commissioners in 2009-2010 which partially funded the position of Teen Coordinator that has enabled a broader range of programs for "Teens and Tweens."

It is unclear from the survey whether residents feel that additional recreational facilities are needed. According to the survey, when asked their opinion about the quality and quantity of recreational facilities and programming in Wendell, large percentages of respondents were unsure or had no opinion regarding tennis courts (62%), sports fields (48%), and recreational programming for teens (69%) and seniors (69%). Based on these replies, it can be assumed that existing recreational programs and facilities need to be publicized to town residents. In addition, survey respondents felt that the following facilities were at least adequate to meet their needs: hiking trails, community events and celebrations, swimming areas, and tot lots and playgrounds. Of these, survey respondents felt that the hiking trails and community events/festivals were in excellent condition (39% and 31%, respectively).

One way of interpreting these results is that most common recreational activities of people who reside in and visit Wendell today do not depend on facilities like sports fields, tennis, or basketball courts. The survey also suggests that the most popular recreational activities take advantage of Wendell State Forest and surrounding natural open spaces. Another interpretation of the survey is that people feel there is little need for these facilities in Wendell. Even if this interpretation is accurate today, Wendell might see demand for these facilities increase in the near future. Based on U.S. Census data, Wendell grew from 292 people in 1960 to 986 people in the year 2000.¹ Estimates show a current population of 1,002 as of 2009, a 1.6% increase since 2000.² Age distribution trends discussed in Section 3 show that segments of the population (those in their late teens and early twenties, as well Baby Boomers) are increasing in proportion to the rest of the population. Town residents have also observed an increase in the numbers of families with young children in recent years. These trends may translate into an increase in demand for programs and facilities for preschoolers, for residents in their teens/early twenties, and for the more active Baby Boomers, as well as for educational and volunteer opportunities, and safe access to hiking trails for all ages.

Public land will most likely be needed in the future for recreational facilities. Even if all new adult residents typify the survey respondents and participate in recreational activities mostly in the State Forest and on trails, Wendell may still need land for park and playground facilities for its youth and may need improved access to a network of recreational trails. None of the properties currently owned by the Town of Wendell would be suitable for these recreational purposes, with the exception of additional trails. If such needs were identified and prioritized, the Town would have to acquire additional land that would be appropriate for parks, playgrounds, or sports fields and that would be accessible to the physically handicapped and the elderly.

Wendell contains many historical sites that require planning for their preservation. Some of these are visible foundations and burial markers, while others may be potential native sites of habitation. In either case, these sites require long-term care and protection to ensure that the most important signs of Wendell's roots are preserved in perpetuity. The Friends of the Wendell Meetinghouse have been working since 2002 on restoring this property, which is in the National Register Town Common Historic District, for use as a community and spiritual gathering space. There may be other historic properties in Town deserving of similar preservation and renovation efforts that should be identified and prioritized, such as the Revolutionary War Era Herrick homestead that was recently acquired by the Town in a tax taking.

Because wildlife is important to the Town, residents are interested in expanding protected greenways for wildlife and trail use that would build upon existing patterns of protected land in town. The Commonwealth of Massachusetts and the Massachusetts Audubon Society own most of the permanently protected land in Wendell. Some of these lands provide public access and some do not. Although selecting specific parcels to protect may require a more refined level of planning than is available within an Open Space and

¹ U.S. Census Bureau – Decennial Census of Population and Housing 1990, 2000.

² U.S. Census Bureau Population Estimates, June 2010.

Recreation Plan, identifying the most important gaps between protected lands would be a necessary first step. Following this, interested residents could work closely with local land conservation organizations to negotiate the purchase or donation of development rights or trail easements from willing landowners. One effort currently underway would potentially redirect along West Street a portion of the 114-mile Metacomet-Monadnock (M&M) Trail that runs from the Massachusetts/Connecticut border through Hampden, Hampshire, Franklin, and northwestern Worcester counties in Massachusetts to Cheshire County in New Hampshire. Further, the Town could adopt changes to its zoning bylaws that would help to protect the greenways that are being created.

C. MANAGEMENT NEEDS

As Wendell now has several larger conservation areas, the Town will need to provide for the continued management of the lands. It would be beneficial to continue to work on the Fiske Pond Trails in order to maximize protection of this sensitive ecosystem and increase accessibility for a broader segment of the population. For example, providing sturdier bridges with hand rails in select locations would make the trail more user-friendly for very young and older residents. Attention could be paid to the needs of those in wheelchairs to make these trails more accessible. The dam at Fiske Pond will also need ongoing maintenance as required by the state. An option for rerouting the M&M trail that is currently under consideration would include running the trail along the western edge of the Fiske Pond Conservation area and cutting a new one on the Fiske property in conjunction with this project. The stewardship plan for the Montague Road Forest called for thinning the trees in a small area initially. This was completed in 2009. A follow-up evaluation is needed to determine whether to continue thinning in another area of the forest. As all of the remaining conservation areas have access issues, discussions and agreements with abutters will be required in order to complete stewardship plans of these areas. The Town may wish to pursue permission to cut a trail across DCR land to access the smallest conservation area that is north of Farley Road.

The Town has not yet made any plans regarding several small Town-owned lots that border the Millers River. As these lots present some special challenges, (including wetlands, archeological remains, and clean-up), any plans for these areas will need to include several different town boards. Town officials are also exploring options for the future of property formerly owned by the late Marion Herrick and recently acquired by the Town through the tax taking process which includes a revolutionary era homestead. Because this property is surrounded by DCR land, the Town is working with officials from DCR to plan for the protection of this unique property.

Wendell is fortunate to have a great number of organizations interested in the environment in, and around, Wendell. There are a number of federal, state, and regional environmental organizations sponsoring land and natural resource protection projects including Mount Grace Land Conservation Trust, Massachusetts Audubon Society, Franklin Land Trust, Trustees of Reservations, New England Forestry Foundation, Department of Conservation and Recreation (DCR), Division of Fisheries and Wildlife,

DCR's Division of Water Supply Protection, Massachusetts Department of Agricultural Resources (MDAR), Harvard University, U.S. Army Corps of Engineers, and the Millers River Watershed Council. The Open Space Committee could be given the responsibility to act as the liaison to these organizations reporting back to Town officials as necessary. Similarly, as Town officials are kept abreast of these local and regional efforts, there will be more opportunities for coordination with adjoining towns on the prioritization of land protection funding for the purpose of getting the most resource value out of every dollar spent. Such cooperation could also facilitate the protection and maintenance of shared resources, such as trails that continue beyond Town borders.

How a community chooses to spend its fiscal resources is decided at Town Meeting. The warrant articles prepared ahead of time are often the result of policy discussions among boards and a small proportion of the total population. A major factor in implementing the recommendations of this Open Space and Recreation Plan will be the effective coordination of all Town boards and commissions in a manner that promotes communication and discussion of open space and recreation issues between boards and among a broader portion of the general public. To facilitate this process, the Town might consider creating a position for a shared administrative assistant to serve the Conservation Commission, Planning Board, Open Space Committee, Zoning Board of Appeals, Tree Warden, Cemetery Commission, Historical Commission, Energy Committee, Agricultural Commission, Community Garden, and playground committee.

One general open space issue relates to the different ways people believe land should be used. A combination of different uses can be planned for, so that the value of each use is represented in the Action Plan, as the result of consensus building among people holding different positions. The Town of Wendell produced a Community Development Plan in 2004 which contains elements of both economic and residential development and open space protection. The public participation process in developing this Open Space Plan update will help the community to decide where to direct new development and where to protect land from development, with specific recommendations included in the plan.

Conflicting perceptions of the issues are common in any community. In Wendell, there appears to be little conflict concerning whether the Town should stay the same or change and grow. Most people want Wendell to remain as the small rural community it is today. There is currently a 3-acre minimum lot size in the rural residential and agricultural district that comprises the entire Town. A Conservation Development bylaw exists, intended to encourage the preservation of open space by increasing density from a conventional subdivision, but this has not yet been applied. Revisions to this bylaw are currently being examined and are not yet complete, but soon will be. They include provisions that encourage "Conservation Developments" instead of conventional subdivisions and "approval not required" (ANR) lots along Town roads. A Conservation Development would be allowed anywhere in Wendell on lots of any size with Site Plan Review by the Planning Board. Through this process, a lot would be divided into two sections: 1) at least 75% of the lot, identified as having the most significant values for protection, would have a permanent conservation restriction placed on it; and 2) the remaining "development envelope" would be able to be developed with greater design

flexibility and streamlined permitting. No Special Permit would be required and the uses, density, and development rules would be allowed by right. This proposal is currently under review by the Planning Board.

There have also been discussions over time concerning whether there should be a zoning district that encourages smaller lot sizes or an area in Town that permits commercial and industrial uses by right. The Community Development Plan identified Wendell Center and Wendell Depot as potential Neighborhood Village Centers with residential and/or commercial development. This question was revisited in the Forest Conservation Project. During that project, in 2007, the Open Space Committee voiced unanimous opposition to decreasing lot size in Wendell Center as this is the site of much of the Town's limited agricultural land with prime farmland soils. They referenced Section 5 of the 2002 Open Space & Recreation Plan which notes that there is very little agricultural land in Town with prime agricultural soils and that much of it is located in Wendell Center along Lockes Village Road and Wendell Depot Road.

In response, the Forest Conservation project suggests some ways to modify this proposal:

“If the concern is preservation of prime agricultural land, it would be possible to create uses to support the existing village uses, such as senior housing, in the area immediately west of the town commons or in the area near the country store. Even if there was consensus that these uses were appropriate for farmland, the total footprint could be very small, since after all that is one of the defining features of a village center.”

While the total amount of agricultural land in Wendell appears to be increasing according to recent GIS data, from the perspective of open space and the community's concerns for increasing local food self reliance, protecting the town's very limited prime agricultural soils will remain a primary concern. This topic will surely be revisited over the course of future planning projects as Wendell planners continue to fine-tune proposals that integrate the social, economic, and environmental needs of the community.

Conservation has been a high priority for the Wendell Planning Board for decades and this trend is likely to endure in years to come. The 2007 Pelham Hills Forest Conservation Project also included an analysis of Wendell's Zoning Bylaws and Subdivision Regulations and suggested a variety of techniques that the Planning Board might employ to further protect the Town's open space. The Conservation Development Bylaw evolved from this project. It proposes to encourage a new pattern of development that supports working landscapes, recreation, and natural resources. The Planning Board will soon be turning its attention to revising the Town's Subdivision Regulations to include greater support for conservation efforts. The Board is also considering drafting a local bylaw to further protect the Town's scenic roads. In order to achieve strong community support and consensus, any future proposals will need to incorporate extensive public input and reflect a balance of community concerns.

Because of often conflicting views on how, or whether, growth should occur within Wendell, special attention should be paid to balancing the need for some residential growth in areas that are most appropriate, with protections placed in areas considered most valuable for its ecological value, water quality, and agricultural/forestry activity. It is likely that Wendell residents would agree that the permanent protection of private land should only occur with willing landowners and in a manner that in no way reduces the equity of the land without just compensation. Wendell has already employed many of the techniques that are used by towns and by conservation land trusts to direct new growth by protecting those areas that are recognized to contain the most important ecosystems, including the purchase of development rights and the outright acquisition of land of significant conservation value. However, the responses to the 2008 survey indicate that the top two most strongly supported actions to protect open space do not require any town funding, i.e., accepting donated conservation land and development rights; and encouraging conservation by state agencies or a combination of parties.

SECTION 8

GOALS AND OBJECTIVES

The following goals and objectives were formulated by the Town of Wendell Open Space Planning Committee based on the results of the 2008 Wendell Open Space and Recreation Planning Survey, discussions with several Town boards and committees, the public forum process, and associated public comment.

- A. Ensure that the Town of Wendell retains its rural character and sense of community and maintains or improves the quality of its air and water, and the diversity and integrity of native fauna and flora through the conservation of locally important natural, open space, and cultural resources.
 - 1. Prioritize land protection projects that conserve forestland, drinking water, streams and ponds, open fields, scenic views, wildlife habitat, wetlands, and farmland.
 - 2. Take advantage of the Town's right-of-first refusal with Chapter 61 parcels or assign this right to a third party.
 - 3. Coordinate with regional and state land protection entities, in and around Wendell, to ensure the continued conservation of important natural and open space resources and to promote and participate in landowner outreach programs.
 - 4. Coordinate and promote donations of land and conservation restrictions and facilitate local investment of land protection funding by private land trusts and state agencies.
 - 5. Provide stewardship for Town-owned lands.
 - 6. Collaborate with the library, schools, Council on Aging, and other local and regional groups to foster environmental sustainability by facilitating ecologically based recreation programs and hands on stewardship projects.
 - 7. Participate with the Millers River Watershed Council in its water quality monitoring program for the rivers, brooks, streams, lakes, and ponds in Wendell.
 - 8. Encourage broad public participation in local planning to ensure that appropriate land use and growth management tools and strategies are identified.

9. Promote and help protect historically significant properties and landscapes within Town.
 10. Encourage sustainable local cottage industries and farm- and forest-based economic activities.
 11. Ensure adequate support for Town departments that regulate, protect, monitor, and maintain Wendell's open space.
- B. Ensure that the Town of Wendell improves the quality, quantity, and accessibility of its recreational resources for current and future generations.
1. Identify and facilitate the acquisition of additional lands for active recreational activities and sports fields, as the need arises.
 2. Determine the specific recreational programming and facility needs of Wendell residents of all ages and abilities.
 3. Develop and publicize recreational programming for residents of all ages and abilities.
 4. Support and identify funding for the continued development of community arts festivals and events.
 5. Identify appropriate areas to expand multi-use (walking, hiking, bicycling, cross country skiing) trail systems within Town as well as connections to trails beyond the Town's borders.
 6. Catalogue existing recreational uses on current town-owned conservation lands and lands with priority for protection.

SECTION 9

SEVEN-YEAR ACTION PLAN

The Seven-Year Action Plan fulfills the Open Space and Recreation Plan objectives. The objectives address both open space and recreation goals because the quantity and quality of accessible open space relates directly to the availability of recreational opportunities in Wendell. For example, nearly 60 percent of the Open Space and Recreation survey respondents use Wendell State Forest at least monthly, while the two most popular forms of recreational activity are walking and hiking, which can be facilitated by a network of connected open space.

The goals and objectives are listed in the first two columns of Table 9-1 in the same order as they appear in Section 8 and are followed in the subsequent columns by recommended actions, responsible board or group, start date, and potential funding sources. By implementing the recommended actions, each objective will begin to be realized. Successful implementation will require the participation of existing town boards, committees and staff, including but not limited to the Selectboard, Planning Board, Conservation Commission, Agricultural Commission, Council on Aging, Board of Assessors and others.

Most of these recommended actions may be constrained by a lack of volunteer time, rather than funding. Where money is required, such as to permanently protect open space, it does not have to be provided by the Town alone. State and federal governmental agencies, private non-profit conservation agencies, and foundations are potential sources of funding. In addition, these sources are more likely to invest in land protection projects that have a broad base of community support.

The Wendell Open Space and Recreation Planning Committee prioritized the 55 action steps finding twelve that were felt to be most important. These priority action steps are listed below in no particular order and represented in the Action Plan Map at the end of this section. (Information in parentheses after each priority action item identifies the corresponding number of the item on Table 9-1.)

The Priority Action Steps are:

- Identify focus or priority areas and clarify the criteria for protection priorities. (Action Item A1b)
- Identify parcels that are of special conservation interest and prioritize parcels using their location relative to focus areas, value, acreage, and threat of development to compare between projects. (Action Item A2b)

- Work with local land trusts to identify potential conservation buyers. (Action Item A2c)
- Identify funding sources for land protection. (Action Item A1a)
- Apply for State Historical Preservation funding. (Action Item A9a)
- Negotiate access with abutters to the Phelps Forest Conservation Area for forestry purposes, clarify the status of abutting properties to the west, and then complete a stewardship plan with a forester. (Action Item A5c)
- Provide ongoing maintenance for trails in the Fiske Pond Conservation Area (including periodic mowing, removal of trees and brush above dam, and maintenance of beaver deceiver) and continue improvements to trails and bridges over wet areas. (Action Item A5a)
- Formalize public access to the Millers River for recreational purposes. (Action Items B3d and A4c)
- Sponsor educational events and materials for residents concerning the management of invasive pests and diseases impacting vegetation, including food crops and trees. (Action Item A6d)
- Post signage on all roads leading into town informing citizens as well as prospective buyers of property in Wendell that the town of Wendell is a "Right-to-Farm" community. (Action Item A10a)
- Create a committee and/or hire a consultant to conduct a comprehensive investigation of the needs of the Conservation Commission, Planning Board, Open Space Committee, ZBA, Tree Warden, Cemetery Commission, Historical Commission, Energy Committee, Agricultural Commission, Community Garden, and evaluate the need for additional funds and/or administrative assistance for these departments. (Action Item A11a)
- Construct sidewalk and bike path to the north and south of the Commons in center of Town. (Action Item A5h)
- Develop a comprehensive plan to update the playground in the Town Center for improved safety and aesthetics. (Action Item B2c)

Table 9-1: Recommended Action Steps to Implement the Wendell Open Space and Recreation Plan

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
A. Ensure that the Town of Wendell retains its rural character and sense of community and maintains or improves the quality of its air and water, and the diversity and integrity of native fauna and flora through the conservation of locally important natural, open space, and cultural resources.					
	A1. Prioritize land protection projects that conserve forestland, drinking water, streams and ponds, open fields, scenic views, wildlife habitat, wetlands, and farmland.	a. Identify funding sources for land protection.	Open Space Committee	2011-2017	Volunteer time; local land trusts
		b. Identify focus or priority areas and clarify the criteria for protection priorities.	Open Space Committee; Agricultural Commission; Conservation Commission	2011-2017	Volunteer time
		c. Refine the mapping of priority of areas and identify gaps in these areas at the parcel level.	Open Space Committee; Conservation Commission; NQLRP	2011	Volunteer time; NQLRP
	A2. Take advantage of the Town’s right-of-first refusal with Chapter 61 parcels or assign this right to a third party.	a. Explore ways to increase the amount of money in the land acquisition fund.	Selectboard; Open Space Committee; Town Meeting	2011-2017	Volunteer time
		b. Identify parcels that are of special conservation interest and prioritize parcels using their location relative to focus areas,	Open Space Committee; Board of Assessors;	2012	Volunteer time

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		value, acreage, and threat of development to compare between projects.	Conservation Commission		
		c. Work with local land trusts to identify potential conservation buyers.	Open Space Committee	2011-2017	Volunteer time; local land trusts
	A3. Coordinate with regional and state land protection entities, in and around Wendell, to ensure the continued conservation of important natural and open space resources and to promote and participate in landowner outreach programs.	a. Have the Open Space Committee appoint a liaison to the North Quabbin Regional Landscape Partnership (NQRLP).	Open Space Committee	2011	Volunteer time; NQLRP
		b. Attend Western Mass. Land Trust Meetings and the Annual Land Trust Conference.	Open Space Committee	2011-2017	Volunteer time
		c. Ensure the training of OSC members in conservation alternatives.	Open Space Committee	2011-2017 (as needed)	Volunteer time; local land trusts
	A4. Coordinate and promote donations of land and conservation restrictions and facilitate local investment of land protection funding by private land trusts and state agencies.	a. Develop a procedure for determining, on a case by case basis, whether Wendell should own permanently protected open space in fee, accept a conservation restriction, or encourage ownership by others.	Open Space Committee; Conservation Commission	2013	Volunteer time

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		b. Continue to support the ownership and management of properties of conservation interest by the Conservation Commission to better guarantee their protection.	Open Space Committee; Conservation Commission	2011-2017	Volunteer time
		c. Develop plan for Town-owned properties bordering the Millers River. (See B3d)	Selectboard; Open Space Committee; Conservation Commission; Historical Commission; Board of Health	2012-2013	Brownfields Grant
		d. With the input of all municipal boards, determine probable future uses of all lands acquired by the Town and any Town-owned lands that have not yet been designated as conservation land or auctioned off.	Selectboard; Open Space Committee; Agricultural Commission; Conservation Commission; Board of Assessors; Planning Board	2014	Volunteer time
	A5. Provide stewardship for Town-owned lands.	a. Provide ongoing maintenance for trails in the Fiske Pond Conservation Area (including periodic mowing, removal of trees and brush above dam, and maintenance of beaver deceiver) and continue improvements to trails and bridges over wet areas.	Fiske Pond Advisory Committee; Conservation Commission	2011-2017	Conservation Commission budget; Town Meeting appropriation; DCR grants

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		b. Clarify issues concerning the western boundary of the Montague Road Forest and continue thinning trees as per stewardship plan.	Open Space Committee; Conservation Commission	2011	Open Space or Conservation Commission budget; Grants for Forestry; Town Meeting appropriation
		c. Negotiate access with abutters to the Phelps Forest Conservation Area for forestry purposes, clarify the status of abutting properties to the west, and then complete a stewardship plan with a forester.	Open Space Committee; Conservation Commission	2012	Volunteer time; Conservation Commission or Open Space budget; Grants for Forestry; Town Meeting appropriation
		d. Attain a permit to cut an access trail to the Conservation Area north of Farley Road on DCR land along western edge of this property and then construct the trail.	Open Space Committee; Conservation Commission	2013	DCR Recreational Trails grant; Volunteer time
		e. Continue to attempt to negotiate access with abutters to the Conservation Area south of Farley Road and, if successful, complete a stewardship plan with a forester.	Open Space Committee; Conservation Commission	2014	Volunteer time; Conservation Commission or Open Space budget; Grants for Forestry
		f. Provide more maintenance for trees on public lands not under the direction of Conservation Commission (especially those located on the Commons, in the cemetery, and near the playground). Increase the budget for the tree warden	Tree Warden	2011-2017	Volunteer time; Tree Warden budget; Town Meeting appropriation

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		and/or relevant departments to ensure this can be done and explore options for getting assistance from residents with appropriate expertise.			
		g. Provide for clean-up of land acquired by Town from tax takings.	Selectboard	2011-2017 (as needed)	Town meeting appropriation; Selectboard budget
		h. Construct sidewalk and bike path to the north and south of the Commons in center of Town.	Selectboard; Highway Department	2015	Volunteer time; Town Meeting appropriation; Community Development Block Grants; other state funds
		i. Clean up road sides and public areas and continue and expand all-town clean up.	Ad Hoc Volunteer Committee	2011-2017	Volunteer time; WRATS budget
		j. Expand Permaculture Garden at Community Garden.	Community Garden	2011-2017	Volunteer time
	A6. Collaborate with the library, schools, Council on Aging, and other local and regional groups to foster environmental sustainability by facilitating ecologically based recreation programs and hands on stewardship projects.	a. Sponsor field trips and workshops on issues related to open space.	Open Space Committee; Library Trustees; Council on Aging; Agricultural Commission	2011-2017	Volunteer time; Cultural Council

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		b. Provide educational workshops, films and speaker nights to help educate residents who strive to be locally, economically, and agriculturally sustainable.	Open Space Committee; Agricultural Commission; Energy Committee; Library Trustees; Cultural Council	2011-2017	Volunteer time; Cultural Council
		c. Sponsor educational events and material for residents and the Highway Department regarding the management of invasive plant species.	Open Space Committee; Highway Department; Conservation Commission; Food Production and Gardening Coordinator	2011-2017 (as needed)	Volunteer time
		d. Sponsor educational events and materials for residents concerning the management of invasive pests and diseases impacting vegetation, including food crops and trees.	Open Space Committee; Agricultural Commission; Tree Warden; Conservation Commission	2011-2017 (as needed)	Volunteer time; MDAR grants
		e. Sponsor stewardship projects on town lands.	Open Space Committee; Fiske Pond Advisory Committee; Community Garden	2011-2017	Con Com or Open Space Budgets; DCR Trail Grants; Volunteer time

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
	A7. Participate with the Millers River Watershed Council in its water quality monitoring program for the rivers, brooks, streams, lakes, and ponds in Wendell.	a. Form an Ad hoc Water Quality Monitoring Committee.	Selectboard; Open Space Committee; Conservation Committee	2011	Volunteer time
		b. Participate in local efforts to train volunteers in vernal pool identification and certification.	Open Space Committee; Conservation Committee	2012	Volunteer time
		c. Collect existing water quality data and prioritize sites for future monitoring.	Ad hoc Water Quality Monitoring Committee	2013	Volunteer time; DEP 604b grants; DRWA volunteer monitors; Riverways Program stream teams; CT River Watershed Council; EPA equipment loans
	A8. Encourage broad public participation in local planning to ensure that appropriate land use and growth management tools and strategies are identified.	a. These tools and strategies may include Zoning Bylaw and Subdivision Regulation revisions and other tools (such as the Conservation Development Bylaw) to protect open space and natural resources, and to maintain Wendell's small town character.	Open Space Committee; Planning Board; Selectboard	2011	Volunteer time
	A9. Promote and help protect historically significant properties and landscapes within Town.	a. Apply for State Historical Preservation funding.	Historical Commission	2012	MHC Preservation Projects Fund

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		b. Promote stewardship of historical sites, structures, and landscapes through quarterly field trips and tours.	Historical Commission; Recreation Committee	2011-2017	MHC Survey and Planning Grants
		c. Evaluate the benefits of adopting a local Scenic Roads Bylaw and adopt if deemed beneficial.	Planning Board; Town Meeting	2013-2014	Volunteer time
		d. Improve stewardship of gravestones in Town Cemeteries including education regarding gravestone preservation techniques available through Association for Gravestone Studies in Greenfield.	Cemetery Commission; Historical Commission		Volunteer time; Town meeting appropriation; Cemetery Commission, Historical Commission, or Open Space budgets
	A10. Encourage sustainable local cottage industries and farm and forest-based economic activities.	a. Post signage on all roads leading into town informing citizens as well as prospective buyers of property in Wendell that the town of Wendell is a "Right-to-Farm" community.	Agricultural Commission; Selectboard; Highway Department	2011	Agricultural Commission budget; Volunteer time; MDAR grants
		b. Publish an agricultural resource brochure.	Agricultural Commission	2012	Volunteer time; Agricultural Commission budget; Town Meeting appropriation
	A11. Ensure adequate support for Town departments that regulate, protect, monitor, and maintain Wendell's open space.	a. Create a committee and/or hire a consultant to conduct a comprehensive investigation of the needs of the Conservation Commission, Planning Board, Open Space Committee, ZBA,	Selectboard	2011	Volunteer time; Town Meeting appropriation

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		Tree Warden, Cemetery Commission, Historical Commission, Energy Committee, Agricultural Commission, Community Garden, and evaluate the need for additional funds and/or administrative assistance for these departments.			
		b. Consider the potential benefits of creating a position for a shared administrative assistant for these departments vs. increasing funds to individual departments.	Selectboard; Ad Hoc Committee	2011	Volunteer time; Town Meeting appropriation
		c. If the need for an administrative assistant is determined, create a job description, fund the position, and hire someone for this position.	Selectboard; Ad Hoc Committee	2012	Volunteer time; Town Meeting appropriation
B. Ensure that the Town of Wendell improves the quality, quantity, and accessibility of its recreational resources for current and future generations.					
	B1. Identify and facilitate the acquisition of additional lands for active recreational activities and sports fields, as the need arises.	a. Conduct a parcel level analysis of all undeveloped land in Wendell that may satisfy short and long term recreational land needs.	Selectboard; Recreation Committee; Open Space Committee; Board of Assessors	2013-2017	Volunteer time

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
	B2. Determine the specific recreational programming and facility needs of Wendell residents of all ages and abilities.	a. Conduct a survey to find out the kinds of recreational facilities and programs people want.	Recreation Committee	2012	Volunteer time
		b. Talk with school officials, parents, and Senior Center members to find out what types of recreational programs or facilities are needed.	Recreation Committee; School Committee; Council on Aging	2012	Volunteer time
		c. Develop a comprehensive plan to update the playground in the Town Center for improved safety and aesthetics.	Selectboard; Library Trustees; Ad Hoc Playground Committee	2011-2012	Volunteer time; DCS PARC Grant; private donations; fundraising events
	B3. Develop and publicize recreational programming for residents of all ages and abilities.	a. Develop and promote recreational programming for residents of all ages based on survey results.	Recreation Committee	2011-2017	Volunteer time
		b. Provide the Recreation Committee with a modest annual budget to facilitate the provision and promotion of recreational programming for all ages and abilities.	Recreation Committee; Selectboard; Town Meeting	2011-2017	Town meeting appropriation; Private donations; business sponsors; Cultural Council
		c. Develop an ongoing program of ecological based recreational opportunities for Wendell residents such as biodiversity days and wildlife monitoring.	Open Space Committee	2011-2017	Open Space Committee budget; Private donations; business sponsors; Cultural Council

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		d. Formalize public access to the Millers River for recreational purposes. (SeeA4c)	Open Space Committee; Recreation Committee; Conservation Commission; Selectboard	2013	Volunteer time; DCR Recreational Trails grant; DFG Office of Fishing and Boating Access funds
		e. Develop a plan for formalizing access along discontinued roads and well-used paths.	Open Space Committee; Selectboard	2014	Volunteer time
	B4. Support and identify funding for the continued development of community arts festivals and events.	a. Develop and implement a year-round schedule of events, including Earth Day, Old Home Day, Holiday Fair, etc.	Open Space Committee; Recreation Committee; Agricultural Commission; Ad hoc Old Home Day and Holiday Fair Committees; Cultural Council	2011-2017	Volunteer time; Cultural Council; private donations; fundraising events
	B5. Identify appropriate areas to expand multi-use (walking, hiking, bicycling, cross country skiing) trail systems within Town as well as connections to trails beyond the Town's borders.	a. Create a trail map of existing trails in Wendell, in addition to the Fiske Pond Conservation Area Map. Determine which types of uses occur on each trail.	Open Space Committee; Recreation Committee	2015	Volunteer time; Conservation Commission or Open Space Committee budget
		b. Support the creation of opportunities for bicycling in Wendell both on and off the roads.	Open Space Committee; Recreation Committee	2106	Volunteer time; DCR Recreational Trails grant

GOAL	OBJECTIVE	ACTION	RESPONSIBLE BOARD or GROUP	START DATE	POTENTIAL FUNDING SOURCES
		c. Create a volunteer network of trail stewards to lay out, cut, and maintain trails periodically.	Fiske Pond Advisory Committee; Open Space Committee	2011-2017	Volunteer time
	B6. Catalogue existing recreational uses on current town-owned conservation lands and lands with priority for protection.	a. Review results of the 2008 Open Space Survey and augment with additional surveys as needed to determine existing recreational uses.	Open Space Committee; Conservation Commission; Recreation Committee	2011	Volunteer time

Town of Wendell Open Space Plan

Action Plan

Post signage on all roads leading into town informing citizens as well as prospective buyers of property in Wendell that the town of Wendell is a "Right-to-Farm" community.

Formalize public access to the Millers River for recreational purposes.

Develop a comprehensive plan to update the playground in the Town Center for improved safety and aesthetics.

Construct sidewalk and bike path to the north and south of the Commons in center of Town.

Provide ongoing maintenance for trails in the Fiske Pond Conservation Area (including periodic mowing, removal of trees and brush above dam, and maintenance of beaver deceiver) and continue improvements to trails and bridges over wet areas.

Negotiate access with abutters to the Phelps Forest Conservation Area for forestry purposes, clarify the status of abutting properties to the west, and then complete a stewardship plan with a forester.

Priority Action Steps

- Identify focus or priority areas and clarify the criteria for protection priorities. (Action Item A1b)
- Identify parcels that are of special conservation interest and prioritize parcels using their location relative to focus areas, value, acreage, and threat of development to compare between projects. (Action Item A2b)
- Work with local land trusts to identify potential conservation buyers. (Action Item A2c)
- Identify funding sources for land protection. (Action Item A1a)
- Apply for State Historical Preservation funding. (Action Item A9a)
- Negotiate access with abutters to the Phelps Forest Conservation Area for forestry purposes, clarify the status of abutting properties to the west, and then complete a stewardship plan with a forester. (Action Item A5c)
- Provide ongoing maintenance for trails in the Fiske Pond Conservation Area (including periodic mowing, removal of trees and brush above dam, and maintenance of beaver deceiver) and continue improvements to trails and bridges over wet areas. (Action Item A5a)
- Formalize public access to the Millers River for recreational purposes. (Action Items B3d and A4c)
- Sponsor educational events and materials for residents concerning the management of invasive pests and diseases impacting vegetation, including food crops and trees. (Action Item A6d)
- Post signage on all roads leading into town informing citizens as well as prospective buyers of property in Wendell that the town of Wendell is a "Right-to-Farm" community. (Action Item A10a)
- Create a committee and/or hire a consultant to conduct a comprehensive investigation of the needs of the Conservation Commission, Planning Board, Open Space Committee, ZBA, Tree Warden, Cemetery Commission, Historical Commission, Energy Committee, Agricultural Commission, Community Garden, and evaluate the need for additional funds and/or administrative assistance for these departments. (Action Item A11a)
- Construct sidewalk and bike path to the north and south of the Commons in center of Town. (Action Item A5h)
- Develop a comprehensive plan to update the playground in the Town Center for improved safety and aesthetics.

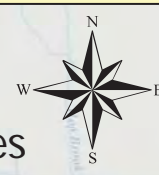
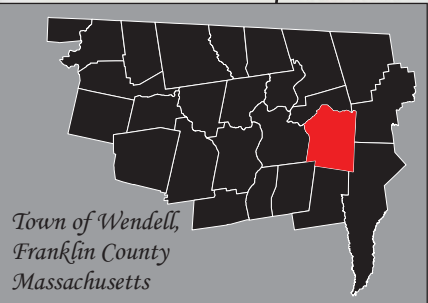
Legend

- Road
- Rail Line
- Stream, River
- Pond, Lake

Wendell Open Space

- Open Space with Limited Protection
- Open Space with Permanent Protection
- Temporarily Protected Land (Chapter 61)
- Priority Areas

Map Sources:
Map Produced by the Franklin Regional Council of Governments Planning Department. GIS data sources include the FRCOG Planning Department, the Massachusetts Highway Department and MassGIS. Digital data obtained from MassGIS represent the efforts of the Massachusetts Executive Office of Environmental Affairs and its agencies to record information from the sources cited in the associated documentation. EOEIA maintains an ongoing program to record and correct errors in the GIS data that are brought to or as to the implied validity of any uses of the GIS data. EOEIA maintains records regarding all methods used to collect and process these digital data and will provide this information on request. Executive Office of Environmental Affairs, MassGIS EOEIA Data Center, 251 Causeway St., Suite 900, Boston, MA 02114-2610.
Note: Depicted boundaries are approximate and are intended for planning purposes only.
Open Space data digitized by FRCOG Planning staff based on assessment records 2008-2009.



SECTION 10

PUBLIC COMMENT

Public feedback was sought throughout the entire open space and recreation planning process. A Public Forum was held on November 4, 2010 to receive input on the Wendell Open Space and Recreation Plan's Seven-Year Action Plan. In addition, draft copies of the plan were available on the Town website and at the Town Offices, Country Store, and the Wendell Free Library for review by the general public. In December 2010, the Wendell Open Space and Recreation Planning Committee sought comments from the Selectboard, Planning Board, Open Space Committee, the Conservation Commission, the Agricultural Commission, the Historical Commission, the Franklin Regional Council of Governments, the Mount Grace Land Conservation Trust, and the Massachusetts Audubon Society, as well as from the Massachusetts Division of Conservation Services (DCS). Letters of comment from these Town Boards and other organizations are included in this section of the Plan. Most of the public feedback provided during the entire planning process is difficult to document due to the fact that the plan constantly incorporated these changes and enhancements. The letters of support reflect the broad base of support that the Wendell Open Space Planning Committee has earned over the past year.

The following comments were recorded during the feedback session at the Wendell Open Space and Recreation Plan Public Forum held on November 4, 2010, at the Town Hall from 6:30 p.m. to approximately 9:00 p.m. Maps were available for review by the public and several of the comments led to discussions that resulted in revisions to the maps. Following are the public comments recorded at the Public Forum:

- The Chair of the Conservation Commission, Charles Thompson Smith, made a number of suggestions for revisions to Section 4: Environmental Inventory and Analysis. These included the use of the word “drumlin” to replace “plateau” in the description of the location of Wendell Center, the addition of information on Town wells and public water supplies, the addition of the Common Reed (*Phragmites australis*) to the list of invasive species, and the addition of several scenic water resources. Mary Thomas of the Conservation Commission also mentioned that the Mile-a-Minute Vine (*Persicaria perfoliata*) is another invasive species of concern.
- Kristina Stinson of the Wendell Forest Conservation Alliance (WFCA) presented a statement proposing the conversion of Wendell State Forest Lands to “Reserve” status, recommending that the discussion of the management of private forest lands in Section 4 be revised to reflect the opinion that forest cutting does not promote biodiversity, and suggesting that forestry activity be discontinued in the Phelps Tracts. (See Appendix D for the text of the WFCA statement.) The Public Forum

participants discussed these issues, pointing out that the 19th century conveyance of the Phelps tracts stipulated that logging be done to benefit the schools and any change to that management plan would result in the property reverting back to the descendants of the original owners. It was also noted that the 2008 Annual Town Meeting Warrant Article designating the Phelps lots as conservation land stated that the land would be managed for forestry. Also discussed were the positive and negative effects of forest cutting practices on biodiversity.

- Dan Leahy of the U.S. Fish and Wildlife Service reported that the Massachusetts Natural Heritage and Endangered Species Program (NHESP) and the Nature Conservancy had recently released a revised BioMap2 report in November 2010, updating the original BioMap report produced in 2001. He pointed out that the 2010 Action Plan would be in place until 2017, by which time the BioMap data would be 16 years old, and requested that the new data be included in the Plan and the accompanying maps even if the schedule had to be extended for several months. FRCOG staff reported that the GIS data layers were not yet available and that the schedule and budget were both too tight to allow for a delay.
- A resident pointed out that the Library is the only location in Town where a person in a wheelchair and with chemical sensitivities can gain access and it would be helpful if there were more such accessible locations.

At the end of the Public Forum, participants voted on the priority action items by posting colored dots on large format sheets itemizing all of the action items from Section 9: Action Plan. The highest priority action items from this process were incorporated into the list in Section 9 that had been originally generated by respondents at Wendell Old Home Day in the summer of 2010 and are included on the Action Plan Map at the end of Section 9.



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval Patrick
GOVERNOR

Timothy Murray
LIEUTENANT GOVERNOR

Ian Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181

March 14, 2011

Patricia A. Smith
Franklin Regional Council of Governments
425 Main Street
Greenfield, MA 01301-3313

Re: Open Space and Recreation Plan

Dear Ms. Smith:

Thank you for submitting Wendell's Open Space and Recreation Plan to this office for review for compliance with the current Open Space and Recreation Plan Requirements. I am pleased to write that the plan is approved. This final approval will allow Wendell to participate in DCS grant rounds through December 2017.

Congratulations on a great job. Please call me at (617) 626-1171 if you have any questions or concerns about the plan.

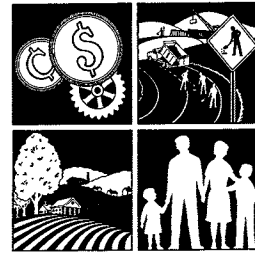
Sincerely,

A handwritten signature in cursive script that reads "Melissa Cryan".

Melissa Cryan
Grants Manager

FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS

425 Main Street • Greenfield, Massachusetts 01301-3313
Telephone 413-774-3167 • Fax 413-774-3169 • www.frcog.org
Executive Director • Linda Dunlavy



December 29, 2010

Melissa Cryan, Grants Manager
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Cryan,

The Franklin Regional Council of Governments is extremely pleased to support the approval of the Wendell Open Space and Recreation Plan by the Massachusetts Division of Conservation Services.

As you know, the plan was developed by the Wendell Open Space and Recreation Planning Committee with technical assistance from the Franklin Regional Council of Governments Planning Department. It represents three years of consensus building on the most important natural, recreational, and scenic resources in Town and the most appropriate strategies for the long term conservation of Wendell. This process included significant public input. The updated Wendell Open Space and Recreation Plan meets all of the requirements of the Division of Conservation Services as laid out in the "Open Space and Recreation Planner's Workbook" (revised March 2008).

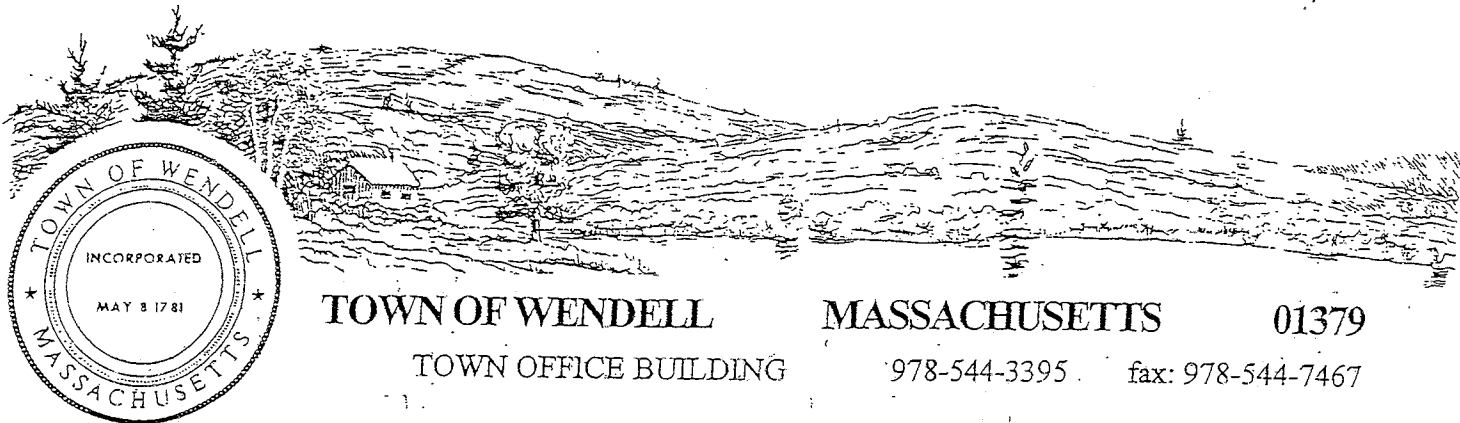
The Open Space and Recreation Plan will be used to help Town officials and other volunteers in their deliberations concerning land use and open space decisions. Once approved by the State, the Open Space and Recreation Plan will make Wendell eligible for land conservation and recreation project funding and more competitive for many other types of state grants. The Town will be better able to collaborate with neighboring towns, the Mount Grace Land Conservation Trust, the Franklin Land Trust, the Franklin Regional Council of Governments, and others to protect the natural, recreational, and cultural resources of the Town.

We look forward to your positive review and approval of the Wendell Open Space and Recreation Plan.

Sincerely,

Peggy Sloan
Director of Planning and Development

cc: Nancy Aldrich, Wendell Town Coordinator
Christine Heard, Chair, Wendell Selectboard



TOWN OF WENDELL **MASSACHUSETTS** **01379**
TOWN OFFICE BUILDING 978-544-3395 fax: 978-544-7467

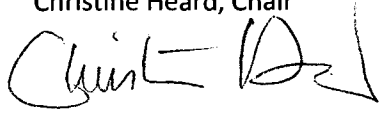
December 8, 2010

To Whom It May Concern:


Thank you for the copy of the Town of Wendell's Open Space and Recreation Plan. Members of the Wendell Selectboard have considered the plan as presented and have voted unanimously to support it in its entirety.

Sincerely,

The Wendell Selectboard

Christine Heard, Chair


Daniel Keller


Jeffrey Pooser


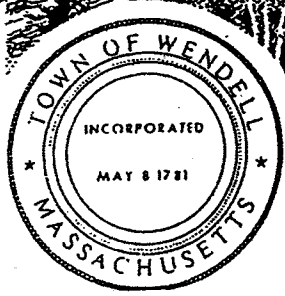
Memo

To: Open Space Committee
From: Wendell Planning Board
CC:
Date: January 5, 2011
Re: Endorsement of Open Space Plan

The Wendell Planning Board endorses the revised Wendell Open Space and Recreation Plan.

Respectfully,

Wendell Planning Board



TOWN OF WENDELL MASSACHUSETTS 01379

December 27, 2010

To Whom It May Concern:

The Wendell Open Space Committee is happy to endorse the 2010 which appears well thought through and carefully executed. Our aims and objectives in coming years will be defined by this document. We appreciate the level of detail of tasks listed in the action plan and the substantial amount of community input into the planning process which this represents.

Sincerely,

Marianne Sundell, Chair

Charles Smith

Mason Phelps



TOWN OF WENDELL MASSACHUSETTS 01379

Box 41

WENDELL CONSERVATION COMMISSION

Open Space Planning Committee

To Marianne Sundell
*38 Locke's Village Rd.

Wendell, Mass. 01379

12.19.'10

Dear Committee Members:

The Conservation Commission is pleased to recommend the latest Open Space & Recreation Plan which was prepared by the Wendell Open Space Planning Committee, & the Franklin Regional Council of Govts. Planning Dept. The Conservation Commission will be guided by the goals & objectives set forth in this plan, especially as regards the 448 acres of permanently protected open space, 442.29 of which is under the jurisdiction of the Commission. The plan provides a contextual analysis of the recent development of the Town since 1970, as population growth impinged on the Town & the surrounding region. The Town must balance this population growth with the need to preserve its rural character. This calls for careful planning for our shared future & that of posterity. This plan is an important step on this path.

Sincerely,
Charles Thompson Smith

December 7, 2010

To Whom It May Concern:

We, the members of the Wendell Agricultural Commission, are pleased with the latest update of the Town of Wendell Open Space and Recreation Plan (2010) to which we have had some input. We wish to thank Pat Smith of FRCOG, in particular, and Marianne Sundell and the Open Space and Recreation Planning Committee for the many hours of work they have put into the writing of this document.

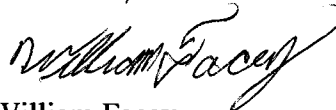
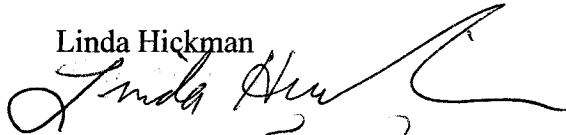
We now have, in the Town of Wendell, a Right-to-Farm Bylaw. With the support of action steps in the 2010 Plan, we hope to have signage to let citizens, prospective buyers and others know that this is a Right-to-Farm community.

There is much interest in growing our own food, growing crops organically, and educating townfolk in new and different ways of farming. Programs such as the film series and food-focused gatherings which the Agricultural Commission has initiated have been highlighted in this new document.

Overall, we see the Seven-Year Action Plan as a positive set of guidelines by which to measure our future efforts, and we applaud those who have worked to create the 2010 Open Space and Recreation Plan.

Sincerely,

Linda Hickman

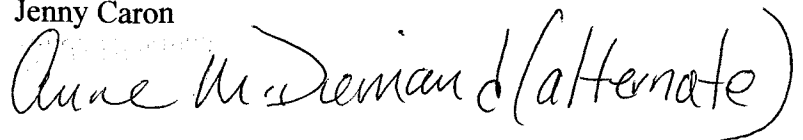


William Facey

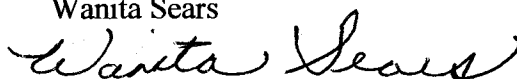


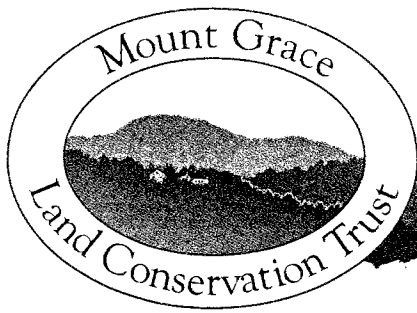
Laurel Facey

Jenny Caron



Wanita Sears





1461 Old Keene Road, Athol, MA 01331-9734

Phone: (978)248-2043 Fax: (978)248-2053

landtrust@mountgrace.org

www.mountgrace.org

Protecting land and encouraging land stewardship in North Central and Western Massachusetts

22 December 2010

Melissa Cryan
Commonwealth of Massachusetts
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Cryan:

Mount Grace Land Conservation Trust has reviewed the *Town of Wendell Open Space and Recreation Plan 2010* (Plan) and provides the following comments about the Plan.

- The Town with technical assistance from the Franklin Regional Council of Governments has provided ample opportunity for public involvement by distributing an Open Space and Recreation Survey in 2008. The Town followed up the survey by holding a series of 12 public meetings to develop the Plan. Moreover, the Town provided opportunities for public involvement at the 2009 and 2010 Earth Day Celebrations, the 2010 Old Home Day event, and during the regular meetings of the various town boards.
- The Plan provides an account of the Town's natural resources and acknowledges how the Town values those resources.
- The Seven Year Action Plan establishes a road map to implement the public goals by incorporating a clear list of objectives, actions, time frames, responsible officials, and importantly, potential funding sources.
- The Town has demonstrated its commitment to implementing the Plan's land conservation objectives. In September the Conservation Commission agreed partner with a Mount Grace Forest Legacy grant application by taking the necessary steps to hold the fee interest in a Mount Grace land parcel. (Per Section 9, Objective A4 of the Plan).

Mount Grace wholeheartedly supports the work of the Town and the Franklin Regional Council of Governments in developing the Plan and is eager to partner with the Town to pursue its implementation.

Thank you for this opportunity to comment on the Plan.

Yours truly,

Leigh Youngblood
Executive Director

ly/pd

c Patricia A. Smith, Franklin Regional Council of Governments
Christine Heard, Town of Wendell
Marianne Sundell, Town of Wendell

SECTION 11

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APPENDIX A

Town of Wendell

ADA Self-Evaluation Report

TOWN OF WENDELL
ADA INVENTORY OF TOWN RECREATIONAL FACILITIES
AND COMMONS

The following briefly describes Town-owned recreational facilities and two common areas and includes each site's resources, accessibility needs, and recommendations for modifications. A recommendation for modification is intended to help in providing access for mobility-disabled individuals. The standards by which the park facilities are judged are used by the Massachusetts Division of Conservation Services and are based on state and federal guidelines.

PLAYGROUND/BASKETBALL COURT AT THE TOWN LIBRARY

There is a ¼ acre playground and a fenced-in basketball court adjacent to the Town Library's parking lot at the address of 7 Wendell Depot Road. The playground contains two picnic tables, neither of which is accessible. The playground itself is on an uneven lawn and contained areas with wood chips. It includes a swing set, slide, two sandbox bucket loaders, and a spinning deck. No access exists between play areas for individuals with mobility disabilities. A fence and gate that had been along the parking area has been removed, allowing greater access. A climbing structure was also removed after an inspection by our insurance company deemed it unsafe. The parking area contains one van accessible space located directly next to the playground. The path to the basketball court is dirt/grass, and a berm or lip of greater than ½ inch exists along the edge of the paved court. The entrance to the court is 32 inches wide. The court's surface is smooth asphalt and is well marked. The chain link fence surrounding the court is approximately ten feet high and in good condition.

It is recommended that the Town of Wendell work to make the area more accessible for individuals with mobility disabilities by doing the following: create paths of packed stone dust between play areas; replace wood chips with an organic material called "fibar," or comparable material, that allows for more mobility; install some accessible picnic tables; construct a path of crushed stone or asphalt between the edge of the parking area and the basketball court so that no lip or berm is present to impede a person in a wheel chair.

NORTH COMMON

The North Common is a three-acre, rectangular shaped open space bordered by Center Street to the north and east, Wendell Depot Road to the west, and Morse Village Road to the south. To the east is also the Center Cemetery. There is a bandstand and veterans' memorial on the southern end of this Common. There are no parking areas around the common. A bike path along Wendell Depot Road would prohibit parking there. Parking near the bandstand is likely to offer the best option. The bandstand is accessible, although the open space surrounding it is not.

It is recommended that the Town of Wendell establish a handicapped parking space near the bandstand entrance. In addition, a paved path or one of crushed stone (if properly maintained) should be created to access a part of the three-acre open space.

SOUTH COMMON

The South Common is an open space area of approximately one acre in size, which is bordered by Morse Village Road to the north, Center Road to the east and south, and Lockes Village Road to the west. Picnic tables are not accessible and the granite benches have neither armrests nor backs. A handicapped parking space is located in front of the Town Hall not too distant from a beveled ramp to the common. This ramp, however, has an uneven cobblestone surface, and the grass area of the common is inaccessible.

It is recommended that the Town of Wendell fill the spaces between the cobbles to as to create a surface that can be easily traversed by a wheelchair. It is also recommended that a path of crushed stone (if properly maintained) or pavement be built from the ramp to the area where the benches are located, such that someone in a wheelchair could sit next to someone else sitting on a bench.

FISKE POND

The Fiske Pond Conservation Area is located in the southwest corner of Wendell. It includes a 125-acre parcel of land and a 10-acre pond. There are no town-operated swimming facilities, play areas, fishing facilities or formal programming at this site. There is a gravel parking area with no delineated parking spaces or handicap space. There is one picnic table adjacent to the trail. This trail is a minimum of three feet wide, does not require the use of stairs, and is for the most part stable and firm, although there are some areas which have changes in level greater than ½ inch. We know of only one wheelchair user who uses the trail from the parking area to the pond; she has expressed satisfaction with the facility.

We recommend the Town of Wendell designate and install a sign for a handicap parking space near the primary trail to the pond. Where feasible within the parameters of conservation restrictions, ensure that the trails are smooth and do not impede a person in a wheelchair.

ADA Transition Plan - Town of Wendell

Playground/Basketball Court

Physical Obstacles	Type of Action to be Taken	Date to be Completed*	Responsible Party
Difficulty traveling between play areas and from parking lot to basketball court.	Create a path of packed stone dust between areas; construct a path of crushed stone or asphalt between the edge of the parking area and the basketball court.	2012	Playground Committee, Highway Dept.
Wood chips under play structures do not allow easy mobility.	Replace wood chips with an organic material called "fibar," or comparable material, that allows for more mobility.	2012	Playground Committee

Fiske Pond

Physical Obstacles	Type of Action to be Taken	Date to be Completed	Responsible Party
There is no handicap parking space	Install a sign to indicate handicap parking adjacent to main trail	2012	Highway Dept.
Primary trail has some uneven areas	Level out areas of trails where possible	2012	Conservation Commission

ADA Transition Plan - Town of Wendell

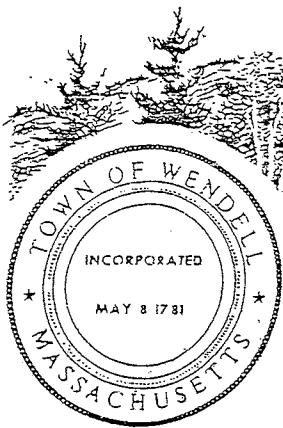
North Common

Physical Obstacles	Type of Action to be Taken	Date to be Completed	Responsible Party
No marked handicapped-accessible parking space	Designate 1 space as handicapped accessible near bandstand entrance	2011	Highway Dept.
Open space surrounding bandstand not accessible	Install an accessible path through a portion of open space to bandstand	2012	Selectboard

South Common

Physical Obstacles	Type of Action to be Taken	Date to be Completed	Responsible Party
Ramp to Common has uneven cobblestones	Fill in cobblestones to provide even surface		Selectboard
There are no paths from the parking lot to common	Install an accessible path to each of these items from the parking area.	2011	Selectboard
Wood chips under play structures do not allow easy mobility.	Install an accessible path through a portion of open space to area near benches	2012	Selectboard
		2012	

* Due to the current fiscal situation within the State and local governments, it has become increasingly difficult to fund the improvements that are necessary to comply with the ADA requirements. However, the Town of Wendell will move towards correcting these issues as funding becomes available. In the meantime, municipal staff will make accommodations upon request in order to facilitate services and programs to ensure accessibility to all citizens.



TOWN OF WENDELL

MASSACHUSETTS

01379

TOWN OFFICE BUILDING

978-544-3395

fax: 978-544-7467

PUBLIC NOTICE

This Notice is provided as required by Title II of the Americans with Disabilities Act (ADA) of 1990.

The Town of Wendell does not discriminate on the basis of disability with respect to the admission to, access to, or operation of its programs, services or activities. The Town of Wendell does not discriminate on the basis of disability in its hiring or employment practices.

Questions, concerns, complaints, or requests for additional information regarding the Americans with Disabilities Act may be forwarded to the Town of Wendell's designated ADA Compliance Coordinator.

Information regarding the Town's ADA Compliance Coordinator is presented below:

Name: Nancy Aldrich, Town Coordinator
Address: Wendell Town Offices
P.O. Box 41
Wendell, MA 01379
Phone: 978-544-3395
Email: towncoord@crocker.com
Days Available: Tuesdays and Thursdays

Individuals who need auxiliary aids for effective communication with respect to programs and services of the Town of Wendell are invited to make their needs and preferences known to the ADA Compliance Coordinator.

Approved:

Christine Heard
Chair, Wendell Selectboard

Updated and reposted on December 14, 2010

GRIEVANCE PROCEDURE

This Grievance Procedure is established to meet the requirements of the Americans with Disabilities Act of 1990 (ADA). It may be used by anyone who wishes to file a complaint alleging discrimination on the basis of disability in employment practices and policies, or in the provision of services, activities, programs, or benefits by the Town of Wendell.

The complaint should be in writing and should contain information about the alleged discrimination such as name, address, phone number of complainant, and location, date and description of the program. Complaint forms are available in the Selectboard Office. Alternative means of filing complaints, such as personal interviews or a tape recording of the complaint will be available for persons with disabilities upon request.

For complaints received with respect to services, activities, programs, benefits and employment practices of the Town of Wendell, the complaint should be submitted by the grievant and/or his/her designee as soon as possible but no later than 60 calendar days after the alleged violation to:

Name:	Nancy Aldrich, ADA Coordinator
Address:	Wendell Town Offices P.O. Box 41 Wendell, MA 01379
Phone:	978-544-3395
Email:	towncoord@crocker.com
Days Available:	Tuesdays and Thursdays

Within 15 calendar days after receipt of the complaint, the ADA Coordinator will attempt to meet with the complainant to discuss the complaint and possible solutions. Within 15 calendar days after the meeting, the ADA Coordinator will respond in writing, and where appropriate, in a format accessible to the complainant. The response will explain the position of the Town of Wendell and where possible will offer options for substantive resolution of the complaint. If the response by the ADA Coordinator does not satisfactorily resolve the issue, the complainant and/or his/her designee may appeal the decision of the ADA Coordinator within 15 calendar days to the Wendell Selectboard.

Within 15 days of the appeal, the Wendell Selectboard will attempt to meet with the complainant to discuss the complaint and possible resolutions. Within 15 calendar days after the meeting, the Wendell Selectboard will respond, in writing, and, where appropriate, in a format accessible to the complainant, with a final attempt at resolution of the complaint.

All written complaints received by the ADA Coordinator, appeals to the Wendell Selectboard and response will be kept by the Town of Wendell for a period of at least three years.

Approved:



Christine Heard
Chair, Wendell Selectboard

COMPLAINT FORM FOR PERSONS ALLEGING DISCRIMINATION ON THE BASIS OF DISABILITY

DATE OF COMPLAINT: _____

NAME: _____
Last name First Name

MAILING ADDRESS: _____
Street

Town State Zip

PHONE NUMBER: _____

BEST TIME TO REACH YOU AT THIS NUMBER? _____

If the ADA Coordinator can not reach you to discuss this complaint, is there another individual who could be contacted on your behalf?

NAME: _____
Last name First Name

MAILING ADDRESS: _____
Street

Town State Zip

PHONE NUMBER: _____

BEST TIME TO REACH THIS PERSON? _____



Is this complaint related to one or more of the following: (Check all that apply)

Employment practices: _____

Program or service activities: _____

Facility access issues: _____

PLEASE DESCRIBE YOUR DISABILITY: _____

PLEASE DESCRIBE YOUR COMPLAINT:

What is the situation or action that you wish to complain about?

When did this occur? _____

Who do you allege discriminated against you? If known, give the name of the institution, department, program and/or individual.

Have you filed a complaint about this matter before? Yes No

If yes, when? _____

To whom did you complain? _____

Was the complaint in writing? Yes No

Have you, or do you intend to file a complaint with respect to this matter with any other Federal, State, or Local agency, or with an attorney? Yes No

If yes, please list a contact's name, address, and phone: _____

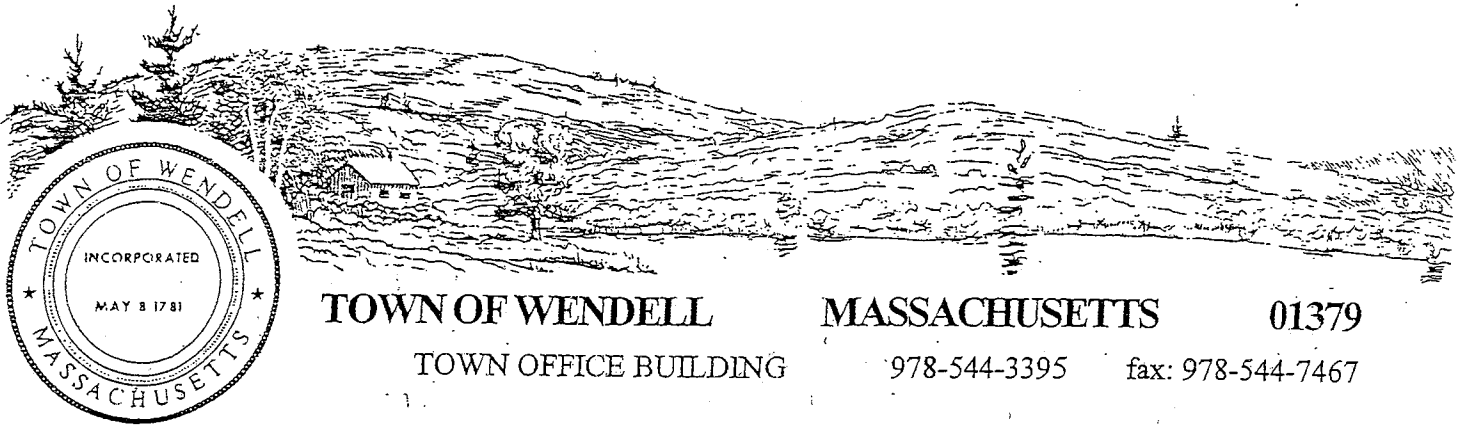
OTHER COMMENTS:

Signature of Complainant

RETURN COMPLETE COMPLAINT FORMS TO:

Nancy Aldrich, ADA Coordinator
Wendell Town Offices
P.O. Box 41
Wendell, MA 01379
978-544-3395
towncoord@crocker.com
Tuesdays and Thursdays

Updated December 8, 2010



The Town of Wendell's employment practices are in compliance with the Americans with Disabilities Act. Issues regarding recruitment, personnel action leave administration, training, tests, medical exams/questionnaires, wage and salary administration, and fringe benefits are covered under one or more of the following methods:

- The Town of Wendell Personnel Policy
- The Wendell Selectboard
- Contracts and/or Memorandums of Understanding

At this time, there are no social or recreational opportunities offered by the Town of Wendell for employees.

Signed:

Nancy Aldrich
Nancy Aldrich
Wendell Town Coordinator
ADA Coordinator

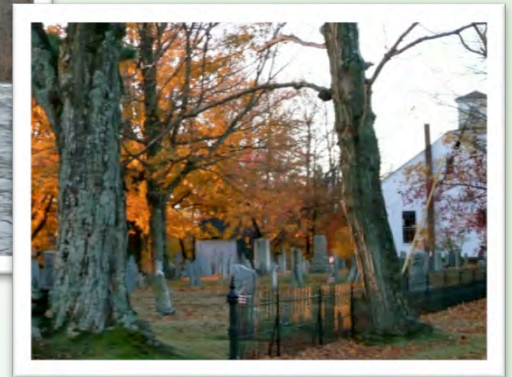
APPENDIX B

Wendell Open Space and Recreation Planning Committee Meeting Notices and Sign-in Sheets

Wendell Open Space & Recreation Plan

PUBLIC FORUM

THURSDAY, NOVEMBER 4TH, 2010
6:30pm, Wendell Town Hall



The Wendell Open Space & Recreation Planning Committee
needs **YOUR** feedback to help prioritize action steps

Agenda:

- Light Refreshments & Viewing of Maps
- Presentation of Draft Plan
- Input & Discussion on Proposed Action Steps

*A copy of the Draft Plan is available for review at the Wendell Store,
the Wendell Library and at <http://www.wendellmass.us>*

For more information contact

Marianne Sundell, Chair, at (978) 544-8981 or Pat Smith, FRCOG Senior Land Use Planner, at 413-774-1194 x111

Wendell Open Space and Recreation Planning Committee

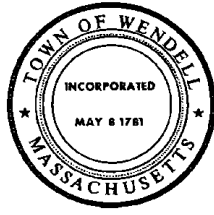
PUBLIC FORUM

November 4, 2010

Sign-in Sheet

Please Print Clearly

Name	Affiliation	Mailing Address/ Email	Phone Number
Charles Thompson Smith	Gen. Comm.	52 Locke Hill Rd - Charles@Deepsoft.com	978-544-6933
Marianna Sundell		Box 115 Wendell MA 01379	978 544-8921
Mason Phelps		PO Box 127, Wendell	978-544-2735
Becke Finn		417 Farley Rd Wendell	978-544-3852
Kathy Becker		PO Box 862 Wendell	978-544-5557
Laurel Facey	AgCom	47 Davis Rd, Millers Falls 01349	544-7178
Pam Richardson		191 Thompson Rd Wendell	413 657 3621
Peter Gallant		" " " "	413-219-4409
Jenny Barilla		10 Blueberry Lane	978 544 3250
Joshua Heinemann		438 Jennison Road	978 544 2306
DAN LEAHY		71 BULLARD PASTURE RD	978-544-6512
Kristina Stinson		66 West St. Wendell	978-544-8324
Mary Thomas (con com)		PO Box 111 wzzw19@yahoo.com	978-544-3112
Jonathan Roy Planton		@ Lockes Village	4-3758
Kathleen W. Mela		438 Jennison Rd	4-2306
PAT SMITH	FRCOG	psmith@frcog.org	413-774-1194 x111
WALT SAHFORD	FRCOG	land@frcog.org	"



AGENDA

**Town of Wendell
Open Space and Recreation Planning Committee Meeting
Wendell Town Offices
September 27, 2010
7:00 – 8:30 p.m.**

1. Introductions – Marianne Sundell, Chair (7:00 p.m.)
2. Review of Final Review Draft of Section 9: Action Plan (*see enclosed*) and the Draft Action Plan Map* – Marianne Sundell, Chair (7:05 p.m.)
3. Review of Draft of Section 1: Plan Summary (*see enclosed*) – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:35 p.m.)
4. Review of Draft of Section 2: Introduction (*see enclosed*) – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:45 p.m.)
5. Review of Draft of Section 6: Community Vision (*see enclosed*) – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:55 p.m.)
6. Review of Draft Maps – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (8:05 p.m.)
 - Scenic Resources and Unique Environments
 - Regional Context
 - Soils and Geographic Features
 - Water Resources
 - Zoning
 - Open Space
 - Environmental Habitat
7. Public Forum/Next Steps (8:20 p.m.)

*Review materials to be distributed at the meeting.

Wendell Open Space and Recreation Planning Committee

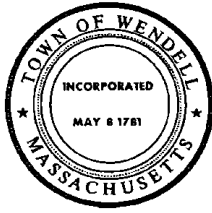
September 27, 2010

Sign-in Sheet

Please Print Clearly

Name	Affiliation	Mailing Address/ Email	Phone Number
------	-------------	------------------------	--------------

Beckie Finn		beckfinn@earthlink.net	978-544-3852
LAUREL FACEY	AgCom	lfacey88@cracker.com	544-7178
Mason Phelps	OSC	PO Box 172, 01379	978-544-2733
Marianne Surell		PO Box 115	544-8981
PAT SMITH		FRCOG	

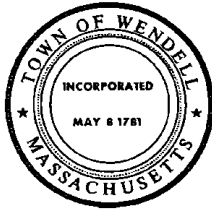


AGENDA

**Town of Wendell
Open Space and Recreation Planning Committee Meeting
Wendell Town Offices
August 23, 2010
7:00 – 8:30 p.m.**

1. Introductions – Marianne Sundell, Chair (7:00 p.m.)
2. Review of Draft Section 7: Analysis of Needs (*see enclosed*) – Marianne Sundell, Chair (7:05 p.m.)
3. Review of Draft Section 8: Goals and Objectives (*see enclosed*) – Marianne Sundell, Chair (7:25 p.m.)
4. Review of Draft Section 9: Action Plan (*see enclosed*) – Marianne Sundell, Chair (7:35 p.m.)
5. Review of Final Draft of Section 5: Inventory of Lands of Conservation and Recreation Interest* and Draft Open Space Map – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:55 p.m.)
6. Review of Draft of Section 3: Community Setting and draft maps* – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (8:00 p.m.)
7. Review of Draft of Section 4: Environmental Inventory and Analysis and draft maps* – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (8:10 p.m.)
8. Next Steps (8:20 p.m.)

*Review materials to be distributed at the meeting.



AGENDA

**Town of Wendell
Open Space and Recreation Planning Committee Meeting
Wendell Town Offices
July 26, 2010
7:00 – 8:30 p.m.**

1. Introductions – Marianne Sundell, Chair (7:00 p.m.)
2. Project Status and Timeline – Marianne Sundell, Chair, and Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:05 p.m.)
3. Review of Draft of Section 5: Inventory of Lands of Conservation and Recreation Interest* and Draft Open Space Map – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:15 p.m.)
4. Review of Draft Section 7: Analysis of Needs (see enclosed) – Pat Smith, Land Use Planner, Franklin Regional Council of Governments (7:30 p.m.)
5. Review of Draft Section 8: Goals and Objectives (see enclosed) – Marianne Sundell, Chair, and Pat Smith, Land Use Planner, Franklin Regional Council of Governments (8:00 p.m.)
6. Next Steps (8:20 p.m.)

**Review materials to be distributed under separate cover.*

Wendell Open Space and Recreation Planning Committee

July 26, 2010

Sign-in Sheet

Please Print Clearly

Name	Affiliation	Mailing Address/ Email	Phone Number
------	-------------	------------------------	--------------

* Anne Diemand		131 Norman Hollow Rd	978-544-6111
* Nancy Kiboschlaeger	Planning Bd	74 Lockes Village Rd	978-544-2741
	Mason Phelps OSC	PO Box 122 Wendell	978-544-2735
* Laurel Facey	Ag. Com.	47 Davis Rd. (Wendell) Millers Falls, MA 01349	978-544-7178
Diane Runkel		382 Jemison Rd Wendell, MA 01379	978-544-2088
Jeff Hooser		245 Lockes Village 01379	9836
Wendell		38 Lockes Village Rd 01379	4-8981

* hand copy

FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS

425 Main Street • Greenfield, Massachusetts 01301-3313
Telephone 413-774-3167 • Fax 413-774-3169 • www.frcog.org
Executive Director • Linda Dunlavy



AGENDA

Town of Wendell Open Space and Recreation Plan Update Committee Thursday, April 9, 2009 7:00 – 9:00 p.m.

1. Revise 2002 Goals and Objectives into updated draft (7:00p.m.)
2. Earth Day displays for community input (8:00p.m.)
3. Project Status (8:15)
 - Review of maps
 - Section 5: table updates needed
 - Timeframe for remaining (Phase II) work



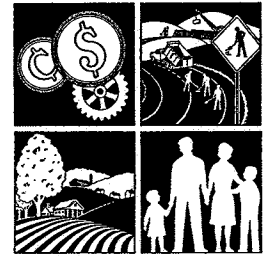
**Town of Wendell
Open Space and Recreation Planning Committee Meeting
Sign-In sheet**

Thursday, April 9, 2009

<u>Name</u>	<u>Affiliation</u>	<u>Address</u>	<u>Phone</u>	<u>Email</u>
Mason Phelps	WOSC	PO Box 122	978-544-2735	-None
Marianne Sordell	WOSC	Box 115	978-544-8789	
Beckie Finn		417 Farley Rd	978-544-3852	beckfinn@earthlink.net
Chris Marano	WOSC	PO Box 992	978-544-3116	
Jane Rubin		382 Jennison Rd.	978-544-2088	rusretfm@
Raymond DiDonato		323 Lockes Village Rd	978-544-8270	hughes.net rdidonat@hotmail.com
Melissa Adams	PROG	425 Main St Greenfield	(413) 774-1914 x107	adams@prog.org

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AGENDA

**Town of Wendell
Open Space and Recreation Plan Update Committee
Town Office Meeting Room
Monday, December 22, 2008
7:00 – 8:30 p.m.**

1. Status of Mapping and Assessors information (7:00)
2. Survey Results – Megan Rhodes, Land Use and Transportation Planner, FRCOG (7:20)
3. Review of updates to Section 3 (7:50)
4. Next Steps (8:15)

**** Note: In case of snow and/or icy weather conditions, please call FRCOG at (413) 774-1194 x107 on Monday at 2:00 pm or later to find out if the meeting has been postponed. If the decision is made to postpone it, the snow date for the meeting will be the next night, Tuesday December 23 same time and place (7:00 p.m. at the Town Office Meeting Room).**



Melissa

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AGENDA

**Town of Wendell
Open Space and Recreation Plan Update Committee
Thursday, October 9, 2008
7:00 – 9:00 p.m.
Town Office Building Meeting Room**

1. Introductions (7:00)
2. Review of Draft Sections 3C and 3D.1 – Melissa (7:05)
 - 3C Demographics
 - Population
 - Economic Wealth
 - Labor Force
 - Employment
 - 3D.1 Patterns and Trends
3. Review of Draft Habitat map (Natural Heritage & Endangered Species) – Melissa (8:00)
4. Review of Sections 3A, 3D.2 and 3D.3 – Marianne (8:10)
 - 3A Regional Context
 - 3D.2 Infrastructure
 - 3D.3 Long-term Development Patterns
5. Next Steps (8:50)



Wendell Open Space & Recreation Planning Committee Meeting

Thursday, September 18, 2008 Town Office Meeting Room 6:30 p.m.

- 6:30 Potluck, reviewers also welcome
- 7:00 Overview of planning project, timeline, etc.
- 7:30 Introductions-background, skills, interests, goals
- 8:00 Review Sections 3 A.2, A.3, & A.4 from 2002 Plan

Proposed Timeline for Open Space & Recreation Plan Update

- September 18** First meeting, review project, introductions
Deadline for Section 3 edits/contributions
- October 9** Review new draft Section 3 w/planner
Deadline for Section 4 edits/contributions
- November 13** Review Section 4
- December 11** Review Draft 5 & updated 4, survey results
Deadline for Section 7 edits/contributions
- January 8** Review new draft Section 7
- February 12** Review revised 7, and 8 & 9
Deadline Section 8 & 9 suggestions
- March 12** Cont. revising 7, 8, & 9 w/planner
- March/April** Create opportunities for community to review 8 & 9
- April 9** Final revisions 8 & 9, and action plan map
Review 1,2, & 6 w/planner
- Late April/May** Distribute draft to related boards
Public forum w/planner

Thank you for volunteering to help update the Wendell Open Space and Recreation Plan. I have enclosed an appointment slip from the Selectboard, a tentative calendar for committee meetings, an agenda for first meeting on September 18, a list of project participants, and a brief section of the 2002 plan that we will be discussing at our first meeting.

A copy of the 2002 Wendell Open Space and Recreation is available on the town website at www.wendellmass.us on the Open Space Committee page. Please send any written edits and comments to wosc@sustaincommunity.org and add this address to the safe list on your e-mail, as I will be using it to send out information related to the planning committee. If you need a paper copy of the sections we will be reviewing mailed to you please call Marianne at 544-8981

Wendell Open Space & Recreation Planning Committee

Don Chappell, Jennifer Caron, Ray DiDonato, Neal Feltmen, Elizabeth Scotten Finn, Jean Forward, Mason Phelps, David Richard, Nancy Riebschlaeger, Martha Senn, Hal Stowell, Marianne Sundell

Project assistants

Taja Perez, Coco Schachtl, Jason Tolzdorf

FRCOG Planning Department

Melissa Adams, Land Use Planner; Ryan Clary, GIS

Reviewers to include: (no appointments needed)

Myron Becker, Jerry & Sam Eide, Deidre Cabral, Fran Doughty, Jim Dunn, Melinda Godfrey, Josh Heinemann, Beth Jakob, Molly Kaynor, Al Macintyre, Heather Reed, Kristina Stinson, Tystram Seidler, Ward Smith and hopefully others too.

APPENDIX C

2008 Open Space and Recreation Survey Results

Wendell Open Space and Recreation Survey Results, 2008

The following paragraphs describe the results of the surveys distributed to Wendell town residents in 2008 with the purpose of learning public opinion on various issues related to open space and recreation. The answers from the survey will help guide the protection of open space and natural resources, and the development of recreational facilities and programs in Wendell.

Overall, the results of the surveys show that Wendell residents greatly enjoy their close proximity to the Wendell State Forest, which they use frequently for a variety of activities. The surveys also show that the town residents place great value on keeping the town's rural, small town character and protecting the quality of the town's water and air.

There were a total of 53 surveys returned to the Wendell Open Space Committee.

In this summary, each table below contains several columns of data. The first column, "Number," refers to the total *number* of people who selected each particular answer. The second column, "Freq" is the *percentage* of people that selected each answer. This percentage is based on the total number of people who actually answered each question, rather than the total number of surveys returned. For example: a total of 53 surveys were returned, but of these 53 surveys, not all of them answered each question on the survey. Some questions were left blank. If 50 of the 53 surveys had an answer for a particular question, then the percentage is based on these 50 responses. By using this methodology, potential bias from non-respondents is eliminated. The third column included in the tables, "Non. Resp.," is the total *number* of people (or non-respondents) who returned surveys, but did not respond to that particular question. This provides the reader an idea of the size of the sample.

Example:

Q1. How important was each of the following in your decision to move to, and/or live in Wendell?
Please circle a number for each item where 1=Very Important; 2=Important; and 3= Not Important.

	VERY IMPORTANT		IMPORTANT		NOT IMPORTANT		NON RESP.
	<i>Number</i>	<i>Freq.</i>	<i>Number</i>	<i>Freq.</i>	<i>Number</i>	<i>Freq.</i>	
OPEN FIELDS, FORESTS, AND TRAILS	38	75%	10	20%	3	6%	2

This means that 2 survey respondents did not answer the question.

Thirty-eight people or 75% of the 51 respondents who answered that particular question felt that the presence of open fields, forests, and trails were a very important reason for their decision to move to and/or live in Wendell.

Question 1

How important was each of the following in your decision to move to, and/or live in Wendell?

Please circle a number for each item where 1=Very Important; 2=Important; and 3= Not Important.

The five **most important** factors influencing people's decision to move to and or/or live in Wendell are:

- 1) Rural or small town character (75% of respondents)
- 2) Air/water quality (75%)
- 3) Open fields, forest, trails (75%)
- 4) Peace and quiet (75%)
- 5) Affordable housing (44%)

The five **least important** factors influencing people's decision to move to and or/or live in Wendell are:

- 1) Job opportunities in the region (73%)
- 2) Easy commuting (71%)
- 3) Five College area (62%)
- 4) Public services (61%)
- 5) Public school system (48%)

The above lists seem to show that town residents place greater value on the physical nature of the town, rather than certain amenities and convenience. The table below shows how each of the factors influenced residents' decisions to move to and/or live in Wendell.

Table 1: Question 1

	VERY IMPORTANT		IMPORTANT		NOT IMPORTANT		NON RESP.
	Number	Freq.	Number	Freq.	Number	Freq.	
RURAL OR SMALL TOWN CHARACTER	40	75%	10	19%	3	6%	0
OPEN FIELDS, FORESTS, AND TRAILS	38	75%	10	20%	3	6%	2
PEACE AND QUIET	38	75%	11	22%	2	4%	2
ACCESS TO WENDELL STATE FOREST	20	41%	21	43%	8	16%	4
AIR/WATER QUALITY	39	75%	10	19%	3	6%	1
PUBLIC SERVICES	5	10%	14	29%	30	61%	4
LOCAL CLIMATE	12	24%	17	35%	20	41%	4
SAFETY FROM CRIME AND VANDALISM	17	33%	21	41%	13	25%	2
PUBLIC SCHOOL SYSTEM	10	20%	16	32%	24	48%	3
AFFORDABLE HOUSING	22	44%	17	34%	11	22%	3
RECREATIONAL OPPORTUNITIES	10	20%	23	47%	16	33%	4
FRIENDS OR RELATIVES HERE	11	22%	17	34%	22	44%	3
FIVE COLLEGE AREA	5	10%	14	28%	31	62%	3
EASY COMMUTING	4	8%	10	20%	35	71%	4
JOB OPPORTUNITIES IN THE REGION	2	4%	11	22%	36	73%	4
PARTICIPATORY GOVERNANCE	13	25%	20	39%	18	35%	2
PERCEPTION OF TOWN VALUES	19	37%	17	33%	16	31%	1

6% of respondents noted the following:
DIRT ROADS

4% of respondents noted the following:
LIBERAL POLITICAL CLIMATE
FREEDOM FROM REGULATION

There was one response for each of the following:
HUNTING, FISHING, GARDENING
COMMUNITY MINDEDNESS
SMALL POPULATION
PARTNER MOVED HERE/MARRIAGE
FEWER POSTED SIGNS IN TOWN
COMMON SENSE
NON-USE OF PESTICIDES
WHEELCHAIR ACCESS OF PUBLIC LANDS
PERMANENTLY PROTECTED FORESTS
LACK OF INTEREST BY TOWN COMM'S
TAX RATE
TRADITIONAL USES

Question 2

How important is it to conserve the following natural resources? Please circle a number for each item where 1=Very Important; 2=Important; and 3= Not important.

According to survey results, the five **most important** natural resources to conserve are:

- 1) Clean air (89%)
- 2) Clean drinking water (89%)
- 3) Lakes/streams/ponds (83%)
- 4) Rural character (81%)
- 5) Forests (81%)

According to survey results, the five **least important** natural resources to conserve are:

- 1) Dirt roads (17%)
- 2) Historic structures (13%)
- 3) Scenic views (12%)
- 4) Stone walls (12%)
- 5) Wetlands (9%)

The table below shows the level of important placed on each of the natural resources. The results show that, overall, people value all of the natural resources fairly strongly – all of the resources received at least 60% of the respondents' votes in terms of being Very Important to conserve.

Table 2: Question 2

	VERY IMPORTANT		IMPORTANT		NOT IMPORTANT		NON RESP.
	Number	Freq.	Number	Freq.	Number	Freq.	
DIRT ROADS	32	62%	11	21%	9	17%	1
FORESTS	43	81%	8	15%	2	4%	0
OPEN FIELDS	40	75%	10	19%	3	6%	0
RURAL CHARACTER	43	81%	5	9%	5	9%	0
SCENIC VIEWS	35	67%	11	21%	6	12%	1
STONE WALLS	31	60%	15	29%	6	12%	1
LAKES/STREAMS/ PONDS	44	83%	7	13%	2	4%	0
WETLANDS	40	75%	8	15%	5	9%	0
WILDLIFE HABITAT	40	75%	10	19%	3	6%	0
CLEAN DRINKING WATER	47	89%	6	11%	0	0%	0
FARMLAND	36	68%	13	25%	4	8%	0
HISTORIC STRUCTURES	33	63%	12	23%	7	13%	1
CLEAN AIR	47	89%	6	11%	0	0%	0
WILDERNESS	39	75%	9	17%	4	8%	1

There was one response for each of the following:

- SMALL POPULATION
- STOP LOGGING THE FOREST
- SMALL POX CEMETARY
- RIGHT OF USAGE OF PUBLIC PROPERTY

Question 3

Which actions do you support to protect/conservate open space and natural resources? Please circle a number for each item where 1=Strongly Support; 2=Support; and 3 = Don't Support.

The results of this question show that residents most strongly support actions that do not entail the expenditure of town money. However, half of respondents felt that the town should take action towards the protections and conservation of open space and natural resources.

The top five **most strongly supported** actions to protect/conservate open space and natural resources are:

- 1) Acceptance of donated conservation land (70%)
- 2) Encourage conservation by private non-profits (61%)
- 3) Encourage conservation by state agencies (61%)
- 4) Encourage conservation by a combination of parties (60%)
- 5) Acceptance of donated development rights (52%)

The top five actions that were **not supported** are:

- 1) No additional town actions should be taken (67%)
- 2) Town purchase of meeting house (48%)
- 3) Town purchase of development rights (40%)
- 4) Zoning changes for open space protection (32%)
- 5) Encouragement of conservation by private non-profits (24%)

Table 3: Question 3

	Strongly Support		Support		Don't Support		Non Resp.
	Number	Freq.	Number	Freq.	Number	Freq.	
TOWN PURCHASE OF CONSERVATION LAND	20	41%	18	37%	11	22%	4
TOWN PURCHASE OF DEVELOPMENT RIGHTS	13	30%	13	30%	17	40%	10
ZONING CHANGES FOR OPEN SPACE PROTECTION	21	45%	11	23%	15	32%	6
NO ADDITIONAL TOWN ACTIONS SHOULD BE TAKEN	7	18%	6	15%	26	67%	14
ACCEPTANCE OF DONATED CONSERVATION LAND	35	70%	11	22%	4	8%	3
ACCEPTANCE OF DONATED DEVELOPMENT RIGHTS	25	52%	12	25%	11	23%	5
TOWN PURCHASE OF MEETING HOUSE	6	14%	16	38%	20	48%	11
ENCOURAGE CONSERVATION BY PRIVATE NON-PROFITS	31	61%	8	16%	12	24%	2
ENCOURAGE CONSERVATION BY STATE AGENCIES	31	61%	12	24%	8	16%	2
ENCOURAGE CONSERVATION BY A COMBINATION OF PARTIES	31	60%	12	23%	9	17%	1

Question 4

Should Wendell protect riverfront property along the Millers River? Circle one.

Three-quarters (75%) of survey respondents said that riverfront property along the Millers River should be protected. Only 16% of the respondents said that the town should not protect riverfront property, while 9% were not sure or had no opinion. (Number of non-respondents: 9)

Question 5

How has the quality of the following changed over time? Please circle a number for each item where 1=Changed for the better; 2=Changed for the worse; 3=Remained the same; and 4= No opinion/Unsure.

The results for this question were fairly mixed – answers were distributed across the positive and negative opinions. Only a few issues emerged as having been seen as clearly changed in a certain direction.

Thirty-one percent of respondents felt that the recreational facilities in Wendell have changed for the better. Conversely, 45% of the respondents felt that the town's rural character has changed for the worse and 33% felt that the sense of community has also changed for the worse.

Table 4: Question 5

	CHANGED FOR BETTER		CHANGED FOR WORSE		REMAINED THE SAME		NO OPINION / UNSURE		NON RESP.
	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	
LOCAL OPEN SPACE	13	23%	18	25%	18	35%	9	17%	1
SENSE OF COMMUNITY	17	21%	15	33%	15	29%	9	17%	1
WENDELL'S RURAL CHARACTER	23	6%	16	45%	16	31%	9	18%	2
RECREATIONAL FACILITIES	7	31%	9	13%	9	17%	20	38%	1
RECREATIONAL PROGRAMMING	9	23%	7	17%	7	13%	24	46%	1

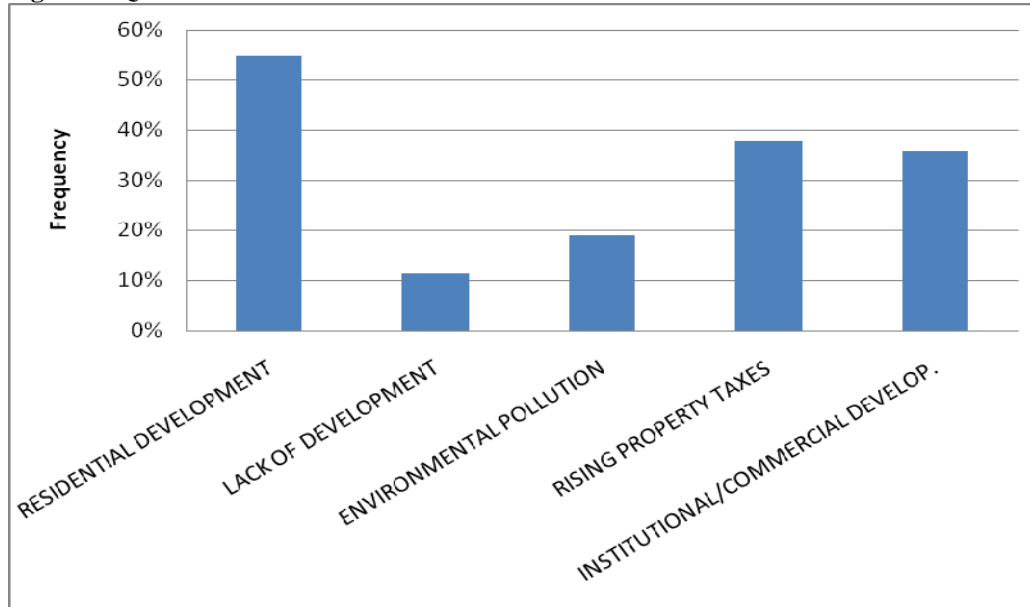
Question 6

What are the two most significant threats to Wendell's sense of community and rural character?

Please circle two only.

Slightly more than half (55%) of survey respondents felt that the biggest threat to Wendell's sense of community of rural character is residential development. This was followed by the threats of rising property taxes (38%) and institutional/commercial development (36%). The following chart illustrates how town residents responded to this question.

Figure 1: Question 6



There was one response for each of the following:

LACK OF MAINTENANCE OF PUBLIC/PRIVATE LAND
 LACK OF POLICY ON SOME PUBLIC/PRIVATE LAND
 CHANGE IN LAND OWNERSHIP - PARCELIZATION
 LOGGING DESTRUCTION OF HABITAT AND PONDS IN STATE FOREST
 PEOPLE USING WOODS/STREAMS TO DUMP TRASH
 STRONG-ARMING OF SELECT/LOCAL GROUPS
 TOO MUCH LAND TAKEN OFF TAXROLLS AND PUT INTO CONSERVATION
 JUNK CARS LEFT TO LEAK OIL, GAS, ANTIFREEZE
 JUNK AND GARBAGE LEFT IN YARDS
 PEOPLE'S ATTITUDES
 LOSS OF DIRT ROADS
 DISREGARD FOR OTHER'S PROPERTY
 THREATS TO TRADITIONAL USES
 LAKE GROVE GROUNDWATER POLLUTION FROM FAILED SEPTIC SYSTEMS
 LOSS OF FREEDOM TO DO WHAT YOU WANT WITH YOUR OWN LAND
 LAKE GROVE SCHOOL
 RESIDENTS CLAIMING TO OWN ENTIRE PONDS AND DENYING
 NON-MOTORIZED USAGE

Question 7

How important are the following to you? Please circle a number for each item where 1=Very Important; 2=Important; and 3=Not Important.

The results for this question show that the town residents value the maintenance of the natural wilderness character of Wendell. The top five **most important** features to the survey respondents are:

- 1) Lack of industrial/commercial strips (79%)
- 2) Clean streams and water bodies (77%)
- 3) Moose, bobcat, deer, and other wildlife (76%)
- 4) Large forested areas (69%)
- 5) Quiet (67%)

The top five **least important** town features according to survey respondents are:

- 1) Narrow, windy roads (27%)
- 2) Large roadside trees (25%)
- 3) Historic cellar holes (22%)
- 4) Dirt roads (21%)
- 5) Scenic views (19%)

Table 5: Question 7

	VERY IMPORTANT		IMPORTANT		NOT IMPORTANT		NON RESP.
	Number	Freq.	Number	Freq.	Number	Freq.	
LARGE ROAD-SIDE TREES	26	50%	13	25%	13	25%	1
DIRT ROADS	23	44%	18	35%	11	21%	1
HISTORIC CELLAR HOLES	17	33%	23	45%	11	22%	2
HISTORIC STRUCTURES	22	44%	20	40%	8	16%	3
VERNAL POOLS	32	62%	13	25%	7	13%	1
WENDELL STATE FOREST	30	58%	21	40%	1	2%	1
MOOSE, BOBCAT, DEER AND OTHER WILDLIFE	39	76%	9	18%	3	6%	2
OPEN FIELDS	32	62%	18	35%	2	4%	1
FARM HOUSES	22	42%	25	48%	5	10%	1
SCENIC VIEWS	27	52%	15	29%	10	19%	1
NARROW WINDY ROADS	19	37%	18	35%	14	27%	1
LARGE FORESTED AREAS	36	69%	11	21%	5	10%	1
WALKING AND HIKING TRAILS	23	44%	23	44%	6	12%	1
LOW TRAFFIC VOLUME/TRAFFIC SPEEDS	28	55%	22	43%	1	2%	2
FARM ANIMALS	21	41%	22	43%	8	16%	2
QUIET	35	67%	14	27%	3	6%	1
LOWER HOUSING DENSITY	31	61%	14	27%	6	12%	2
ABSENCE OF CITY LIGHTS	31	60%	13	25%	8	15%	1
CLEAN STREAMS AND WATER BODIES	40	77%	11	21%	1	2%	1
LACK OF INDUSTRIAL/COMMERCIAL STRIPS	41	79%	5	10%	6	12%	1

There was one response for each of the following:

FREEDOM OF CHOICE
 CLUSTER HOUSING
 LOCALLY-OWNED BUSINESSES
 COOPERATIVELY-OWNED BUSINESSES
 WHEELCHAIR ACCESSIBLE AT FISKE
 NO PESTICIDE USE RESIDENTIAL OR FARM
 NO HERBICIDE USE RESIDENTIAL OR FARM
 HABITAT DIVERSITY, OPEN VS. FORESTED
 DIVERSITY IN FOREST TYPES AND AGE CLASSES
 LESS JUNK CARS/GARBAGE IN FRONT YARDS
 LESS COMMITTEES

Question 8

What is your opinion about the quality of the following open space and recreation facilities in the town of Wendell? Please circle a number for each item where 1=Excellent; 2=Good; 3=Adequate; 4=Poor; and 5=No Opinion/Unsure.

This question shows that there are a few facilities in which most people agree are in excellent condition – specifically the library programming and Wendell State Forest. However, there is less agreement as to which facilities in town are in need of improvement. For example, Fiske Pond appears in the top five as being both in excellent *and* poor condition.

The top five facilities which survey respondents say are in **excellent condition** are:

- 1) Library programming (61%)
- 2) Wendell State Forest (44%)
- 3) Fiske Pond (35%)
- 4) Bear Mountain (29%)
- 5) Community Events (27%)

The top five facilities in which survey respondents felt were in **poor condition** are:

- 1) Whetstone Wood Sanctuary (20%)
- 2) Fiske Pond (18%)
- 3) Ball fields (17%)
- 4) Town office playground (15%)
- 5) Basketball court (15%)

Table 6: Question 8

	Excellent		Good		Adequate		Poor		No Opinion /Unsure		Non Resp.
	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	
TOWN COMMON	13	26%	20	40%	13	26%	2	4%	2	4%	3
WENDELL STATE FOREST	23	44%	21	40%	7	13%	1	2%	0	0%	1
SWIFT RIVER PLAYGROUND	7	14%	10	20%	5	10%	3	6%	24	49%	4
BALL FIELDS	1	2%	3	6%	5	11%	8	17%	30	64%	6
BEAR MOUNTAIN	14	29%	6	12%	7	14%	1	2%	21	43%	4
WHETSTONE WOOD SANCTUARY	9	18%	1	2%	3	6%	10	20%	26	53%	4
M&M HIKING TRAIL	11	22%	15	31%	4	8%	2	4%	17	35%	4
TOWN OFFICE PLAYGROUND	1	2%	13	27%	13	27%	7	14%	15	31%	4
BASKETBALL COURT	1	2%	12	25%	13	27%	7	15%	15	31%	5
FISKE POND	18	35%	13	25%	4	8%	9	18%	7	14%	2
MILLERS RIVER	7	14%	14	29%	9	18%	7	14%	12	24%	4
LIBRARY PROGRAMMING	30	61%	6	12%	6	12%	1	2%	6	12%	4
RECREATIONAL PROGRAMMING	7	15%	5	10%	7	15%	7	15%	22	46%	5
COMMUNITY EVENTS	13	27%	18	38%	7	15%	6	13%	4	8%	5

Question 9

**Which of the following recreational activities do members of your household do in, or near Wendell?
Please circle as many that apply.**

Question 9 reveals that Wendell town residents are very active. They participate in a lot of different recreational activities, many of which are outdoors. Top six most popular activities for survey respondents are:

- 1) Walking (83%)
- 2) Hiking (74%)
- 3) Bird-watching (72%)
- 4) Gardening (66%)
- 5) Bicycling (62%)
- 6) Canoeing (60%)

	Number	Frequency*
BASKETBALL	14	26%
BASEBALL	6	11%
BICYCLING	33	62%
BIRD WATCHING	38	72%
BOATING	30	57%
CAMPING	16	30%
CANOEING	32	60%
CROSS-COUNTRY SKIING	19	36%
FISHING	20	38%
GARDENING	35	66%
GOLF	6	11%
HIKING	39	74%
HUNTING	13	25%
ICE SKATING	8	15%
JOGGING	8	15%
PICKNICKING	17	32%
ROCK CLIMBING	6	11%
ROLLERBLADING	2	4%
SLEDDING	15	28%
SNOWSHOEING	18	34%
SNOWMOBILING	7	13%
SOFTBALL	3	6%
SWIMMING	26	49%
TENNIS	3	6%
WALKING	44	83%

***NOTE: Frequency refers to the percentage of all respondents who acknowledged participation in the stated activity.**

Q9 continued

The majority of these recreational activities occur within the town of Wendell. The Wendell State Forest is the predominate location for many of the activities, including: walking, hiking, bird-watching, cross-country skiing, snowshoeing, and hunting. Many of the activities also take place in surrounding towns, such as New Salem, Shutesbury, Montague, and Greenfield. The Quabbin Reservoir is a popular place to bicycle. The following are the percentage of all respondents who said they participated in the activity in the noted location.

BASKETBALL	WENDELL 13%	FRANK.CTY. TECH. SCHOOL 4%	LIBRARY 4%	SHUTESBURY 1%	ORANGE 1%	GREENFIELD 1%	
BASEBALL	FCTS 4%	WENDELL 1%	TURNER FALLS 1%	MONTAGUE 1%	ORANGE 1%	GREENFIELD 1%	HOME 1%
BICYCLING	WENDELL 48%	QUABBIN 4%	NEW SALEM 4%	ALL OVER 2%	STATE FOREST 1%	SHUTESBURY 1%	ORANGE 1%
BIRD WATCHING	WENDELL 50%	HOME 11%	NEW SALEM 4%	TURNER FALLS 1%	BARTONS COVE 1%	FISKE POND 1%	ERVING 1%
	ALL OVER 1%						
BOATING	WENDELL 22%	SHUTESBURY 7%	LAKE WYOLA 6%	ERVING 6%	TULLY RESERVOIR 4%	CT. RIVER 4%	
	NEW SALEM 1%	ALL OVER 1%	QUABBIN 1%	LAKE MATTAWA 1%	WICKETT POND 4%	RUGGLES POND 1%	
CAMPING	WENDELL 11%	ALL OVER 6%	OUT OF STATE 6%	TULLY RESERVOIR 4%	GILL 1%	ERVING S.F. 1%	
CANOEING	WENDELL 28%	TULLY RESERVOIR 7%	SHUTESBURY 7%	WICKETT POND 6%	LAKE WYOLA 4%	MILLERS RIVER 4%	FISKE POND 1%
	ORANGE 1%	LAKE MATTAWA 1%	OUT OF STATE 1%	ERVING S.F. 1%	ALL OVER 1%		
CROSS COUNTRY SKIING	WENDELL 19%	STATE FOREST 6%	FISKE POND 4%	SHUTESBURY 4%	OUT OF STATE 1%	NORTHFIELD 1%	ALL OVER 1%
	NEW SALEM 1%						
FISHING	WENDELL 17%	MILLERS RIVER 6%	STATE FOREST 4%	SHUTESBURY 4%	QUABBIN 4%	LAKE WYOLA 1%	WICKETT POND 1%
	NEW SALEM 1%	WARWICK 1%					
GARDENING	WENDELL 53%	HOME 11%	ERVING 1%				

GOLF	AMHERST 4%	SHELBURNE 4%	WENDELL 1%	ASHFIELD 1%			
HIKING	WENDELL 38%	STATE FOREST 11%	M&M TRAIL 4%	QUABBIN 4%	SHUTESBURY 4%	ALL OVER 4%	BEAR MTN. 1%
	ERVING 1%	SUNDERLAND 1%	NEW SALEM 1%	PETERSHAM 1%	MT. TOBY 1%	POETS SEAT 1%	LAKE WYOLA 1%
HUNTING	WENDELL 13%	STATE FOREST 4%	ALL OVER 1%	NORTHFIELD 1%	LEYDEN 1%	GILL 1%	
ICE SKATING	WENDELL 9%	SHUTESBURY 4%	LAKE WYOLA 1%				
JOGGING	WENDELL 11%	ALL OVER 1%	NEW SALEM 1%				
PICNICKING	WENDELL 23%	ALL OVER 5%	QUABBIN 1%	STATE FOREST 1%			
ROCK CLIMBING	WENDELL 6%	NORTHFIELD MTN. 1%	ERVING 1%	MT. TOBY 1%			
ROLLERBLADING	WENDELL 1%	AMHERST 1%					
SLEDING	WENDELL 19%	STATE FOREST 6%	HOME 1%	TURNERS FALLS 1%			
SNOW SHOEING	WENDELL 20%	STATE FOREST 4%	HOME 1%	FISKE POND 1%	SHUTESBURY 1%	NORTHFIELD MTN. 1%	ALL OVER 1%
	ERVING 1%						
SNOWMOBILING	STATE FOREST 1%	HOME 1%	WENDELL 6%	ALL OVER 2%			
SOFTBALL	HOME 1%	WENDELL 1%	MONTAGUE 1%				
SWIMMING	WENDELL 20%	LAKE WYOLA 8%	DEERFIELD R 1%	SHUTESBURY 6%	OUT OF STATE 4%	LAKE MATTAWA 2%	HOME 1%
	ERVING 1%	ORANGE 1%	FISKE POND 1%	ALL OVER 1%			
TENNIS	WENDELL 1%	ERVING 1%	GREENFIELD 1%				
WALKING	WENDELL 70%	STATE FOREST 6%	HOME 6%	FISKE POND 4%	SHUTESBURY 1%	ALL OVER 1%	ERVING 1%
	TURNERS FALLS 1%						

Other activities noted:

TAI CHI	WENDELL 2%		
HORSEBACK	WENDELL 6%		
SAILING	TULLY RESERVOIR 2%	LAKE WYOLA 2%	

Question 10

How often do you utilize the following open space and recreational resources? Please circle a number for each item where 1=Daily; 2=Weekly; 3=Monthly; 4=Every six months; 5=Once a year; and 6=Never.

This question further validates the fact the Wendell State Forest is a very popular place in the town for residents for their outdoor recreational activities. The top five **most used** open space and outdoor recreational resources in the town are:

- 1) Wendell State Forest (14% daily, 18% weekly)
- 2) Bear Mountain (9% daily, 4% weekly)
- 3) Town Common (2% daily, 4% weekly)
- 4) Swift River playground (2% daily, 4% weekly)
- 5) Recreational programming (5% weekly)

The top five **least used** resources are:

- 1) Ball fields (85% never)
- 2) Swift River playground (77% never)
- 3) Whetstone Wood Sanctuary (74% never)
- 4) Recreational programming (68%)
- 5) Bear Mountain (51% never)

Table 7: Question 10

	Daily		Weekly		Monthly		Every Six Months		Once a Year		Never		Non Resp.
	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	Number	Freq.	
TOWN COMMON	1	2%	2	4%	9	19%	13	27%	14	29%	9	19%	5
WENDELL STATE FOREST	7	14%	9	18%	13	27%	10	20%	4	8%	6	12%	4
SWIFT RIVER PLAYGROUND	1	2%	2	4%	3	6%	2	4%	3	6%	37	77%	5
BALL FIELDS	0	0%	1	2%	2	4%	3	6%	1	2%	40	85%	6
BEAR MOUNTAIN	4	9%	2	4%	2	4%	7	15%	8	17%	24	51%	6
WHETSTONE WOOD SANCTUARY	0	0%	2	4%	1	2%	4	9%	5	11%	34	74%	7
M&M HIKING TRAIL	0	0%	1	2%	9	20%	7	16%	10	22%	18	40%	8
RECREATIONAL PROGRAMMING	0	0%	2	5%	2	5%	4	9%	6	14%	30	68%	9

9% of respondents noted the following as places utilized:

FISKE POND

4% of respondents noted the following as places utilized:

LIBRARY

There was one response each for the following as places utilized:

MORMON HOLLOW

DEJA BREW

ROBERT FROST TRAIL

Question 11

What is your opinion about the quantity and quality of the following recreational programming and facilities in the town of Wendell? Please circle a number for each item where 1=Excellent; 2=Good; 3=Adequate; 4=Poor and 5=No opinion/Unsure.

This question provides insight into which programming and facilities of the town are in currently good condition and which would benefit from some improvement. The top five resources that survey respondents feel are in **excellent condition** are:

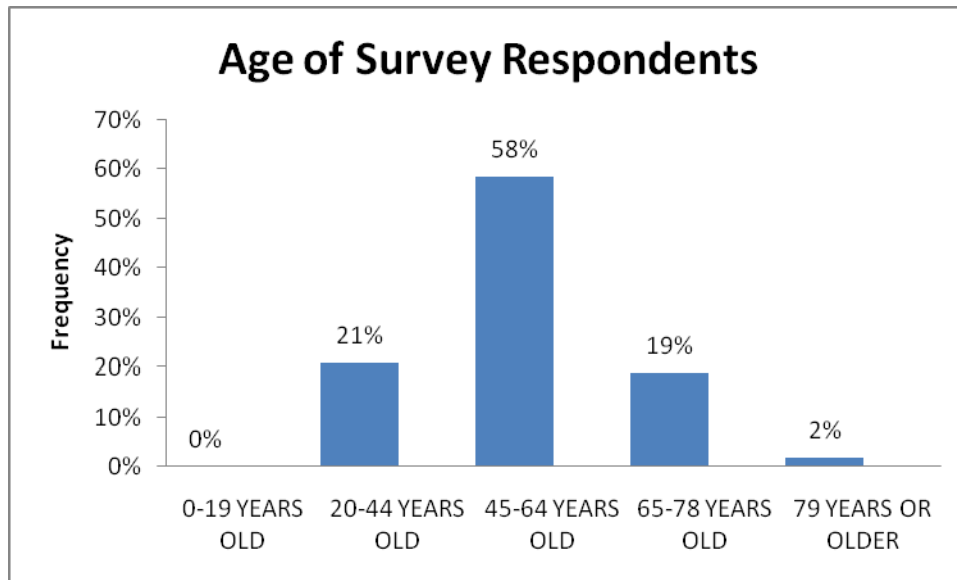
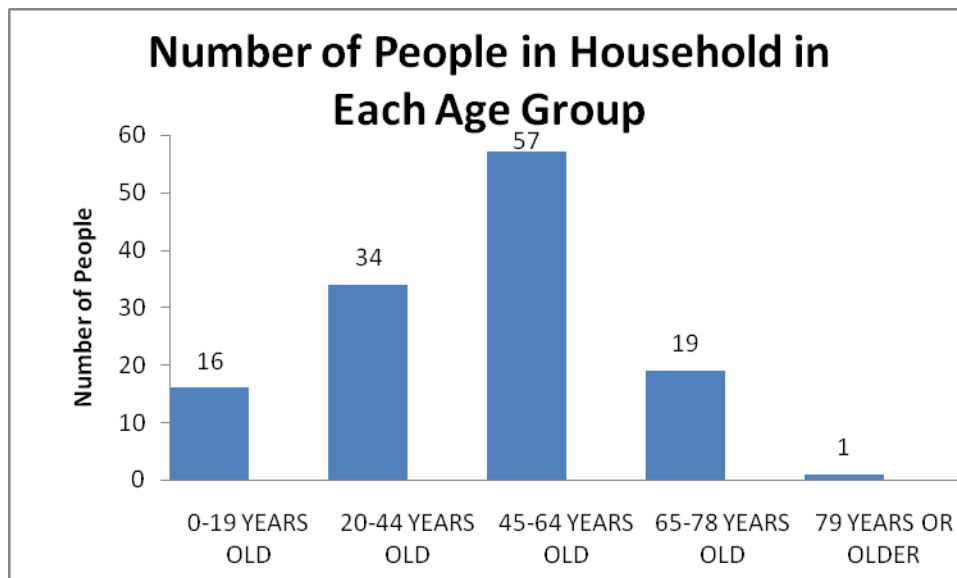
- 1) Hiking trails (39%)
- 2) Community events/festivals (31%)
- 3) Swimming areas (17%)
- 4) Playgrounds/tot lots (8%)
- 5) Sports fields (6%)

The top five resources that survey respondents feel are in **poor condition** are:

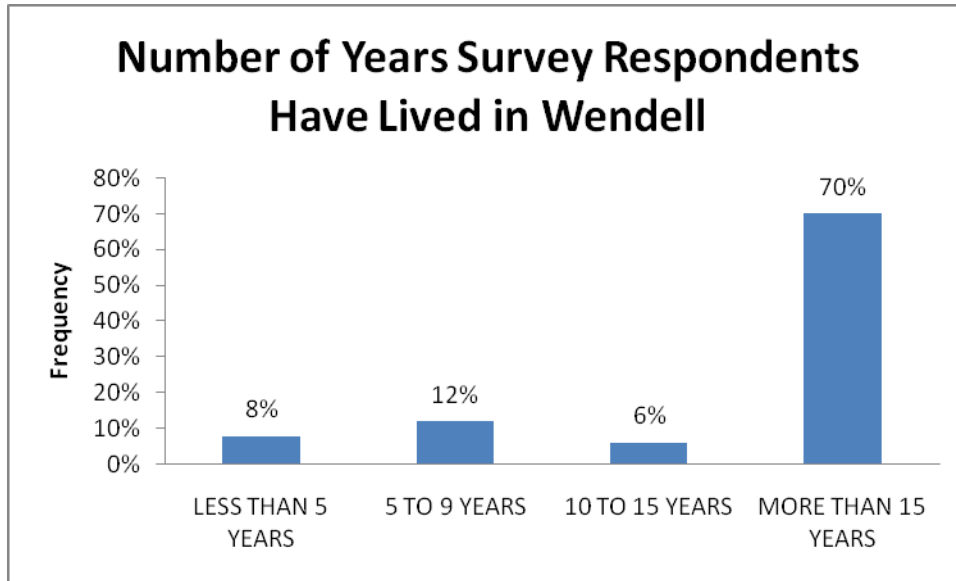
- 1) Sports fields (25%)
- 2) Tennis courts (21%)
- 3) Recreational programming for teens (20%)
- 4) Swimming areas (19%)
- 5) Recreational programming for seniors (14%)

Table 8: Question 11

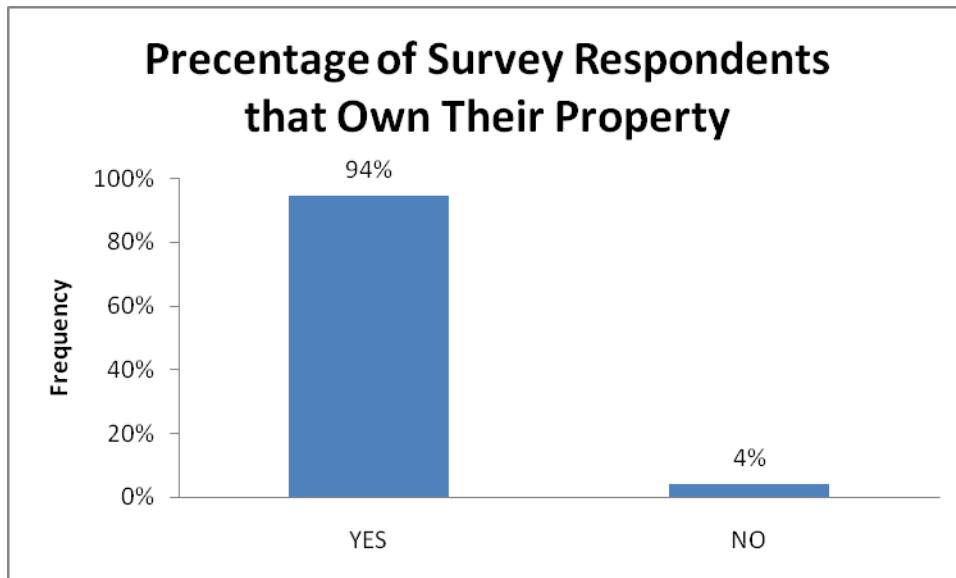
	Excellent		Good		Adequate		Poor		No Opinion /Unsure		Non Resp.
	Number	Resp.	Number	Resp.	Number	Resp.	Number	Resp.	Number	Resp.	
PLAYGROUND/TOTS LOTS	4	8%	11	22%	6	12%	7	14%	21	43%	4
SPORTS FIELDS	3	6%	3	6%	7	15%	12	25%	23	48%	5
TENNIS COURTS	2	4%	0	0%	6	13%	10	21%	29	62%	6
SWIMMING AREAS	8	17%	3	6%	15	32%	9	19%	12	26%	6
HIKING TRAILS	19	39%	13	27%	9	18%	1	2%	7	14%	4
RECREATIONAL PROGRAMS FOR TEENS	3	6%	0	0%	2	4%	10	20%	34	69%	4
RECREATIONAL PROGRAMS FOR SENIORS	2	4%	0	0%	6	12%	7	14%	34	69%	4
COMMUNITY EVENTS/FESTIVALS	15	31%	11	22%	11	22%	6	12%	6	12%	4

Questions 12- 15: Demographic Statistics of Survey Respondents**Question 12: What is your age?****Question 13: Please write the number of people in your household in each age group.**

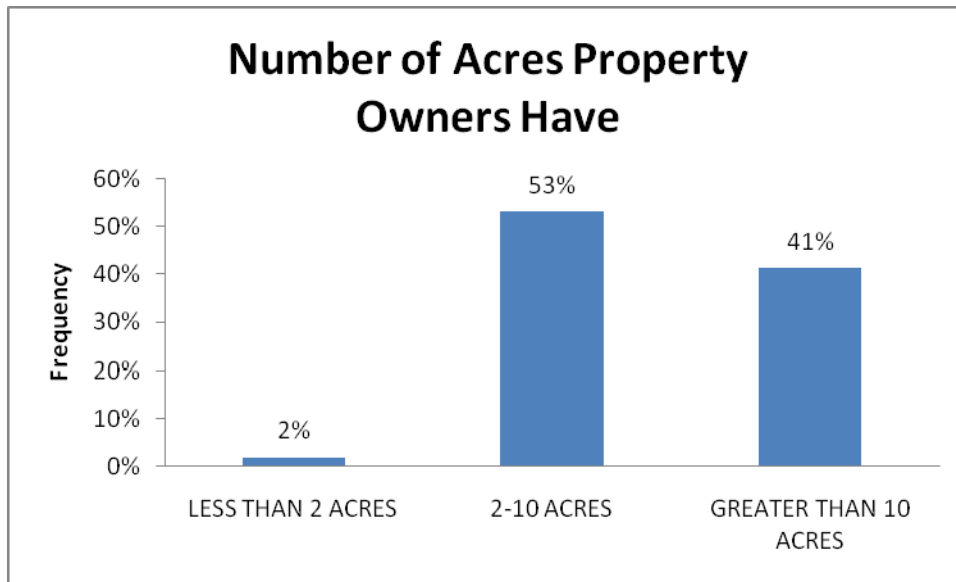
Question 14: How many years have you lived in Wendell?



Question 15: Do you own your property?



Question 15a: If you own your property, how many acres do you have?



APPENDIX D

Forest Designations in Wendell

Wendell Forest Conservation Alliance Letter

Open Space and Recreation Planning Committee Chair Response to Wendell
Forest Conservation Alliance Letter

Reasons for Managing our Forest Landscape Letter

WENDELL FOREST CONSERVATION ALLIANCE LETTER

November 5, 2010

The Wendell Forest Conservation Alliance is a group of local individuals interested in the protection of public and private lands supporting local forests and their associated, essential natural functions. We are especially concerned with forests within Wendell and surrounding townships that comprise an important "greenway," with the ecological, aesthetic, and conservation values inherent in contiguous tracts of naturally occurring forest habitat. We thank the Wendell Open Space Planning Committee for its tremendous efforts in putting together a new Open Space Plan, which contains data, suggestions, and action plans to support our general interests in forest preservation.

We appreciate this opportunity to publicly make the following recommendations:

1. That the OSRP include a statement in support of the conversion of Wendell State Forest lands to "Reserve" status as is currently proposed for a percentage of DCR land in Massachusetts, thereby protecting it from further industrial forest harvesting. The Wendell State Forest deserves this protection for the following reasons:
 - a. The surrounding matrix of protected and privately-held forest lands provide an unprecedented opportunity to support the OSRP's mission of "Using Island Biogeography to Protect Wendell's Biodiversity" and generally enhance and protect its rural character;
 - b. The New England National Scenic Trail (The M & M Trail) bisects Wendell State Forest. This trail has recently been designated as a National Scenic Trail by the Federal Government under the National Trail Systems Act (1968). This Act was designed "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." This objective is inconsistent with logging. The portion of WSF that contains Bear Mountain should also be given the highest level of protection, as it is a likely candidate for the future re-routing of the trail (the trail now follows the paved Farley Road in this location).
 - c. WSF has undergone recent industrial timber harvesting activity, but rather than consigning it forever to this role, long-term and geographic factors recommend a change of policy toward a conservation purpose. Whereas Wendell would stand to potentially benefit economically by access to the products of its state forest, we residents have a strong ethic of land and forest conservation. We might be more willing than most to support Reserve zoning for the greater, longer good that

continuous logging would jeopardize, plus the ability to hike and bike in such forests, and observe and learn in them.

2. That the Wendell Forest Conservation Alliance be acknowledged as a group that supports the broader land conservation aims outlined in the OSRP, and particularly supports the notion of conservation bylaws covering land development.

3. That Section 4-p. 35 be modified as was suggested by OSRP contributors in an earlier draft to provide a more balanced perspective on the management of private forest lands – as it currently reads there is a strong message that forest cutting promotes biodiversity when in fact, as noted in earlier sections on Island Biogeography, it can be equally strongly argued that the opposite is true. Instead, the Wendell Forest Conservation Alliance supports the general notion that forest “wildland” habitat is diminishing and therefore non-managed forests hold great ecological and conservation value for wildlife habitat, environmental quality, and human health.

4. That forestry activity as is outlined in the ORSP on the remaining town-owned Phelps tracts be discontinued in order to protect and promote wild forest habitat in Wendell. Although there is historical rationale for the logging, a “hands-off” management strategy would serve more modern economic and ecological gains to the town.

November 23, 2010

Dear members of the Wendell Forest Conservation Alliance,

The Open Space & Recreation Planning Committee has considered your request that the OSRP include a statement in support of the conversion of Wendell State Forest lands to “Reserve” status that is currently proposed for a percentage of DCR land in Massachusetts. However, we do not support including this recommendation in the plan for a variety of reasons.

First, members of the committee hold differing viewpoints on this topic. While we all agree that it is beneficial that some forestland be held in reserves and other lands be managed as sustainable working landscape, the committee membership include both strong proponents and strong opponents of reserve status for the Wendell State Forest. As the general topic of reserve status versus working landscape has historically been an especially divisive subject in Wendell in recent decades, I believe that the strong differences of opinion among members of the planning committee is reflective of broader conflicting views among the Town’s residents. I agree the Wendell residents share a strong ethic of land and forest conservation with regards to protecting land from development, but they do not appear to agree about how to manage protected forests. I believe that the recommendations in this plan should focus on topics on which the majority of the community agrees, as the document was produced for the benefit of all Wendell residents.

The general topic of designating reserve status to permanently protected local open space, as opposed to preserving the land as working landscape, became especially divisive in Wendell when the Town acquired the Fiske Pond Conservation Area and circumstances necessitated that this property be given reserve status. One result of this was that some members of the community directed a great deal of hostility toward the standing open space committee. In the years following the acquisition of Fiske Pond, the Wendell Open Space Committee has worked hard at reestablishing a positive relationship with local residents who were angry about the restrictions placed on the Fiske Pond property. If the new Open Space & Recreation Plan were to contain a recommendation favoring either reserve status or managed forest status it would likely have the impact of alienating proponents of the alternate arrangement. This could have the effect of undermining WOSC’s ability to work with residents who support permanently protecting land, but differ as to how it should be managed.

Finally, a solid majority of the members of the Open Space & Recreation Planning Committee do not favor reserve status for the entire non-park portion of the Wendell State Forest. While the plan does not make any recommendation either favoring or opposing reserve status for the reasons mentioned above, as individuals most of us believe that sustainable forest management is compatible with preserving habitat for many species, a position shared by many prominent wildlife biologists. We support the continuation of the practice of allowing local residents to harvest wood from the state forest to heat their homes and policies that enhance rather than obstruct local residents from relying on local resources to meet our needs. We are also concerned that designating the forest as a reserve could lead to a number of logistical problems that could affect the Town negatively.

The forestry activity related to the Phelps tracts that are outlined in the plan is included in response to a historical rationale stemming from deed restrictions outlined by the donors in 1888. The action steps in the plan outline the steps required to carry out the actions described in the wording of the warrant articles approved at the 2008 annual town meeting. These articles state “such land shall remain a working landscape available for traditional uses and be managed for timber and firewood with attention to habitat protection for the benefit of local schools....” The Open Space and Recreation Planning Committee does not have the legal authority to overturn decisions made at town meeting. Ultimately, for practical purposes, decisions about if and when to continue forestry related activities on the Phelps lots will rest with the membership of the Open Space Committee and Conservation Commission.

Sincerely,

Marianne Sundell,

Chair Wendell Open Space & Recreation Planning Committee

**REASONS FOR MANAGING OUR FOREST
LANDSCAPE
WOSC**

- Before I proceed let me clarify my position on the issue of reserves. I am not totally opposed to the concept of forest reserves:
 - Reserves provide an important control area for comparison with managed landscapes.
 - Reserves provide important habitat for a small but important segment of our natural flora and fauna

- The Wendell Energy Committee has formed a Local Food Sub-committee with the mandate to decide how to best reduce our dependency on food imported from outside the region and how to best build up the pattern of local food production and exchange in the community. If this action is a good idea, why isn't also a good idea to manage our forest and produce as much of our forest products as locally as possible? USDA soil suitability classifications clearly show our landscape and soils are much better suited to the production of forest products than they are for farming.

- No one who is remotely familiar with private forest land would believe the statement that “private forest will serve as the engine for an invigorated local wood products industry and a supply of local forest products”. Most private forest land has been poorly managed and “high graded”. A forest rotation requires 80 to 100 plus years. With the current turnover in ownership, numerous different land owners over the course of one rotation are very likely. Keeping many different landowners focused on a long term goal is unrealistic and unlikely. **Long term public ownership has always been a strong a positive factor for state lands**

forest management at least before the move to “forest management by public consensus”.

- New England Forest Landowner facts: FACTS: Source NE Forestry Foundation Winter 2009 newsletter
 - ***85% of NE Forest is in private ownership.**
 - *Since 1990, fully two thirds of the Northern Forest has changed ownership.
 - *40% of the family forestland in NE, almost 5.5 million acres has owners 65 or older meaning we are about to witness the largest intergenerational transfer of land in our history. Much of this land is likely to be subdivided and no longer available as productive forest land.
- There hasn't been a forest landowner study done anywhere that concluded managing forest for the purpose of harvesting forest products was a priority of forest landowners. Regardless of where the study was conducted all studies indicated approximately 45% of forest landowners had no intention of ever harvesting forest product and that most owned their forest land for privacy and personal enjoyment. What this means is that both the Harvard Forest “Wildlands and Woodlands Report” and DCR’s Technical Steering Committee Report are based on an important false assumption that public lands can be essentially removed from production and that private lands will serve as a long term sustainable source for our forest product needs!
- A very recent publication titled “Social versus Biophysical Availability of Wood in the Northern United States” by Butler, Zhao Ma, Kitteredge and Catanzaro states that though family forest control 54% of the 7,685 million dry tons of wood in the region once constraints such as slope, size of holding, harvesting restrictions and ownership attitudes are applied wood availability is significantly reduced by nearly two thirds!

http://www.masswoods.net/images/stories/pdf/social_availability_njaf.pdf

- Whenever a timber sale occurs on DCR land **8%** of the sale revenue is returned to the town where the sale occurred. **30%** generally goes back into the land in the area of the management project. In the state forest lands of western MA timber sales have been the only historical source of maintenance revenue. Until recently Parklands Management needs, when they occurred, were incorporated into nearby timber sales to resolve problems on a “break even basis” at worst. In the recent past there have been at least two instances where in excess of 1 million dollars was spent in parklands accomplishing needed clean-up that could have been corrected using commercial timber sales. In light of the current economy, budgetary constraints and the ever mounting deficits there are no available funds to replace lost maintenance dollars provided through timber sales. There are many more competing demands for the available tax dollars that have far greater urgency. **Advocating low revenue producing state forest such as Wendell is placed in reserve** is advocating for the closing of Wendell State Forest. Warwick State Forest is similar to Wendell State Forest and has no staff attached to that Forest and it is very obvious that forest is being run by an absentee owner.
- The sizes of reserves as mandated by the TSC Report are unrealistic for a state with the population density of Massachusetts. I would like to see the placement of a 15,000 acre reserve in the Wendell area! 15,000 acres would nearly equal all the DCR land in two of the following three towns: Warwick, Erving or Wendell. The situation gets even worse from Worcester County east. With the dispersed settlement pattern of the area numerous households would be impacted by being surrounded by a forest reserve and subject to all the inconveniences and risks created by the level of stewardship allowed on a reserve. (i.e. Forest fire, Power outages, blocked

road access etc.) Over time in holdings would become prime candidates for a “taking” due to the expense and difficulty of maintaining services to the household(s) in question. I have never seen a suggested age class distribution for managed forest that exceeded placing more than 10-15% of the land base in a reserve status. For Wendell State forest that would mean a more reasonable acreage of 1,000-1200 acres of reserve.

- Forest Reserves as established by DCR are bogus reserves in every sense of the definition. Just about any use other than timber harvesting is allowed in a DCR Reserve. The value of DCR Reserves for scientific research is minimal due to the number of uncontrolled variables that are present in a reserve making true scientific study extremely difficult.
- Forest management is the most cost effective habitat manipulation tool we have at our disposal for both our native wildlife and for our native forest types. Lack of “early succession” or early seral habitat is the problem not the lack of mature forest habitat and is well documented in current publications and studies.
- Natural processes such as wildfire and floods can no longer be allowed to operate the way they functioned in pre-settlement times, due to our population density and settlement patterns. Management is a necessity not an option!
- Even though forest area is losing ground in Massachusetts, the volume of trees continues upward. The growing-stock volume of trees increased by 17% between 1985 and 1998 (Alerich, 2000). Our forest is ageing and we should be thinking of regenerating a large percentage of our forest stands. Large diameter trees are the most susceptible to insects, disease and catastrophic storms. Historical records prove the New England area has been hit by catastrophic hurricanes at approximately 100 year intervals. The last such occurrence happened in 1938. (**The hurricane was**

estimated to have killed between 682 and 800 people,^[2] damaged or destroyed over 57,000 homes, and caused property losses estimated at US \$306 million (\$ 4.72 billion in 2010 dollars) An estimated 2 billion trees were destroyed in NY and New England). The logic of advocating for a forest management policy that decreases forest type and age class diversity escapes me!!

- Given sufficient time reserves in the North Quabbin Region will eventually progress to a climax succession of Eastern Hemlock and American Beech. Both species have serious insect and disease issues.
- Massachusetts currently produces only 2% of the wood fiber that it consumes. This stems from a combination of increasing population and demand for wood products coupled with a shrinking sawmill industry (Damery and Boyce, 2003). The number of sawmills operating in the state has fallen by 55% from 1971 to 2001.

(<http://bct.eco.umass.edu/publications/by-title/landowner-driven-sustainable-forest-management-and-value-added-processing/>) **When there is no longer a MA Forest Industry how will we deal with severe forest issues??**

- As more and more of our forest are removed from production and our demand for forest products increase the need is most often met through the exploitation of lesser developed nations who lack environmental lawsa lose, lose situation for the global environment. As more and more wood is imported the threat to our native woodlands from insects and diseases increases. IE: Hemlock Whooley Adelgid, Asian Longhorn Beetle, Emerald Ash Borer and the list goes on and on.
- State Forest Management projects are planned forest disturbances with a management objective and a goal. Natural disturbance is random occurrence.

- State forest management is a temporary disturbance that doesn't disrupt the use of the forest for an extended period of time. Even logging debris with the exception of cull portion of logs will decompose and disappear in 6-7 years. Forest management activities make improvements to the landscape enhancing the potential for multiple activities. Forest management activities accomplish much needed infrastructure maintenance which otherwise doesn't occur.
- Natural disturbance can be catastrophic and in the absence of salvage operations may preclude the use of the land for other purposes for a very long extended period of years.
- State forest management activities provide much needed forest products for society. Natural disturbance in some instances provides no forest products or low quality forest products at best.
- Forest management activities generate revenue for the commonwealth the town and for the wood industry. Natural disturbance, when salvaged is an extremely dangerous and expensive proposition particularly when done through other means than a commercial timber sale. When no salvage of a natural disturbance occurs society is often faced with a serious safety problem as a result.

For a combination of the above reasons I believe the direction the DCR Technical Steering Committee has chosen to take with regard to Massachusetts forest land will implode in the next 10-15 years. The problem is when that occurs it will be impossible to push a button and reverse the damage that has occurred. Any losses in forest quality in the absence of management as well the loss of infrastructure is irreversible or extremely costly at best!

Submitted by
David A Richard
WOSP Committee
Lic. MA Forester

APPENDIX E

Plant Communities Tables

Representative Species Found in Dry Habitats in Western Massachusetts

Representative Species Found in Wet Habitats in Western Massachusetts

Wildlife Habitats: Representative Wildlife Species of Western Massachusetts

TABLE 4-3: PLANT COMMUNITIES: REPRESENTATIVE SPECIES FOUND IN DRY HABITATS IN WESTERN MASSACHUSETTS

	FOREST				FIELD		
	TYPE	SOFTWOOD	MIXED SOFTWOOD AND HARDWOOD	HARDWOOD			
	NAME	WHITE AND RED PINE	PITCH PINE	HEMLOCK -NORTHERN HARDWOODS	OAK-HICKORY	OLD FIELD	GRAZED FIELDS
LAYER (IF PRESENT)	DOMINANT OVERSTORY TREES	white pine (<i>Pinus stroba</i>) red pine (<i>Pinus resinosa</i>)	pitch pine (<i>Pinus rigida</i>) black oak (<i>Quercus velutina</i>)	sugar maple (<i>Acer saccharum</i>) beech (<i>Fagus grandifolia</i>) yellow birch (<i>Betula allegheniensis</i>) hemlock (<i>Tsuga canadensis</i>)	white oak (<i>Quercus alba</i>) red oak (<i>Quercus rubra</i>) hickory (<i>Carya spp.</i>)	gray birch (<i>Betula populifolia</i>) white pine (<i>Pinus stroba</i>) red spruce (<i>Picea rubens</i>) juniper	
	ASSOCIATED AND UNDER-STORY TREES	gray birch (<i>Betula populifolia</i>) aspen (<i>Populus sp.</i>) red maple (<i>Acer rubrum</i>) pin cherry (<i>prunus pennsylvanica</i>) white oak (<i>Quercus alba</i>)	scarlet oak (<i>Quercus coccinea</i>) aspen (<i>Populus sp.</i>) pin cherry (<i>Prunus pennsylvanica</i>) white pine (<i>Pinus strobus</i>)	paper birch (<i>Betula papyrifera</i>) red maple (<i>Acer rubrum</i>) red oak (<i>Quercus borealis</i>) white ash (<i>Fraxinus americana</i>)	American Chestnut (<i>Castanea dentata</i>) red maple (<i>Acer rubrum</i>) beech (<i>Fagus grandifolia</i>) tulip tree (<i>Liriodendron tulipifera</i>) white pine (<i>Pinus strobus</i>) flowering dogwood (<i>Cornus florida</i>) hornbeam (<i>Carpinus caroliniana</i>) hop hornbeam (<i>Ostrya virginiana</i>)	balsam poplar (<i>Abies balsames</i>) sumac (<i>Rhus spp.</i>) alder (<i>Alnus rugosa</i>) fire cherry (<i>Prunus serotina</i>) trembling aspen (<i>Populus tremuloides</i>) striped maple (<i>Acer pennsylvanicum</i>) yew (<i>Taxus canadensis</i>) juniper	white pine (<i>Pinus stroba</i>) low juniper (<i>Juniperus spp.</i>)
	SHRUBS AND HERBS		broomsedge (<i>Andropogon scorparius</i>) ferns and wildflowers such as aster, wild strawberry, whorled loosestrife, Canada cinquefoil, gray golden-rod, and huckleberry.	mountain maple (<i>Acer spicatum</i>) alternate-leaved dogwood (<i>Cornus alternifolia</i>) mountain laurel (<i>Kalmia latifolia</i>) witch hazel (<i>Hamamelis virginiana</i>) hobble bush (<i>Viurburnum alnifolium</i>) partridgeberry (<i>Mitchella repens</i>) Many ferns , mosses and wildflowers such as jack in the pulpit, trout lily, solomon's seal, trillium, starflower, Dutchman's breeches, bloodroot and violets.	mountain laurel (<i>Kalmia latifolis</i>) witch hazel (<i>Hamamelis virginiana</i>) maple-leaved viburnum (<i>Virburnum acerifolium</i>) red-osier dogwood (<i>Cornus stolonifera</i>) blueberry (<i>Vaccinium spp.</i>) Many wildflowers including trout lily, hepatica, bloodroot, columbine, geranium, and lady's slipper.	grasses (<i>Anthoxanthum, etc.</i>) Robin's plantain (<i>Erigeron pulchellus</i>) wild daisy (<i>Chrysanthemum leucanthemum</i>) devil's paintbrush (<i>Hieracium aurantiacum</i>) black-eyed Susan (<i>Rudbeckia hirta</i>) goldenrod (<i>Solidago spp.</i>) asters (<i>Aster spp.</i>)	
HABITAT	Fresh, sandy loam, moist soil types, early succession.	Dry and hot sand on sand and gravel	Higher elevations, cooler, moister sites.	Warmer slopes	All sites, variations in use and microclimate vary composition.		
RARE OR ENDANGERED SPECIES DOCUMENTED IN WENDELL	none	none	none	none	none	none	

Source: Town of Wendell Open Space and Recreation Plan 1987

Commonwealth of Mass. Natural Heritage and Endangered Species Program 2000

TABLE 4-4: PLANT COMMUNITIES: REPRESENTATIVE SPECIES FOUND IN WET HABITATS IN WESTERN MASSACHUSETTS

TYPE		FOREST LAND		GRASSLAND	
		BOG	SWAMP AND FLOOD PLAIN	MARSH	WET MEADOW
LAYER (IF PRESENT)	DOMINANT OVERSTORY TREES	black spruce (<i>Picea mariana</i>) tamarack (<i>Larix laricina</i>) American white cedar (<i>Chamaecyparis thyoides</i>)	red maple (<i>Acer rubrum</i>)		
	ASSOCIATED AND UNDER-STORY TREES	red maple (<i>Acer rubrum</i>)	silver maple (<i>Acer saccharinum</i>) ash (<i>Frdaxinus</i> spp.) American elm (<i>Ulmus americana</i>) swamp white oak (<i>Quercus bicolor</i>)		
	SHRUBS AND HERBS	leatherleaf (<i>Chamaedaphne calyculata</i>) sheep laurel (<i>Kalmia angustifolia</i>) sweet gale (<i>Myrica gale</i>) pitcher plant (<i>Sarracenia purpurea</i>) sundew (<i>Drosera</i> spp.) buckbean (<i>Merryanthes trifoliata</i>) cottongrass (<i>Eriophorum</i> spp.) cranberries (<i>Vaccinium</i> spp.) sphagnum moss (<i>Sphagnum rotundifolia</i>) water willow (<i>Secodon verticillatus</i>)	spicebush (<i>Lindera benjoin</i>) blueberry (<i>Vaccinium</i> spp.) speckled alder (<i>Alnus rugosa</i>) viburnum (<i>Viburnum</i> spp.) winterberry (<i>Ilex verticillata</i>) cinnamon fern (<i>Osmunda cinnamonea</i>) royal fern (<i>Osmunda regalis</i>) sensitive fern (<i>Onoclea sensibilis</i>) spinulose shield fern (<i>Dropteris thelypteris</i>) skunk cabbage (<i>Symplocarpus foetidus</i>) azalea (<i>Rhododendron</i> spp.) false hellebore	hydrophytic grasses (<i>Gramineae</i> spp.) sedges (<i>Cyperaceae</i>) rushes (<i>Junaceae</i>) cattail (<i>Typha</i> spp.) pickerel weed (<i>Pontederia cordata</i>) water plantain (<i>Alisma triviale</i>) bur-reed (<i>Sparganium</i> spp.) pond weed (<i>Potamogeton</i> spp.) frog-bits (<i>Hydrocharitaceae</i>) arums (<i>Araceae</i>) duckweed (<i>Lemna</i> spp.) water lillies (<i>Nymphaea</i> spp.) buttonbush (<i>Cephalanthus occidentalis</i>) sweet gale (<i>Myrica gale</i>) water milfoils (<i>Myriophyllum</i> spp.) horsetails (<i>Equisetum fluviatile</i>) naiads (<i>Nayadaceae</i>) buckwheats (<i>Polygonacea</i>) arrowgrass (<i>Juncaginaceae</i>) bladderworts (<i>Ultricularia</i> spp.) pipewort (<i>Eriocaulon</i> spp.)	rushes (<i>Junaceae</i>) sedges (<i>Cyperaceae</i>) hydrophytic grasses (<i>Grammineae</i>) cattail (<i>Typha</i> spp.) bur-reeds (<i>Sparganium</i> spp.) water plantain (<i>Alisma</i>) arums (<i>Araceae</i>) iris (<i>Iridaceae</i>) dock (<i>Rumex</i>) smartweed (<i>Polygonum</i> spp.) Joe-pye weed (<i>Eupatorium dubium</i>) false loosestrife (<i>Ludwigia</i>) purple loosestrife (<i>Lythrum</i>) loosestrife (<i>Lysimachia</i> spp.) blue verain (<i>Verbena</i>) boneset (<i>Eupatorium perfoliatum</i>)
HABITAT	Standing or slowly running acid water. Upland or lowland sites have different species.	Groundwater near the surface or collected surface water. Seasonal flooding.	Standing or running water during growing season.	Surface water provides a significant part of the supporting substrate for plants.	
RARE OR ENDANGERED SPECIES DOCUMENTED IN WENDELL		pale green orchis (<i>Platanthera flava</i>)	Adder's-tongue fern (<i>Ophioglossum vulgatum</i> L.)	Adder's-tongue fern (<i>Ophioglossum vulgatum</i> L.)	
RARE OR ENDANGERED SPECIES ASSOCIATED IN WENDELL	three-leaved Solomon's seal (<i>Maianthemum Trifolium</i>)	mountain alder (<i>Alnus viridis</i> spp. <i>Crispa</i>) tradesant's aster (<i>Aster tradescantii</i>) shore sedge (<i>Carex lenticularis</i>) tufted hairgrass (<i>Deschampsia cespitos</i> spp. <i>glauca</i>) sand bar cherry (<i>Prunus pumila</i> var. <i>depressa</i>) sand bar willow (<i>Salix exigua</i>) moonseed (<i>Menispermum canadense</i>)			

Source: Town of Wendell Open Space and Recreation Plan 1987
Commonwealth of Mass. Natural Heritage and Endangered Species Program 2000

TABLE 4-5: WILDLIFE HABITATS: REPRESENTATIVE WILDLIFE SPECIES OF WESTERN MASSACHUSETTS

TYPE	WOODLAND			OPENLAND			OPEN WATER			WETLAND	
INSECTS, ETC.	snails, slugs spiders harvestmen sawflies, wasps, bees ants flies moths, butterflies	crickets, roaches beetles leafhoppers aphids true bugs thrips psocids	lacewings insect larvae centipedes millipedes sowbug mosquitos gnats	spiders wasps, bees ants flies moths, butterflies beetles leafhoppers	aphids crickets grasshoppers cockroaches praying mantids stink bugs spittlebugs	dragonflies ladybugs fireflies gnats mosquitos	crustaceans, clams, hydroids planarians, amphipods mosquito larvae caddisfly larvae diving beetle damselfly nymph dragonfly nymph	diving spider moth horseflies	mosquito larvae earthworms amphipods red spiders (litter) centipedes crane-fly larvae beetles	snails (on weeds) flies (midges, crane)	
FISH							trout (stream and pond) bass (stream and pond) suckers (stream and pond)	pickerel (pond) bass (pond) perch (pond)	young fish blue gills bullhead catfish pickerel	perch centrarchids killfish	
REPTILES	spotted turtle wood turtle box turtle semi-box turtle	redbellied snake ringneck snake sekay's snake hognose snake	black racer kingsnake	garter snake ribbon snake green snake			snapping turtle painted turtle water turtle		snapping turtle painted turtle musk turtle	garter snake ribbon turtle water snake	
AMPHIBIANS	spotted salamander (underground) marbled salamander (underground) toads spring peeper gray tree frog						dusky salamander (streams) red-backed salamander (streams) two-lined salamander (streams) spotted newt (streams and ponds) mudpuppy (Ct. River drainage)	bullfrog greenfrog leopard frog pickerel frog	dusky salamander red-backed salamander spotted newt bullfrog greenfrog	leopard frog pickerel frog	
BIRDS	ruffed grouse thrushes (mountains also) vireos warblers (mountains also) bluejay chickadee hairy woodpecker downy woodpecker yellow-shafted flicker brown creeper scarlet tanager great-horned owl (mountains)	golden-crowned kinglet (softwood) Tennessee warbler sharp-shinned hawk broad-winged hawk yellow-bellied flycatcher (softwood) great crested flycatcher wood peewee pine siskin (softwood) ruby-throated hummingbird		cattle egret Cooper's hawk red-tailed hawk red-shouldered hawk bob-white ring-necked pheasant killdeer screech owl nighthawk chimney swift eastern kingbird barn swallow	house wren catbird brown thrasher robin cedar waxwing northern shrike starling vireos crows cardinal sparrow snow bunting (mountains also)	eastern meadowlark northern oriole red-winged blackbird common grackle indigo bunting slate-colored junco raven	green heron Canada goose common loon pre-billed grebe American coot more than seventeen species of duck	sandpiper gull belted kingfisher bank swallow	wood duck woodcock green heron common egret American bittern rails	common snipe yellowthroat red-winged blackbird sparrow marsh wren water thrushes	
MAMMALS	eight kinds of bats flying squirrel red squirrel (softwood) gray squirrel New England cottontail snowshoe hare (softwood) deer mouse white-footed mouse meadow-jumping mouse hairy-tail mole	pine vole boreal redback vole (softwood) chipmunk red fox gray fox raccoon porcupine skunk whitetail deer black bear		eastern cottontail meadow jumping mouse	meadow vole eastern mole		beaver muskrat		masked shrew smokey shrew longtail shrew northern bog lemming boreal redback vole star-nosed mole meadow mouse snowshoe hare cottontail rabbit mink	marten lynx bobcat black bear muskrat raccoon whitetail deer gray fox	
RARE & ENDANGERED SPECIES - DOCUMENTED	wood turtle (Clemmys unsculpta)			wood turtle (Clemmys unsculpta)			spotted turtle (Clemmys guttata) northern spring salamander (Gyromophila porphyriticus) four-toed salamander (Hemidactylium scutatum) triangle floater (Alasmidonta undulata) wood turtle (Clemmys unsculpta)		spotted turtle (Clemmys guttata) ringed boghaunter (Williamsonia lintneri) wood turtle (Clemmys unsculpta)		
RARE & ENDANGERED SPECIES - ASSOCIATED	elderberry long-horned beetle (Desmocerus palliatus) midland clubtail (Gomphus fraternus) cobra clubtail (Gomphus vastus) skillet clubtail (Gomphus ventricosus) umber shadowdragon (Neurocordulia absoluta) brook snaketail (Ophiogomphus apersus) riffle snaketail (Ophiogomphus carolus) riverbank looping snail (Pomatopsis lapidaria) lake emerald (Somatochlora cingulata) ski-tailed emerald (Somatochlora elongata) coppery emerald (Somatochlora georgiana) Kennedy's emerald (Somatochlora kennedyi) mocha emerald (Somatochlora linearis) riverine clubtail (Stylurus amnicola) zebra clubtail (Stylurus scudderii) A clubtail dragonfly (Stylurus spiniceps)						twelve-spotted tiger beetle (Cicindela duodecimguttata) midland clubtail (Gomphus fraternus) cobra clubtail (Gomphus vastus) skillet clubtail (Gomphus ventricosus)		Jefferson salamander (Ambystoma jeffersonianum) Blue-spotted salamander (Ambystoma laterale) pale green pinion moth (Lithophane viridipallens) pitcher plant borer moth (Papaipema appassianata)		

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