

Middleton, Massachusetts

Open Space and Recreation Plan

2013

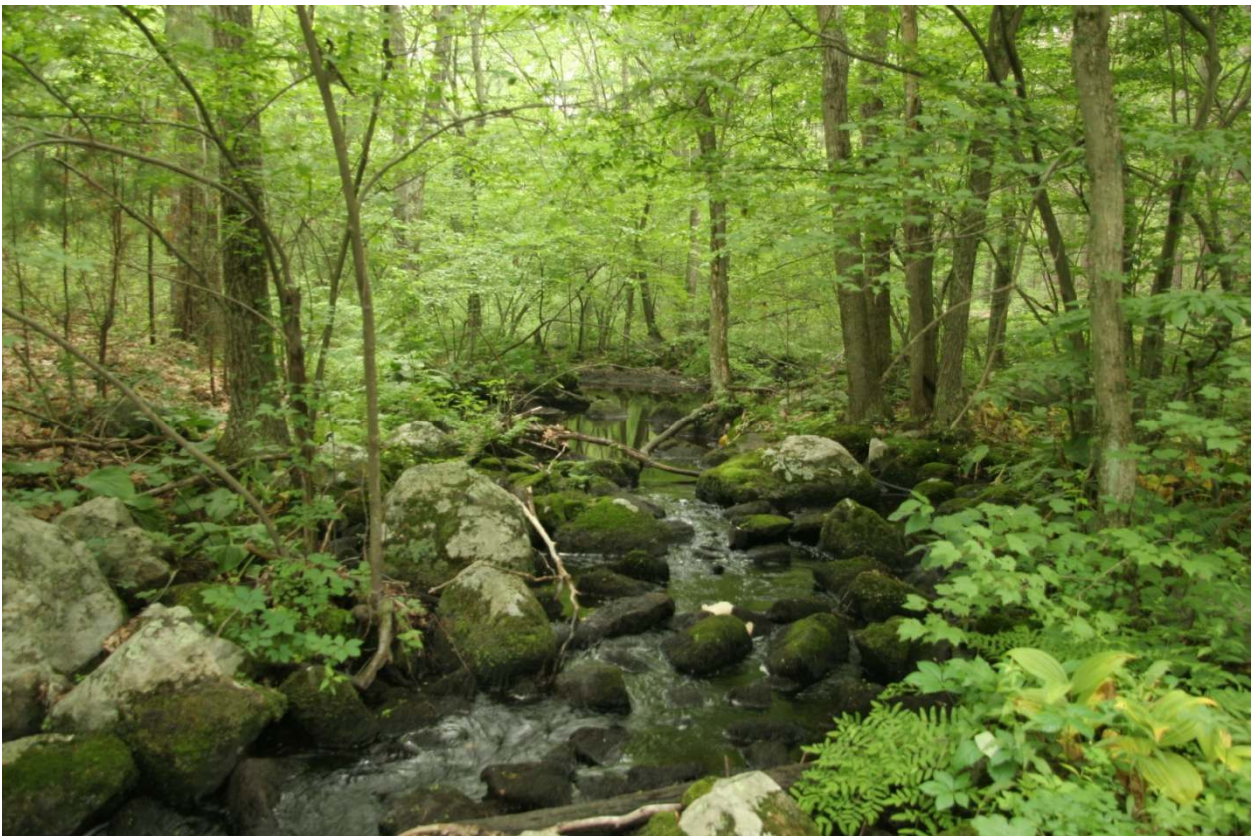


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Acknowledgements

Former Conservation Agent, Michèle F. Grenier, PWS, CWS, was responsible for performing data collection and contributed to the writing of this document. Current Middleton Conservation Agent, Judith Schmitz completed the Plan. Cooperation and information from others, including Ira Singer, Town Manager; Ryan Ferrera, Assistant Town Manager; Brad Swanson, Assistant Assessor; Bob LaBossiere, DPW Superintendent; Derek Fullerton, Health Director; Pike Messenger, former Conservation Agent/ Middleton Stream Team; Christine Lindberg, Planning Board Chairperson; Richard Bienvenue, Building Commissioner; Patti Zingarelli, DPW Clerk; Karen Matsubara, Planning Board Secretary; Patricia Swain, Ecologist, Massachusetts Natural Heritage and Endangered Species Program; Susan Gannon COA Director; Sarah George, Town Clerk; the Middleton Conservation Commission, the Middleton Planning Board, Middleton Stream Team and the Middleton School Department are greatly appreciated.

SECTION 1--PLAN SUMMARY

The goal of this **2013 Open Space and Recreation Plan** is to lay the groundwork for action and participation. For the Town of Middleton to set a course for the future, this plan must be used and useful for years to come. Given Middleton's location at the center of a transportation network, change will occur; how the changes are managed will help shape the face of the community.

Middleton's early days as an agricultural community established a small town feeling. Even though the Town changed many years ago from a rural to a suburban existence, there remains a strong desire, even among newer residents, to preserve and protect certain elements. The analysis contained within this plan outlines and highlights these elements.

In summary, this plan:

- Looks at Middleton through the bigger picture of regional issues, historical perspective and development patterns to see how, when, and why change occurs;
- Reviews environmental and natural resource issues to better understand how we are affected by, and how we impact, the natural world;
- Outlines existing conservation and recreation holdings, facilities and opportunities;
- Identifies community needs to better prepare for future change;
- Presents a specific set of goals and objectives to implement change.

These goals and objectives will require that land use decisions to preserve land are made and that financial issues are debated. A strong message that has been made clear in the last few months is that the time is now to shape the future. It is hoped that this plan can play a role in the changes that will come.

SECTION 2--INTRODUCTION

A. Statement of Purpose

The levels of growth in the Town of Middleton have given rise to new concerns about a broad range of planning issues. Workshops have been held, the 1998 Master Plan was reviewed and questions of open space and recreational opportunities are now on the minds of many residents. The timing for the preparation of this **2013 Open Space and Recreation Plan**, which is being put forward as an update and revision of the 1998 Open Space and Recreation Plan, could not have come at a better time.

The purpose of this planning document is to give residents and Town officials an important and necessary tool to help make better decisions which will affect the future of the Town. This plan will be only one of many tools that will shape the future, but the issues of open space and recreational facilities play a large role in helping to define the overall quality of life in any community. Taking steps to implement the goals and objectives outlined in this plan will benefit current and future residents, and will impact the entire region. There is much work to do, but the residents of Middleton have shown a strong willingness to look to the future and make hard land use and economic decisions.

B. Planning Process and Public Participation

Two preliminary sessions, both open meetings and accessible to the public, were held to provide input to the revisions to the Middleton Open Space and Recreation Plan. These meetings were incorporated into regularly scheduled Conservation Commission meetings, and were included on the meeting agenda posted on the Town of Middleton website and at the Middleton Town Hall. The first, on January 4, 2011, focused on gathering public input; outlining the planning process; reviewing the current status of conservation holdings, recreation facilities, and other significant lands; discussing current problem areas and shortcomings; listing needs; and generally discussing goals and objectives. In addition, draft sections of the needs analysis, goals and objectives and proposed action plan were put forward, reviewed and critiqued.

A second workshop was held on March 1, 2011, which focused on overall planning for the Town's future. This workshop was attended by residents and included a wide cross section of interests and backgrounds. This workshop was run by the Conservation Commission. Much of the meeting was spent focusing on the strengths, weaknesses, threats and opportunities of the Town. The meeting concluded with the listing of goals and objectives.

The day-to-day interplay between various staff members, primarily in the planning, conservation, building and health departments helped to bring many issues into better focus. A final meeting was held on January 8, 2013 to solicit public comments on the proposed final draft of the Middleton Open Space and Recreation Plan. This meeting, which was included on the agenda of the January Conservation Commission meeting, was advertised in the Tritown Community Newspaper, and posted on the Town of Middleton website and at the Middleton

Town Hall. Copies of the Plan were also available online for review, and distributed to town boards and departments.

SECTION 3--COMMUNITY SETTING

A. Regional Context

The Town of Middleton, incorporated in 1728, is located in Essex County, in northern Massachusetts and is surrounded by Danvers to the southeast, Topsfield to the east, Boxford the northeast, Andover to the north, North Reading to the west, Lynnfield to the southwest and Peabody to the south (Figure 1). Middleton is approximately 23 miles from Boston. The town covers an area of approximately 14 square miles. (See Figure 1, Locus Map).

Middleton is situated entirely within the Ipswich River Watershed in Essex County. The Ipswich River flows roughly 45 miles from its headwaters in the towns of Burlington, Billerica, and Wilmington, through Reading, North Reading, Lynnfield, Peabody, Danvers, Middleton, Topsfield, Boxford, Wenham and Hamilton. The Ipswich River flows through the thirteen (13) communities to its mouth in Ipswich, where it empties into Plum Island Sound and Ipswich Bay.

Middleton is linked in several ways to the surrounding towns and the region as a whole. Middleton is downstream from a number of densely developed towns. Fourteen (14) communities draw their water from the Ipswich River Watershed (IWS). An increased population has diminished the recharge of water back into the watershed as many homes that draw their water from the IWS are located outside the watershed. As a result, rationing is required by Middleton as well as many other communities during the summer and fall months.

The U. S. Environmental Protection Agency still has the Ipswich River listed as “impaired” under *Proposed Listing of the Condition of Massachusetts’ Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act*.

The Ipswich River Watershed Association oversees and coordinates a conservation strategy, which is a regional approach to protection of the Ipswich River and adjacent land. This strategy was initiated in 1990 by the Riverways Program of the Massachusetts Department of Fisheries.

Historically, Middleton was a farming community and luckily still partly is. Recently, with rapid development around Middleton, Danvers, Andover, North Reading, and Peabody, the roads through Middleton have become transit routes for shoppers and commuters. Traffic flows on Route 62 (east/west) and Route 114 (north/south) and have increased substantially in recent years. Many traffic lights and the widening of these roads reflect the burden of increased traffic through the town. In addition, nearby Routes 495, 95, 128 and 1 have also increased traffic and made Middleton the “middle town”.

One of the Town’s outstanding natural features is Middleton Pond, which is the source of drinking water for parts of Middleton and neighboring Danvers. Since 1875 Danvers has owned Middleton’s water rights and has operated and administered the Town’s water system for which Middleton Pond is a reservoir. Middleton Pond serves as a natural break to development along

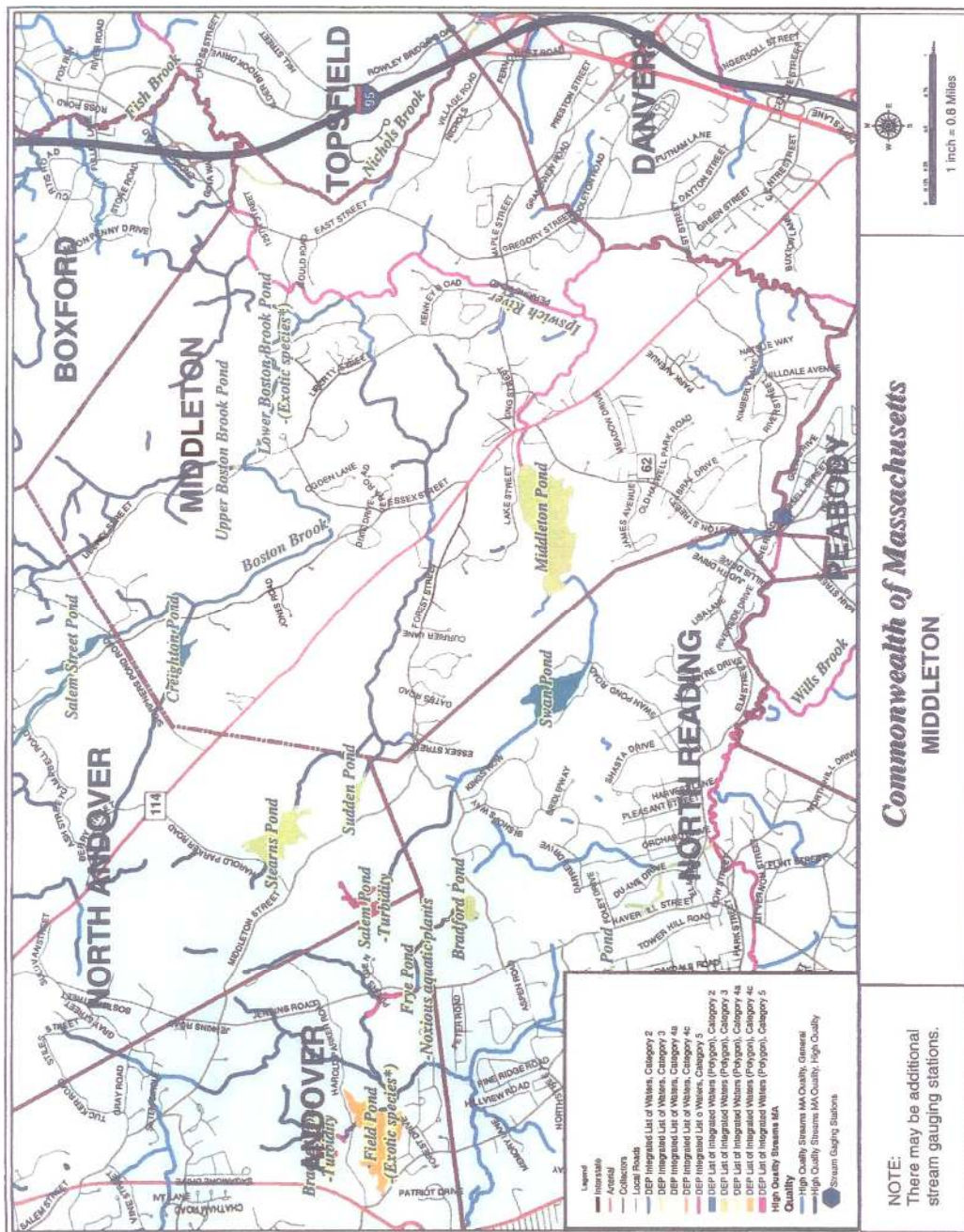


Figure 1 Locus map

Route 62, as Danvers has bought up undeveloped forested land surrounding the pond to protect the watershed. To the north of the Pond is Emerson Bog which recharges the Pond. It is also administered by Danvers.

Until the 1990's, Middleton's rate of development had been comparatively slower than surrounding towns. The main reasons for this slower growth were as follows: (a) a small number of large land owners held onto their lands, and (b) there is no public sewer system (until recently septic systems could not be installed on land with a high water table), and (c) only a few streets had town water.

The Town, unlike its neighbors, has had no prior policy with regard to the preservation of open space. Middleton has been fortunate in having a number of conservation-minded residents who have protected their open lands through participation in the Essex County Greenbelt Association and New England Forestry Foundation conservation programs.

A prominent example of public participation to address regional water-related concerns is the Middleton Stream Team (MST). This group, legislatively created in 1988, is steward of Middleton's 5 canoe landings, 7 ponds and 7 brooks. MST is comprised of members from Middleton. Because the Ipswich River flows north to south through the five surrounding communities, land use adjacent to the river in any one town can impact water quality downstream. [See Section 4 C for additional discussion on water issues]

MST has worked extensively over the last two decades to gather information on the aquifer and river systems, stressing the value of this resource to all five of the towns. Members meet regularly to discuss common interests, plan public forums, and to educate people on why and how this important and critical resource needs to be preserved and protected. Yearly, MST sponsors an annual photo contest for pictures of Middleton's resource areas and also Earth Day. Members conduct daytime hikes and other environmental series programs which bring together local leaders, state representatives and officials and concerned citizens to both learn about and see (kayak and canoe trips are a highlight each year) the beauty and importance of this river system.

Middleton is currently attracting primarily middle to upper income families looking for larger lots and some degree of isolation from their neighbors, as well as a good school system. Middleton is politically and socially tied to its neighbors, Boxford and Topsfield, through the Masconomet School District. All three towns pay for the junior and senior high schools through real estate taxes.

The Town has tried to attract light industry, however, without a sewer system, much of its land is difficult and costly to build upon. Consequently, the Town has turned to retail businesses and to residential development. The residential development is taxing the Town's infrastructure as well as the tax payer. In this regard, the Town formed a Master Plan Committee in 1998. A Master Plan was completed in October, 1999 and can be found at the following web address (http://www.townofmiddleton.org/Pages/MiddletonMA_Admin/masterplan).

It should be noted that, because Middleton enjoys a good centralized location and easy access to transportation networks, town residents have the ability to take advantage of open space

resources in many surrounding communities. Areas such as the Harold Parker State Forest in Andover, the Boxford State Forest, and the trails within Essex Greenbelt lands are nice hiking spots.

Middleton is served by the the Metropolitan Area Planning Council (MAPC) is a regional planning agency that represents 101 Greater Boston communities. In 2008, MAPC completed *MetroFuture*, a 30-year plan, proposing goals and strategies for smart growth throughout the Metropolitan Boston. This plan identifies Middleton as a "developing suburb". Towns meeting this description are "less-developed towns with large expanses of vacant developable land. Most have recently experienced high rates of growth, primarily through large lot single-family homes. Some towns have a locally-significant stock of rental units and units in modestly-sized multifamily structures. Many of these towns have a well-defined, mixed use town center. Others have town centers with historical and civic significance but no commercial or neighborhood function. The extent of economic development varies but is generally quite limited."

The Middleton Open Space and Recreation Plan will advance several of the 65 regional goals put forth in *MetroFuture*. The following *MetroFuture* goals are particularly relevant to Middleton's Plan:

Goal 9: The region's landscape will retain its distinctive green spaces and working farms.

Middleton continues to acquire and permanently preserve Open Space throughout the town. Despite its proximity to urban areas it has land that is currently in active agricultural use.

Goal 10: Growth in the region will be guided by informed, inclusive, and proactive planning.

In May, 2009 residents of the Town of Middleton voted to establish a Master Plan Committee. This Committee works to assure that growth of the Town, along with land acquisitions, follow the recommendations contained in the Middleton Master Plan. In May, 2013 Middleton residents voted to approve the creation of a Planning Coordinator position. When hired, this employee will help administer and update the Master Plan. Regional considerations were taken into account when the Master Plan was developed and will be incorporated into any revisions of the Plan.

Goal 12: Communities will work together to plan for growth and share resources.

The Metropolitan Area Planning Council provides opportunities and resources for Middleton to share resources with other communities. The newly formed Rails to Trails Committee will facilitate the linkage of Middleton's proposed rail trail into the network of existing regional rail trails.

Goal 42: The region's agricultural economy will grow through a focus on sustainable farming and by bringing more locally produced foods to the market.

The weekly Farmer's Market during the growing season provides an opportunity for local and regional farmers to sell their products.

Goal 62: The region's rivers, streams, lakes, and ponds will have sufficient clean water to support healthy populations of native fish and other species, as well as recreational uses.
and

Goal 63: The ecological condition of wetlands will improve, and fewer wetlands will be lost to development.

Middleton citizens and municipal officials participate and interact with the Ipswich River Watershed Association and The Parker-Ipswich-Essex River Restoration Partnership. Both of these organizations have regional focuses that support aquatic species and recreation. The Parker-Ipswich-Essex Rivers Restoration Partnership (PIE-Rivers) "is a regional network of organizations, governmental agencies and individuals all working to promote healthy rivers and ecosystems in the coastal rivers of northeastern Massachusetts. PIE-Rivers was formed to increase communication, coordination and collaboration between those involved in restoration, preservation and management of the watersheds." The Ipswich Watershed Association (IRWA) "is a group of citizens, scientists, businesses, and municipal managers concerned about the health of the Ipswich River and its watershed." Middleton's very active Stream Team, is sponsored by the IRWA.

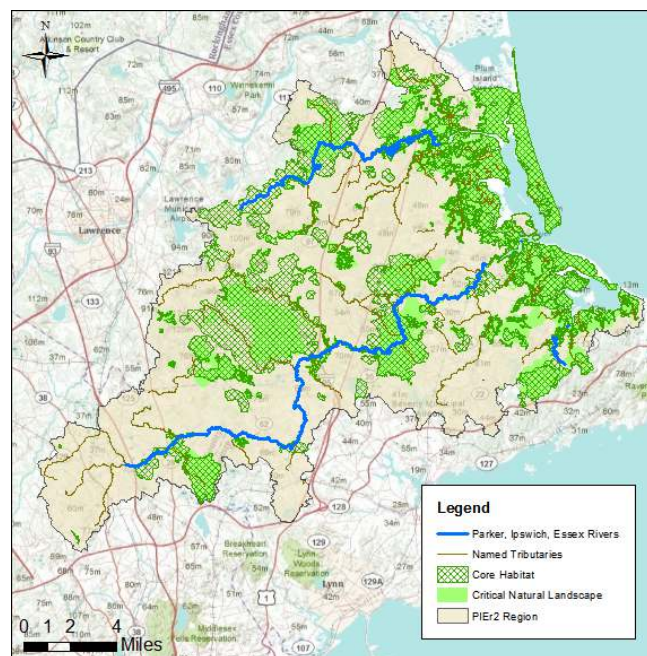


Figure 2. Map of the PIE-Rivers region showing major streams and BioMap2 core habitat and critical natural landscapes. (<http://pie-rivers.org>)

Since its founding in 1998, the Middleton Stream Team has had a tremendously positive impact on the accessibility of the Ipswich River, other water resource and natural lands in general throughout Middleton and surrounding towns. According to its the

IRWA website (<http://ipswichriver.org/our-work/stream-teams/>), the purpose of the Middleton Stream Team is "to monitor, educate, advocate, and conduct projects for the ecological health and responsible public use of the streams, wetlands and approximately eight miles of Ipswich River within Middleton. The team's activities include oversight, historical research, public education, conservation, remediation, the development, and maintenance of river sites for public use and fostering responsible stewardship of our water resources by all users, landowners, and businesses. The team has developed two permanent sites for canoe launching, picnicking, and conservation on the Ipswich River, and is currently developing a third. The team has also installed stream name signs at all road crossings. The team maintains a permanent watershed educational display case in the Middleton Post Office/Sovereign Bank Lobby, publishes a weekly water-related essay in the Tri-Town Transcript, sponsors an annual contest for photos of Middleton natural water resources, and conducts a series of hikes and canoe trips throughout the year for the public."

The Middleton Conservation Commission is proactive in encouraging new development to keep adequate setbacks to wetlands, preserve wetlands, and open space with Conservation Restrictions, and keeping Riverfront Area along the Ipswich River in its natural condition.

Goal 64: The region will retain its biodiversity, and will have healthy populations of native plants and animals, and fewer invasive species.

One of the recommendations in the 2013 Middleton Open Space and Recreation Plan is to improve/maintain the biodiversity of the existing Open Space parcels in Middleton. Invasive species are present throughout Middleton, and the control of these species is a priority. Plans to remove invasive plants from the Pike Messenger Park may be implemented within the next year.

In 2012, a Wood Turtle (a State Species of Special Concern) was observed in Middleton for the first time since the 1800's. In the same year, two new plant rare plant records were made one for Long's Bulrush and a second for American Bittersweet.

Goal 65: A robust network of protected open spaces, farms, parks, and greenways will provide wildlife habitat, ecological benefits, recreational opportunities, and scenic beauty.

Many of the Open Space parcels in Middleton are currently networked along the Ipswich River, within Danvers Watershed land and within the northern portion of town. Several parcels abut Open Space in North Andover, Boxford and Danvers. Existing trails and the proposed Rail Trail extend or will extend into other towns. Future acquisitions of Open Space, as recommended by this plan will focus on extending the network of interconnected open space within Middleton and as an extension of open space in adjacent communities.

B. History of the Community

Before it became Middleton, the area was known as Will's Hill after a Native American who, it is believed, lived below a great hill overlooking Middleton Pond. William Nichols was the first settler to the area in 1651. A brook in the far eastern section of Town still bears his name. In its

earliest days fishing, hunting and limited grazing of animals were the primary land uses. As residents arrived and settlements sprung up, agriculture was a key industry.

Middleton became a town in 1728, when it was formed from parts of Salem Village (now Danvers), Topsfield, Boxford and Andover. On July 9, 1728 Middleton held its first Town Meeting at Dr. Daniel Felch's house on Maple Street. Jonathan Fuller presented the Charter from the Commonwealth to the Town.

The rivers that flowed through Town brought several small industries. An ironworks, which was an important industry at that time, was established during the late 1600's. The works was located on Mill Street, its sluice still evident as an outlet of Mill Pond.

Middleton's location between Salem and Andover made it a favorite stop-over for travelers and their horses. The Estey Tavern, built in 1753, was operated continuously until 1892. In the 1830s, Colonel Francis Peabody built an important paper mill. Boston Blacking Chemical Company took over the site, which is now occupied by Bostik, Inc., a manufacturer of adhesives. Bostik has continued to expand over the years.

The introduction of the Salem/Lawrence railway in 1848 and the Salem/Lowell Railroad in 1850 gave additional impetus to Middleton's economic growth, improving the Town's ability to service growing cottage and light industries. Both lines gave Middleton direct access to Boston. There were three stations in town: Howe Station at the intersection of Maple and Gregory streets, South Middleton Station located alongside the Ipswich River at the junction of Boston, River, and Russell Street, and the Middleton Square Station, where a turntable was located.

As railroads developed so did the shoe industry and several small industries that provided materials to the shoe companies. The 1800s was a booming era for Middleton. Figure 3, a historic map taken from "An Atlas of Essex County" (D.G. Beers & Co.) depicts Middleton in 1872.

At the turn of the 20th century, Middleton was a favorite summer resort, with small cottages located along the winding Ipswich River and on ponds throughout the town. Steam railroads and electric car lines brought commuters and visitors.

Improved road construction ultimately obviated the need for the rail connections, and in 1935 the last train transited Middleton. A portion of the old railway bed is today used by the Danvers Electric Department for their overhead wires. A swath of land, approximately 50 feet in width, the old rail bed runs from North Andover in the northwest through the center of Town and exits south of Maple Street, leading into Danvers. Surrounding communities have developed a trail system using the old rail right-of-way. At the 2012 Middleton Town Meeting residents voted to establish a Rails to Trails Committee. This Committee is in the process of studying the

Through the late 19th century and into the 20th century, there was a substantial amount of agricultural uses. Acres of greenhouses dotted the landscape, and sent loads of tomatoes, cucumbers and other produce into the markets of Boston. It has also been said that Middleton was a gladiolus capital, as many farms and experimental plots were devoted to this flower. In East Middleton, the Richardson family has operated a dairy farm that was known locally as the "Largest Dairy Farm in Northern MA." Today the Richardson family operates one of the best ice cream shops where fresh, natural milk and cream are also sold and they still maintain several cow pastures.

While some agricultural uses are still in existence, the re-forestation or abandonment of these earlier uses helped to create the undeveloped landscape, or at least the appearance of such a landscape, which greeted the "newcomers" who arrived in the 40's, 50's and early 60's.

In 1875 the Town of Danvers made a proposal to take water from Middleton Pond. Middleton agreed, provided Danvers supply water to Middleton "on just and reasonable terms." In 1895 Danvers connected Middleton Pond to Swan Pond in North Reading with an iron pipe to supplement the Town's main reservoir. More recently, Danvers built a water treatment plant beside Middleton Pond. During times of drought or high-usage, Danvers and Middleton purchase water from Beverly to permit the Middleton Pond system to recharge.

Several cemeteries throughout Middleton are maintained by the Town. Some surveys have been performed, and burial dates going back to the 1700's are found in a few areas. The conditions of the burial grounds range from well-maintained to obscured from view. In 1994 the Middleton Cemetery Restoration project was begun and continues to be run by the town, the Society for the Preservation of New England Antiquities (SPNEA) and other private organizations. The following is a list of Town -owned cemeteries:

- Mill Street – Elliot Cemetery
- Boston Street – Flint Cemetery
- Off Wennerberg Road – Fuller Cemetery
- South Main – Merriam Cemetery
- off Gregory Street – Middleton Colony Cemetery
- 83 Maple Street – Oakdale Cemetery
- Mount Vernon/Old South Main Street – Old fuller Burying Ground
- Mill Street Ext. – Peabody Cemetery
- off Locust Street– Peabody Tomb
- off Hollygate Circle – Richardson Cemetery
- Mount Vernon Street – Smith cemetery
- Thomas Road – Symonds Cemetery

In 1972 the Massachusetts Wetlands Protection Act was enacted. Town Conservation Commissions were formed to administer this Act, which protects swamps, bogs, wet meadows, ponds, lakes, stream, and rivers. In Middleton this meant that about 2,400 acres, a quarter of the Town, became protected. With the passing of the Rivers Protection Act in 1996, strong additional protections were provided to lands situated 200 feet on either side of Middleton's perennial streams and the Ipswich River.

C. Population Characteristics

(1) Population Trends

The population increase during the 1990's dramatically changed the character of Middleton. Within one generation, the population of the town has doubled in size, with the majority of the developable land in town devoted to houses. The following table shows the changes in population, by age group during the past thirty years, and includes a projection of the population by 2020.

<u>Age</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
0-4	262	356	473	430	506
5-9	267	322	528	430	506
10-14	364	259	503	565	514
15-19	404	290	461	676	567
20-24	289	307	465	670	720
25-29	351	345	489	561	739
30-34	350	457	715	529	852
35-39	291	463	898	613	731
40-44	231	387	754	713	483
45-49	236	342	578	830	503
50-54	243	278	489	773	726
55-59	245	247	373	555	825
60-64	198	242	279	475	767
65-69	165	223	216	327	497
70-74	106	177	199	244	424
75-79	59	121	159	164	225
80-84	40	59	100	119	152
85-89	22	32	39	73	80
<u>90 plus</u>	<u>12</u>	<u>14</u>	<u>26</u>	<u>37</u>	<u>56</u>
Total	4135	4921	7744	8784	9903

Table 1. Population Statistics for Middleton (source: U.S. Census data available at www.umass.edu/miser) [note: red number indicate age groups with highest populations]

Although the population of Middleton increased slowly until the early 1990's, between 1990 and 2000 the population grew by 57%, due to families moving into the many new subdivisions. Growth slowed during the decade between 2000 and 2010 to just over 13%. By 2020, Middleton's population is projected to increase by an additional 13%.

With the slowing of population growth during the past decade, and an anticipated steady rate of growth during the next decade, the town has more time to plan for growth. The greatest population increases will be seen in the 55-65 year old age group (many who moved to Middleton during the 1990's), and also in the 30-34 year old demographic, representing new homeowners in town. Open space and recreation needs of those nearing retirement as well as younger residents must be balanced in the future.

(2) Geographic Distribution / Density

The geographic distribution of Middleton's population is somewhat a function of the Town's three primary residential zoning categories: 20,000 square foot, 40,000 square foot and 2-acre see Figure 4.

Middleton's 20,000 square foot R-1a and "Village Residential" districts are concentrated near the intersections of Routes 114 and 62. They comprise approximately 9% of the Town's zoned residential lots. In this relatively compact area are found the Town Hall, Fire Department, Library, Post Office and Historical Museum. Small lots, building restrictions (the Town Square is close to Middleton Pond and wetland areas), pre-existing residential housing, and the absence of parking facilities along Route 114, all constrict commercial activity near Town Square.

Stately old Estey Tavern and the newly (2009) expanded Flint Public Library define the primary district of Town Square. Just behind the Tavern is a newer, small-scale commercial plaza with a New England flair which houses a bank, a salon, a pizzeria, a real-estate office, a florist, a bridal salon and a picture framer. A gas station, a second beauty salon, a convenience store, and a woodworking store, all located near Estey Tavern on Route 114, complete the Square.

Middleton Square wrestles with traffic flowing through the Town on two heavily used State highways. It is often difficult for local shoppers to maneuver in and out of retail and municipal establishments with the constant flow of traffic through Town.

Currently, the library is the only institution in the Town Square area with seating in a park-like setting. Richardson Park, a welcome area of green located behind the library, is graced with a small stone bench.

There is now a sidewalk for those residents living along the first mile of Boston Street, as it winds southwestward from Route 114. Boston Street residents are within easy walking distance of the Town Square and Middleton Pond. Those living further down Boston Street, on River Street and in some of the new developments that are located along both streets, commute by car to their destinations.

With 2011-2012 came the opening of the new Howe-Manning School, located directly behind the old school. Several pushed for the beautiful older school building to be used as a new municipal building, but unfortunately the older school was razed. The Howe-Manning School is very close to the Town Square and is a focal point for nearby residents. The facilities, playground, and ball field also provide valuable open space abutting the buffer zone of Bordering Vegetated Wetlands.

Middleton Pond is, of course, another important feature of Middleton's town center, especially for people living nearby. While the pond, itself, is not available for water recreation, the path

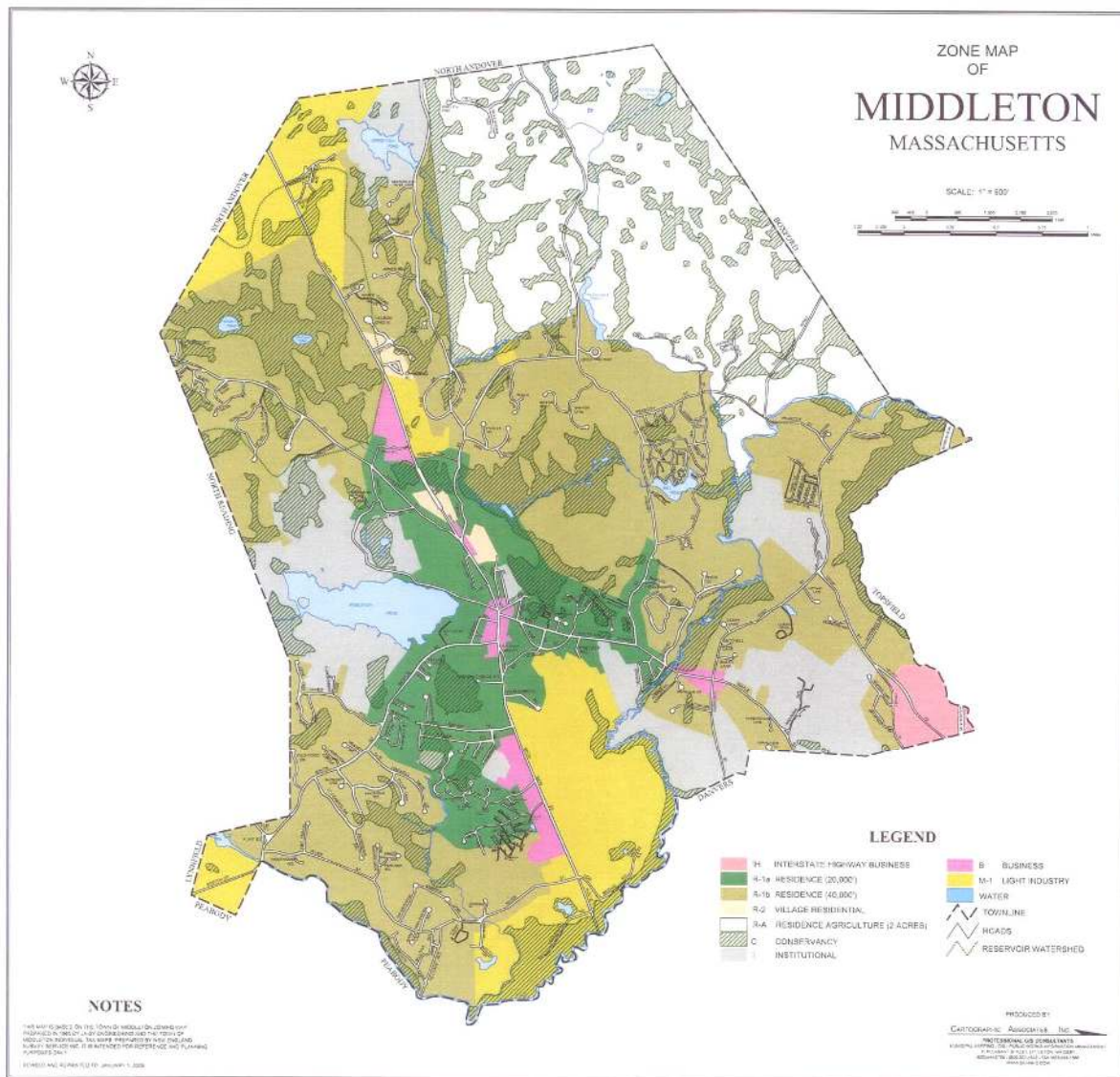


Figure 4. Zoning Map, Town of Middleton

around it is popular with walkers and bikers. The Town of Danvers manages the pond's large watershed land and keeps the access open.

Heading south on South Main Street from the Town's center one encounters a large restaurant with residences across the street. In this area there is a wonderful Farmers' Market that is held every Wednesday during the growing season, which offers residents local home and small scale farm products. Further south, picturesque pasture land, and a golf course abuts the east and west side of the highway. Continuing on South Main one encounters commercial buildings on both sides of the street up to the Town line at the Ipswich River. Some major businesses along the way include: Richardson's Dairy and Ice Cream, a driving range and batting cages, a car wash, Walgreens's, McDonald's and a shopping center with Market Basket, Bob's Store and several other stores and businesses.

Commercial development is also present along North Main Street, particularly near the North Andover town line. Office buildings, light industry, a motel, a used car lot, several retail stores, and a Dunkin Donuts are located in this area. In addition, municipal buildings including the Middleton Police Station, the Department of Public Works yard and offices, and the Middleton Electric Light Department are located on North Main Street.

40,000 square foot zoning R-1b prevails throughout most of the town and accounts for 60% of Middleton's residential lots. 2-acre Resident Agriculture (R-A) is located north and northeast of the Square. The R-A District comprises 15% to 20% of total zoned residential area. This area offers the best opportunity for preserving open space. The Essex County Greenbelt Association and New England Forest Foundation are both very active in this area. The Bay Circuit Alliance is a partnership of organization and individuals working to complete the Bay Circuit Trail around Boston. They have located land in Middleton, which would connect their trail in North Andover to Boxford State Forest access located off Sharpener's Pond Road.

There are also still large landowners in the R-A zoning district who have their lands in Chapter 61. The town has the first option to purchase such lands, should they be removed from the Chapter 61 status.

(3) Employment Trends

Industry and Commerce

The Town of Middleton is a residential community with some manufacturing activity. In 2011, 357 firms located in Middleton reported to the Massachusetts Division of Employment Security. These firms employed an average of 3,697 persons and had a total annual payroll of \$244,985,477.

Industry	2007	2008	2009	2010	2011
Construction	399	287	681	423	400

Manufacturing	362	341	282	304	315
Trade Transportation & Utilities	1,003	1,034	1,036	1,014	1,042
Financial Activities	95	284	117	139	208
Professional & Business Services	543	484	379	539	522
Education & Health Services	659	709	772	622	629
Leisure & Hospitality	427	440	482	514	460
Other Services	103	107	131	140	121
Total Employment	3,591	3,686	3,880	3,695	3,697

Table 2. Middleton Employment Statistics (source: see Table 3)

	2007	2008	2009	2010	2011
Number of Establishments	335	344	342	351	357
Average Weekly Wages	\$859	\$866	\$851	\$933	\$957
Total Wages Calendar Year Average	\$205,462,764	\$201,739,458	\$193,205,713	\$221,252,377	\$244,985,477

Table 3. Middleton Wage Statistics

SOURCE: Massachusetts Department of Employment and Training. Data based upon place of employment, not place of residence. Due to the reclassification the U.S. Department of Labor now uses the North American Industry Classification System (NAICS) as the basis for the assignment and tabulation of economic data by industry.

The following table lists the Town's largest employers, exclusive of the Town itself.

<u>Name</u>	<u>Production/Function</u>	<u>Approximate No. of Employees</u>
Essex County Jail	Correctional Facility	560
Demoulas Market Basket	Retail Food Store	350
Idearc Media	Telephone Services	175
North Shore Regional Voc. Tech.	Vocational School	172
Bostik	Adhesives	170
Richardson's Dairy	Dairy	145
SAS Institute, Inc.	Software Technology	120
Angelica's Restaurant	Restaurant	90
Bob's Store	Retail Clothing	65
Dailey's	Restaurant	43

The businesses in Middleton have remained relatively stable despite the economic downturn in 2008. Wages have continued to increase, and business revenues contribute to the tax base of the town. The majority of employers are located along Route 114, Route 62 and Locust Street.

Recreational facilities such as golf courses, batting cages, miniature golf and health clubs are located near many businesses in the southern part of town. Open space along the Ipswich River is also close to some commercial areas.

Labor Force, Employment and Unemployment Rate

According to the Massachusetts Division of Employment and Training, in November 2012, the Town had a total labor force of 4,132 of which 3,925 were employed and 207 or 5.0%, were unemployed, as compared with 6.1% for the Commonwealth (unadjusted).

The following table sets forth the Town's average labor force and unemployment rates for calendar years 2007 through 2011 and the unemployment rate for the Commonwealth and United States as a whole for the same period.

<u>Year</u>	<u>Town of Middleton</u>		<u>Commonwealth</u>	<u>United States</u>
	<u>Labor Force</u>	<u>Unemployment Rate(%)</u>	<u>Unemployment Rate (%)</u>	<u>Unemployment Rate(%)</u>
2011	4,125	7.1	6.9	8.5
2010	4,246	8.5	8.5	9.6
2009	4,436	7.7	9.3	10.1
2008	4,301	4.7	5.3	5.8
2007	4,279	3.9	4.5	4.6

Table 4. Unemployment Rates

SOURCE: Mass. Department of Employment and Training, Federal Reserve Bank of Boston and U.S. Bureau of Labor Statistics. Data based upon place of residence, not place of employment. Monthly data are unadjusted.

(4) Family Income

Population, Income and Wealth Levels

The following table compares census years' averages for the Town of Middleton, the Commonwealth and the United States. In addition the 2010 census, according to CLRsearch.com, the median household income for Middleton was \$107,707 compared to Massachusetts was \$68,398 and the average household income for Middleton was \$129,309 compared to Massachusetts at \$90,891.

Median Age:

	Middleton	Massachusetts	United States
2010	41.5	39.1	37.2
2000	36.3	36.5	35.6
1990	36.3	33.6	32.9

Median Family Income:

	Middleton	Massachusetts	United States
2010	\$93,576	\$81,165	\$49,445
2000	87,605	61,664	50,046
1990	52,036	44,367	35,225

Per Capita Income:

2010	\$37,993	\$33,966	\$27,334
2000	29,031	25,952	21,587
1990	19,933	17,224	14,420

SOURCE: Federal Census

According to the 2010 Federal Census, the Town has a population density of 554 persons per square mile.

Obviously, increases in population mean there is new building growth. This growth impacts town government by placing new demands on the departments which deal directly with new development. The Building, Health and Conservation offices have been able to maintain level staffing numbers. The ripple effects of growth have impacted most other departments, from Assessors, to Treasurers, Police and Fire, due to increased work loads, emergency calls and other genuine demands.

The large number of new families with young children has generated increased needs for recreation facilities. The East Street and Natsue Way Recreation Areas [See Section 5, Recreation Inventory] have helped respond to those needs by providing additional playing fields and areas for both children and adults. The levels of growth in Middleton raises the question of how and where to provide recreational facilities.

The proximity of Middleton to an excellent transportation network has diversified the employment base for Town residents. Good weather brings out many workers who walk or jog during their lunch breaks. Middleton has a need for additional sidewalks and the creation of a rail trail.

D. Growth and Development Patterns

1. Patterns and Trends

Middleton is a community which has evolved from a small New England town with scattered centers of activity focused on mill sites, to an agricultural town with greenhouses and fields dotting the landscape, to a rural/suburban community sitting on the brink of additional change. As a town blessed, or some would say cursed, with a key location in the region, Middleton is a town which is working hard to shape the best future for its citizens while realizing that more change is to come. In many ways the zoning decisions made at Town Meetings in the last few years have created the template for future change. The tough questions, especially as they relate to recreation and open space needs, are whether the residents will allow the zoning prophecies to be self- fulfilling or will make choices to help channel the growth and change and make sure Middleton's strong sense of community is not undercut and eroded.

What continues to keep Middleton from over development includes the following:

- (a) Close to 25% of Middleton is designated wetlands. It should be noted that the Town of Danvers owns 10% of the total land in the Town for its reservoirs and protection areas around them.

- (b) Middleton is fortunate to have citizens serious about land conservation. These individuals and groups have been responsible for acquiring land to preserve as open space throughout the area.

2. Infrastructure

(a) Water Supply

<http://www.mass.gov/dep/water/drinking/3184000.pdf> SWAP Report 2003

The majority of Middleton residents are connected to the municipal water distribution system (Figure 5). The remainder of the town relies on private wells for water supply.

Although the Danvers Water Department is responsible for the treatment and supply of the potable water, the Middleton Water Division is responsible for the water quality during transmission throughout the distribution system. The reservoirs for Danvers and Middleton are located within three water supply protection areas. The Middleton Pond Reservoir water supply protection area is mostly in Middleton, and extends into the Town of North Reading. The Swan Pond Reservoir water supply protection area is in the Town of North Reading. The Emerson Brook Reservoir water supply protection area is in the towns of Middleton, North Andover and North Reading (Figure 6). The wells (Well #1 and #2) for Danvers and Middleton water supply are located within a single water supply protection area, with portions in the towns of Danvers, Middleton, Peabody and Lynnfield. Well #1 is on the Ipswich River on the Town Line and has a yield of 850,000 gpd. Well #2 is across the town line on Buxton Lane with a yield of 580,000 gpd. There are also two storage tanks for the system. One is located on the Danver's State Hospital property with a capacity of 5.4 million gallons. The second is at Folly Hill near the Beverly town line which has a capacity of 4 million gallons.

The distribution system consists of 36 miles of water lines, of which ninety percent is cement lined ductile iron pipe. There are 398 fire hydrants, which are regularly flushed in the spring and painted and lubricated in the summer. The Town of Middleton's water is purchased from the Town of Danvers, which meets or exceeds the federal standards for water quality. The water is drawn from the Middleton Pond where Danvers operates the water treatment plant at 36 Lake Street. The Middleton Water System has 1385 residential service connections and 141 commercial and institutional service connections delivering on the average of 516,387 gallons of water per day to Middleton customers. This is an increase of 2,983 gallons per day from last year.

The Massachusetts Department of Environmental Protection has set a standard per capita water conservation threshold for consumers of drinking water. The threshold is 65 gallons of water a day per person. In 2010 Middleton residents were using an average of 64.97 gallons of water per person per day. The highest residential users were homeowners who were irrigating their landscapes. The Town of Middleton adopted an Irrigation Bylaw at the town meeting on 5/10/2005. The bylaw is in effect from May 1 until September 30 of each year. It is unlawful to

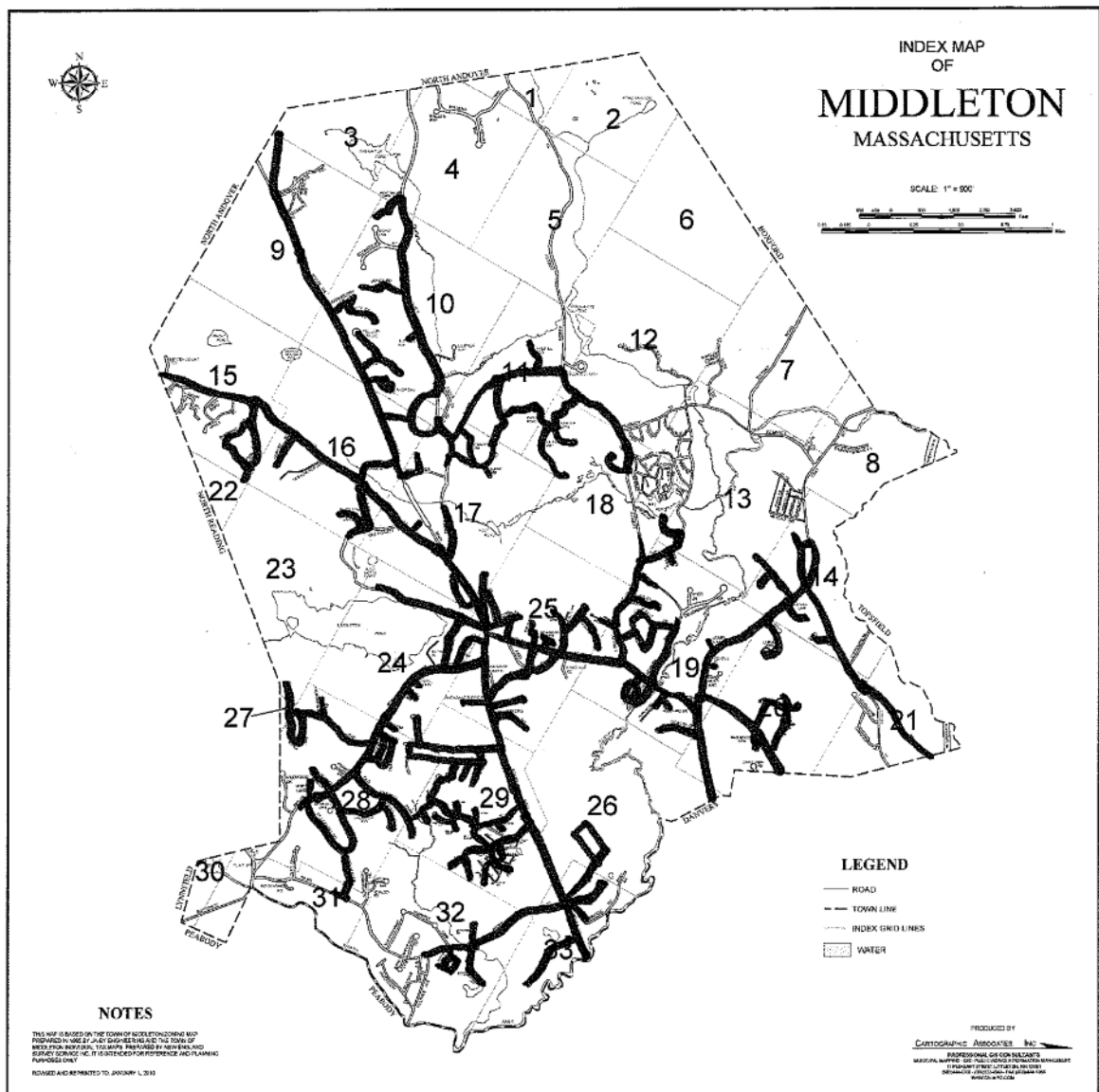


Figure 5. Water Distribution System

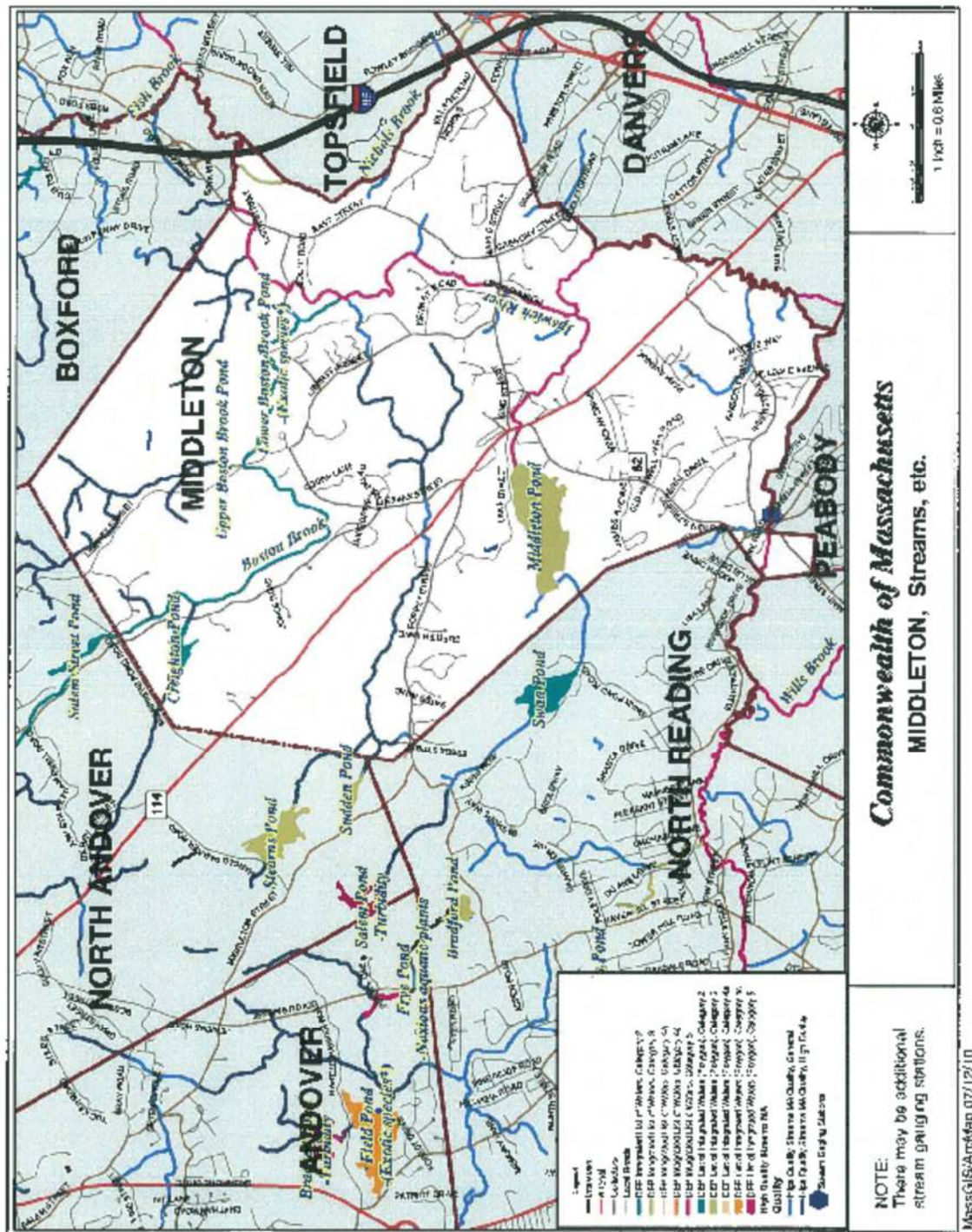


Figure 6. Water Supply Map

water between the hours of 8:00am to 7:00pm using a sprinkler or lawn irrigation system. There are 6 levels of the Bylaw, which are triggered by the flow of the Ipswich River and the level of the Middleton Reservoir.

The indisputable fact is that there is a water supply problem in the region. In the past, the Ipswich River has been pumped dry during the summer months. For the most part, water used within the Town of Middleton stays within the Ipswich River watershed due to the prevalence of septic systems throughout town. Unfortunately, in upstream towns, including Danvers, municipal sewer systems result in water leaving the Ipswich River watershed once it is used, thereby reducing the volume of recharge to the river. Recently the Town of Reading has begun to purchase water from the MWRA, reducing the stress on the river upstream of Middleton.

(b) Sewer

Approximately 13% of the Town of Middleton is served by sewer based on population. Sewer lines are located on Village Road, part of Locust St., Mansfield Rd., and Nichols Lane, all located on the eastern edge of Middleton, adjacent to Danvers. The sewer system is part of a private sewer system that is tied into the South Essex Sewer District with a treatment plant located in Salem, Massachusetts. The Town has no plans for any publicly financed sewer projects.

The lack of a municipal sewer system necessitates septic systems on most lots throughout the Town. This restricts use of the land since a number of commercial enterprises are prohibited from discharging to an on-site wastewater treatment system. Commercial industries that wish to located in Middleton are required to discharge wastewater from its processes into a tight tank at considerable pumping expense. Unsuitable soil conditions also restrict residential development in some areas.

(c) Transportation

The Town's lack of a public transportation system results in increased vehicular traffic. In order to take public transportation to Boston, one has to catch a train from either Beverly, Reading or North Andover. Lines of rush hour traffic on Main, Boston and Maple Streets and by new traffic lights that have been appearing in Town over the past decade. A major contribution to increased traffic has been development in neighboring towns, as well as in Middleton.

Several important transportation routes and systems converge in Middleton. State Routes 114 (running north-south) and 62 (running east-west) are major bisectors of the town. Interstates 495 and 95 pass near the town (see Figure 7 Roads Map).

A Dial-a Ride bus provides curb-to-curb service for senior citizens and handicapped individuals and creates a link for them to the shopping areas and stores.

Development in Middleton is, and will continue to be, partly driven by the combination of location and the transportation network which makes it so easy to get to Boston, New Hampshire and other major destination points. Challenges will surface as local and state officials deal with

increased traffic and necessary improvements to the commuter train station, but growth patterns and trends should not change as these issues are dealt with in the next few years.

(e) Electricity

Middleton operates a municipal electric department. The offices are located off (Rt 114) North Main Street. Recently, a photovoltaic array has been proposed to the east of South Main Street, behind the Marketbasket Plaza on property owned by Richardson Farms. In the future, photovoltaic arrays may become a significant passive land use in Middleton. While these arrays do not provide public open space, they do prevent land from becoming developed with commercially or residential uses that could have greater detrimental impacts to the environment.

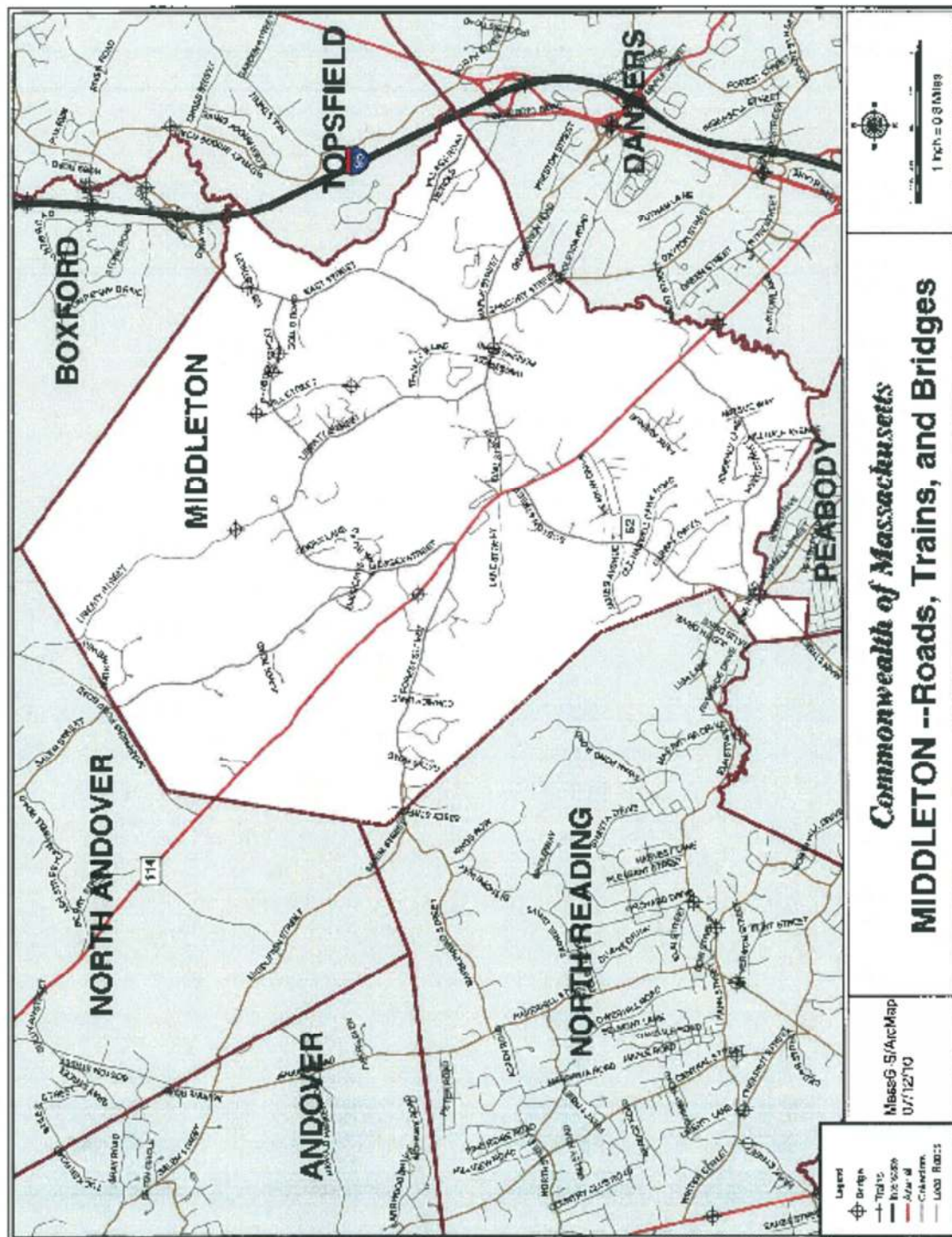


Figure 7. Major Roadways in Middleton

3. Long Term Development Patterns

As of this writing, there are no subdivisions in the planning stages with Middleton's Planning Board. Four subdivisions, containing 90 lots have been approved within the past two years. Construction has begun on Essex Crossing off Essex Street and Middleton Estates off East Street. Ridgewood Estates on the site of the former Jewish Community Center Camp off East Street/Towne Road is an example of a missed opportunity to acquire valuable Open Space and Recreation land in Middleton. A former summer camp along the Ipswich River, this property contained a pool, tennis courts, basketball courts and river access. It was identified as unprotected open space in the 1998 Open Space and Recreation Plan, however, when the Town had the opportunity to purchase the property several years voters did not approve the appropriation for the purchase. If Open Space and Recreation land acquisition is a priority, advanced planning must prepare the town to successfully pursue the purchase of valuable properties as they become available. For example, the Boys Club of Lynn property on Creighton Pond off of Essex Street may one day be sold. This property could be a valuable addition to Middleton's Open Space and Recreational Areas.

Zoning is one of the means used to protect open space and preserve the rural character of a community. The majority of land use in Middleton is residential.. While one acre zoning covers the larger area, approximately 15% to 20% of land in the north and northeast part of Town is zoned for two acre lots (Residential Agriculture). Current zoning does not encourage developers to design for playgrounds, or to set aside areas for parks, trails or open spaces. It is in this area that the Essex County Greenbelt Association and New England Forestry Foundation have been particularly active. Enactment of "smart growth" zoning such as Open Space Design Zoning may be more effective for preserving open space than current large lot zoning.

The Town's long-term development is largely a function of the economy, the zoning and conservation commission regulations and remaining, buildable land. The Town of Middleton's local land use controls, the Zoning By-Laws, have undergone minor changes in the last fifteen (15) years. The existence of sewers in one section of town [on top of the fact that soil conditions make on-site systems an option for a majority of town] and an adequate supply of high quality water have helped to make Middleton an attractive community for development. Certain areas of town, especially parts of East Middleton, have not been extensively developed due to the Ipswich River and other recourse areas also poor soils for sanitary systems.

Levels of growth in the industrial/commercial sector have been much slower than residential growth. The economic slowdown of the last few years impacted new commercial. Some corporations have located new operations here in existing buildings and some current park businesses have expanded into other vacant facilities. If and when new development occurs in the park is dependent upon outside market forces. Development along Rt 114 has added a variety of stores and restaurants to Middleton's retail base.

The impact this growth is having on existing open space and recreation facilities is both easy and difficult to ascertain. When looking at recreation issues, it is simple to quantify increases in the number of individuals participating in programs, and the number and variety of programs being created. [See Section 5, Recreation Inventory]. Clearly, new residents, and shifts in age groupings of existing residents, have created increased demands for recreation programs.

The impact of growth on conservation and open space lands is harder to determine. As far as the actual use of these lands, since there is no real way to count the number of residents visiting specific parcels, it is difficult to gauge the impact of population growth. But, a review of the survey results and comments received at the public hearings held on the Open Space Plan and for meeting public meetings with the Conservation Commission indicate that a strong interest exists for the development of conservation lands with trail systems, purchasing and preserving more open space and other improvements which encourage use by residents. [See Sections 7, Analysis of Needs, and Section 8, Goals and Objectives]

The long term picture of Middleton relative to an eventual build-out and the impact on the size and number of conservation holdings is unclear. If the Town, the Conservation Commission or the local land trust assume an active role in working with land owners or negotiating with developers to preserve key parcels, then one picture will emerge. If a hands-off approach is taken, and the market place controls what land is developed and when, then a much different picture will emerge.

Three sections of the Zoning By Law, the Conservation Overlay District, Flexible Development and Watershed Protection Overlay District provide scenarios which help to preserve open space, rivers and streams. In all cases, single-family development occurs on lots smaller than what is required in the R-1 Zone, Figure 7 Zoning provided that areas of open space are set aside for use by the residents of the subdivision or for town-wide use. The benefits of these three approaches are that open space is created, fewer and/or shorter roadways are constructed [with less environmental impacts from drainage run-off and less financial burden to the town for long-term maintenance], and the preservation of a bit of Middleton's rural nature, which is an important part of the town's past and future.

SECTION 4--ENVIRONMENTAL INVENTORY & ANALYSIS

A. Geology, Soils and Topography

(1.) The Geology of Middleton

More than three hundred million years ago, the land that is now Middleton was molten rock, three miles deep in a great mountain range. That liquid rock slowly, slowly cooled to become the granites, diorites, and syenites we see on the surface today. In time unimaginable, the mountains imperceptibly eroded away, until in the last few million years the action of the continental ice sheets expanding and retreating during the age of the glaciers, sped up that erosion to create the basis for the landscape we see today.

The last great period of glaciation happened here just 10,000 to 12,000 years ago. Globally, we are still very much in an ice age. Those ice sheets, perhaps a half-mile thick here, moved slowly but with tremendous weight and force on and between outcroppings of granite, mostly Salem diorite which is the bedrock in our area. On bare ledges around Town one can still see the gouges and striations caused by debris embedded in plastic ice at the glacier's base. These scratches run northwest to southeast, as do oval hills such as Will's Hill, Bald Hill, just over the line in Boxford, and Flint Hill, all of which are drumlins of glacial deposits.

The glaciers scooped, tore, plowed, gouged, and ground the underlying substrate producing massive amounts of movable clay, silt, gravel, and boulders that washed out from under the ice or were carried along by it. On retreat, the melting ice left these materials and great buried blocks of ice behind in a seemingly random hodgepodge. Mini-valleys between bedrock heights were filled or dammed. The ice blocks melted leaving isolated ponds. Higher hard ledge scraped bare in the expansion was washed clean or again buried upon retreat. And great hunks of rock, some torn from ledges many miles northwest, were scattered about. These boulders can be seen almost anywhere in a casual walk through our woods.

The terrain left behind was briefly barren, devoid of vegetation and topsoil. Dig a hole almost anywhere in Town today, 8,000 to 10,000 years later, and you'll quickly pass through a thin six to eight inch layer of largely unformed topsoil into the sand and gravel so recently deposited. At two feet or before you'll encounter large stones, the once raw material for our many miles of stone walls. Our field-clearing ancestors didn't have to dig for them, frost heaved up new batches yearly much to their dismay.

As glacial deposits blocked the flow of water; many lower poorly drained areas became bogs and swamps. In them, thick vegetation grew, and organic matter accumulated to become thick peat and muck. Roughly one fourth of the land area of Middleton falls under the category of "wetlands". Wetlands are invaluable groundwater recharge areas, filters of water, wildlife habitat and they are protected by State and Federal laws.

How can one characterize in a word such a mix of soils, exposed bedrock, recent wetlands, streams and a river. It is, of course, impossible, but if time is added to the mix the word "changing" comes to mind.

There are, in a 1905 geology book of Essex County by John Sears, many photographs of County scenes, several taken in the Middleton area. One is from a hill, perhaps the one now capped by a new development called Ferncroft Heights. It shows Topsfield as an apparent sea of gentle swells extending to the north and east. Upon a closer more thoughtful look the swells become low hills almost devoid of trees and marked only by stonewalls, a few buildings here and there, cows, and rare small patches of woods. The scene is pastoral, reminding one of the English countryside. Just a century ago our land was bald, kept so by cattle, horses, sheep, hogs, chickens, and woodcutters. We read that charcoal makers of an earlier time clear-cut even the swamps and steepest slopes!

Today if you go up in an airplane or climb a hill, (Flint Hill in South Middleton is a good choice, because there is a high-tension right-of-way that allows you to see north across the Town), you'll see forests and little else. The trees have returned probably more so than at any time since the period between the last glacier and the arrival of the Native Americans, who are said to have cleared the land by burning. Three hundred and fifty years ago the English brought cattle, sheep, horses, and hogs. They and their masters finished the clearing begun by the Native Americans. Now we are again in a time of forests characterized by oaks on the uplands, red maples in the low.

However, as of this writing humans are assuming the roles formerly played by grazing cattle. Roads, lawns, and large houses are again opening up the land, and not just the surface as the cows and earlier men had done, but deeper into the till. The glacier's work is being re-enacted on a lesser scale by chain saws, dynamite, bulldozers, and trucks.

In the 1940's, 1950's and 1960's good glacial deposits - whole hills of it - were trucked out of Town for the building of Logan Airport and other projects requiring fill. One account reports of "500 truck load a day" leaving the pits south of River Street. There are areas in the southeast quarter of Town where old timers remember hills that are now flat or pitted areas, reduced to floodplain elevations. Despite the lack of topsoil these areas are now covered with robust stands of bushed and saplings of considerable diversity. How quickly recovery progresses here in New England! Perhaps this is not so surprising among plant species, ancestors of which had retreated and returned after several glaciers.

In summary, Middleton's topography has largely been shaped by the glaciers, the last one being the Wisconsin, and more recently by men and their powerful and efficient machines. Parking lots, paved driveways, and roads have resulted in hundreds of acres that are impermeable to runoff. Land, once pastures, is now lawn. Since much of the Town is without public water, people have drilled wells as deep as 1,200 feet into aquifers. Last year alone there were forty-four such deep wells drilled. As of this writing, more manmade projects are on the drawing boards. Good long-range planning becomes more and more important.

(2.0) The Soils of Middleton

Middleton's soils, so recently formed from glacial and alluvial drift, are not surprisingly, quite varied. A thoughtful look at the soil conservation Service's (SCS) maps of the County's soils

give some sense of the complexity of the soils found in this area of ancient bedrock and very young, geologically speaking, topography. Middleton's landscape has been shaped and reshaped in the last half million years by the waxing and waning continental glaciers. The last, the Wisconsin, retreated recently just 10,000 years ago. It left behind till, erratics, iceblocks, drumlins, kames, eskers, and outwash plains, all seemingly strewn at random over a rough base of bedrock. Old watercourses were dammed, new ones were formed. Low areas were elevated with glacial debris, others were scoured clean to expose basal Salem diorite (a darker finer member of the hard granite family, our "ledges"). The finer materials, clays, silts, sands and gravels, often mixed make up our still young soils. Is it then surprising that soils formed from these many sources, some coming from as far away as Concord, New Hampshire are so varied?

As with much of Northern Massachusetts, the Town of Middleton contains a range of soil types and geologic and topographic characteristics. Generally speaking, the five major soil associations in Middleton are Merrimack- Hinckley-Urban land association; Paxton- Montauk-Urban, Canton-Woodbridge-Freetown association, Chatfield-Hollis-Rock outcrop association and Freetown-Fluvaquents association [see Figure 8, Soils Map]. The former has nearly level to steep slopes, with well drained soils formed in glacial outwash and very poorly drained organic soils. The latter contains nearly level to moderately steep, well drained to poorly drained soils on glaciated uplands.

Perhaps those soils encountered on a cross-country walk from Middleton Square, one and one-half miles east to the Danvers line, will illustrate. If on our walk, we stop every few yards to dig a test hole, the SCS map tells us that we will find 19 patches of soils ranging from one-half to 20 acres. Each patch falls into one of nine different soil types, each with its own name and distinctive characteristics. On this imaginary half-hour walk if one discounts the digging and examination times, we will cross two streams, a river, wet areas, and a couple of ledges, in addition to the soils walked on. According to the soil map, many variations of the nine named soil types would be found. Each has its own vertical profile and "percolation" times.

An even longer "soil walk" from the North Andover line in the northwest to Danvers in the southeast would give a broader view. In the rugged north, where high outcroppings of bedrock flanked by poorly drained areas abound, the dominant soils are in two soil associations, the Canton-Woodbridge-Freetown association (green on the soil map) and the Chatfield-Hollis-Rock outcrop association (red on the soil map). The SCS describes them as follows:

Canton-Woodbridge-Freetown association: Deep nearly level to steep. Well drained, loamy sand soils formed in glacial till; deep nearly level, very poorly drained, mucky soils formed from organic deposits.

Chatfield-Hollis-Rock outcrop association: Moderately deep or shallow, gently sloping to steep, well drained or somewhat excessively drained loamy soils formed in glacial till; areas of exposed bedrock.

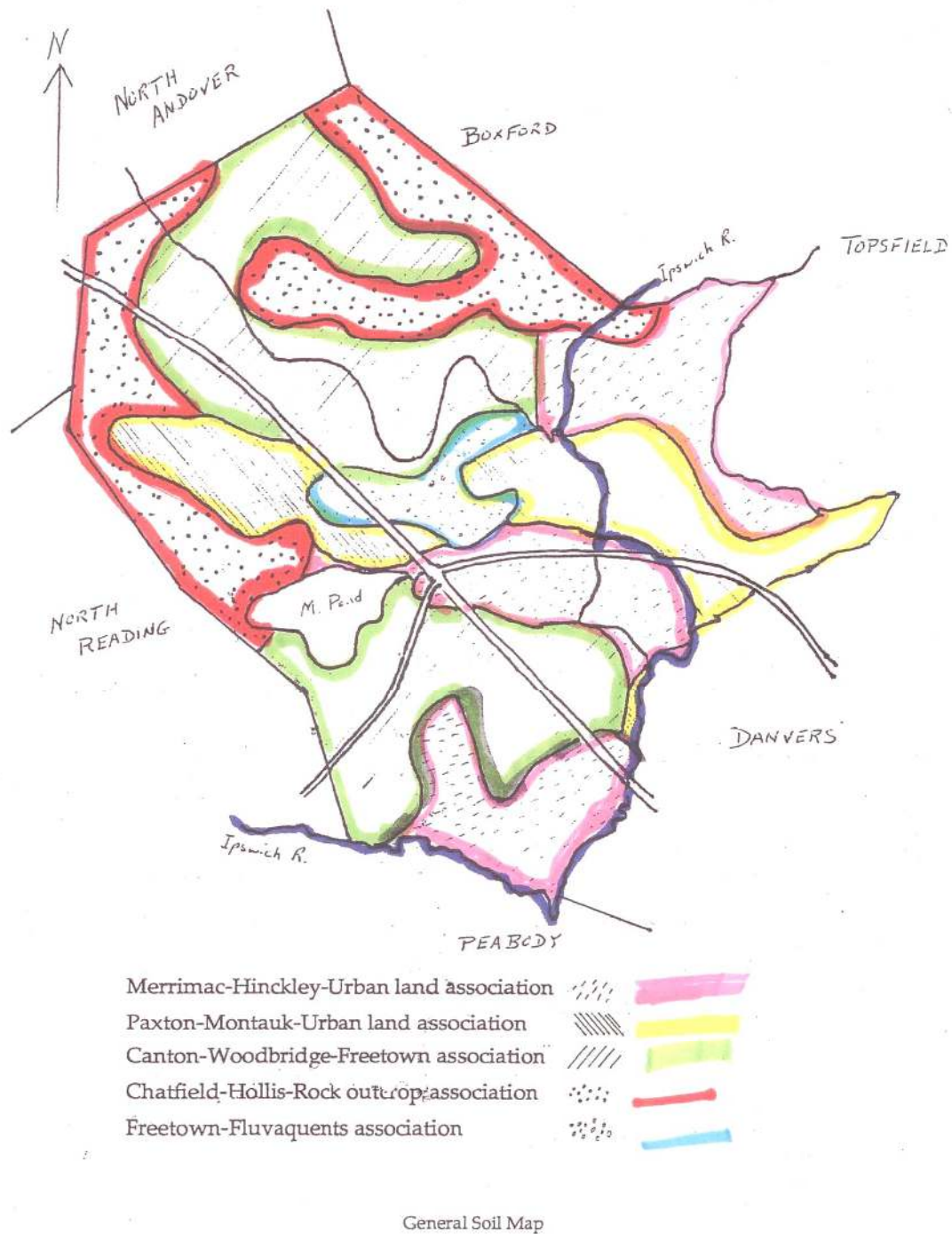


Figure 8. Soil Map

Half or more of the Town is characterized by these two associations, including almost three-fourths of the area in the north and west quadrants. The descriptions, "nearly level, well

drained", might lead one to believe that much of this land would be suitable for building. However, such suitable soils are often found in areas surrounded by ledge or wetland, "areas of exposed bedrock", "very poorly drained". Add to the numerous ledges and low areas of muck where septic systems are not possible or not allowed, the factors of access, steepness, potential restrictions due to the presence of rare species, and the Board of Health rule that new septic systems must be no closer than 100 feet from wetlands, and you can understand that not much land is readily developable.

The gentler topography of the northeast, east and south portions of Town are characterized by extensive Merrimack-Hinckley-Urban Land (pink on map) and the Paxton-Montauk-Urban Land associations (yellow on map).

The Merrimack-Hinckley-Urban Land association: Deep nearly level to steep. Somewhat excessively drained, loamy sand soils formed in outwash deposits; areas where soils have been altered or obscured by urban works or structures.

The Paxton-Montauk-Urban Land association: Deep nearly level to steep. Well drained, loamy sand soils formed in glacial till; areas where soils have been altered or obscured by urban works or structures.

These are the associations on which most of the Town's residents have lived and on which many of them used to farm. Several hundred acres are still farmed or used as pasture. Much of the Ipswich River floodplain is characterized by soils in these associations

Good land use planning requires an examination of the specific soils found on a specific site. The Soil Conservation Service Soil Survey of Essex County, Southern Part provides a listing of the characteristics and limitations of a specific soil. Incorporating these factors into a proposed project or development will serve to eliminate potential problems, i.e. flooded basements, failed septic systems or poorly draining recreational fields.

(3.0) Topography

Middleton's average topographical range is between 140 and 230 feet above mean sea level. The highest elevation, 250 feet, is in the northeast corner of town; the lowest, 100 + feet, is in the southeast corner of town.

Looking back at soil maps from the early and mid-1970's and comparing these to maps showing current and planned development, it seems pretty clear that much of Middleton's soil history has been altered and become urbanized. With no significant exceptions, the only areas of prime and statewide important farmland which remain are lands under Chapter 61 or land which has been purchased and placed under some type of conservation protection. Not much marginal land has been allowed to be developed, and some areas remain open due to the fact that public sewer is not presently available. As is documented elsewhere in this plan, the desirability of Middleton for dwelling is forcing the development of more land that, in other economic times, might have remained open.

B. Landscape Characteristics

Like most New England towns, Middleton would be hard to characterize as one landscape type. A trip up Route 114 which bisects the Town will give the visitor a hint of the varied landscape here.

Starting at the Danvers line, the visitor will see the Ipswich River, which forms the boundary between Middleton and Danvers, slowly wandering through a great marsh which stretches for a mile in both directions. The river can best be appreciated from a canoe or after a brief walk on Lonergan Road past a cluster of businesses which hide the marsh from the main road.

Middleton is in the middle of the Ipswich River Watershed. Nine miles of that river meander along its southern and eastern borders. About 13 miles of named streams wend their way through Town to the river. These streams and their tributaries tie roughly 2,400 acres of wetlands to the river.

The road then begins gently to rise and fields and pastures are evident, in spite of the heavy commercial development of this area. A solar farm has recently been approved behind the Marketbasket Plaza, to the east of South Main Street. Occasionally from the road, one catches a glimpse of the rough carved glacial terrain. This gives just a hint of the jumble of exposed ledge alternating with bogs, vernal pools, intermittent streams, and swamps that are much more in evidence along the less traveled roads in Town. These roads were built in roller coaster dips and curves in order to make their way over and around the ubiquitous ledge.



On the right side of South Main Street, traveling north, the traveler will see acres of pasture. Similar fields can be found along some of the smaller roads. Such fields are pastured, hayed, and a very few still cultivated. Those on East and Peabody Streets are well-drained bottomland in floodplains.

A side trip east on Maple and then south on Gregory leads to a wonderful panoramic view of high drumlins and still-cultivated fields. These are the State lands stretching across eastern Middleton and western Danvers, from the County Jail on Bare Hill to the abandoned State Hospital.

Proceeding towards Middleton center on Route 114, the traveler will catch sight of a few wooded hills whose beauty is much more evident when one leaves the State highway. Flint Hill and Will's Hill are forested high drumlins which stand more or less alone. From their summits, one looks across what seems a vast oak and pine forest. In reality, these trees obscure many new developments.

Like most of Massachusetts, Middleton's land was once almost all pasture despite its thin rocky or wet soils. Miles of stone walls attest to this. A few thousand years ago the glaciers shaped the land and left a patchwork of soils, wetlands and uplands. The true character of Middleton's landscape is best seen from the many old cattle runs and logging roads which wind through its second growth forests. There, raw cliffs of granite, boulders dumped by the retreating ice, numerous pools and small bogs, are found. It is not uncommon to see partridges, deer and turkeys, as well as many less obvious creatures.

C. Water Resources

Today, rather than rivers of ice, Middleton has the Ipswich River and its tributaries. Middleton is entirely within the river's drainage basin and is bounded to the south and east by it, as can be seen in Figure 9. About 2,400 acres of wetlands (swamps, bogs, ponds, lakes, and wet meadows) are directly or indirectly connected to these streams and river (Figure 10). Since August, 1996, when the Massachusetts Rivers Protection Act was enacted, continuously running streams are defined as "rivers" now protected, in part, by 200 foot buffers on either side.



Figure 9. Ipswich River Watershed

Impoundments along Ipswich River tributaries has created ponds throughout Middleton. The large area of open water in town is Middleton Pond, which has been created as a water supply reservoir. Smaller ponds include Creighton Pond and Traggetts Pond, off of Essex Street; Prichard's Pond off of Liberty Street; and Mill Pond between Liberty and Mill Streets. Several other "ponds" that are a combination of open water and emergent/shrub vegetation include Emerson Bog, to the west of North Main Street; Pond Meadow (Pout) Pond, in the northern part of Middleton; and Aunt Bett's Pond, between Forest and Lake Streets. The former site of Curtis Pond, to the north of Peabody Street, was restored to river in 2012, with the removal of the Curtis Pond Dam.

Dozens of beaver dams along all of the perennial streams and the Ipswich River have created numerous small beaver ponds throughout the town within the past decade. These ponds and dams have altered the habitat associated in the vicinity of the dams dramatically. Areas that were once terrestrial uplands or wetlands are now open water. Shaded understories now receive more sunlight due to the increase in open water and clearings. Residents familiar with seasonal flow in the Ipswich River have observed that the beaver ponds have moderated the extreme low flow conditions in the river. At a recent conference held by the Parker-Ipswich-Essex River Restoration Partnership, a presentation was made about the possible positive links between beaver impoundments and downstream nutrient reduction in the Ipswich River.

Near the intersection of Mill Street and Peabody Street is the site of the former Curtis Pond Dam. Located in Middleton, the dam was owned by Danvers. In 2012, a joint consent of both towns allowed this dam to be removed to allow Boston Brook to flow freely to the Ipswich River which discharges into the Gulf of Maine. Removal of the dam has restored riparian habitat along this section of Boston Brook and will benefit state-listed species occurring in Middleton.

Adjacent to all of the ponds, lakes, streams, rivers and brooks in town are bordering vegetated wetlands. Work activities within 100 feet of wetlands and within 200 feet of perennial rivers and streams are under the jurisdiction of the Conservation Commission and the Massachusetts Department of Environmental Protection (DEP). The value of wetland areas is well documented: they are important for flood control; storm damage prevention; the protection of public and private water supplies; the protection of groundwater supply; the prevention of pollution; the protection of fisheries; the protection of land containing shellfish; and the protection of wildlife habitat. The large amount of wetlands bordering the rivers and ponds certainly contributes to the maintenance of good water quality.

Fishing is a popular activity on most of the ponds and rivers in Middleton. Due to the fact that, as noted above, most of the larger ponds were created by dams, there has been a buildup over the years of sediment and organic matter. The Stream Team has developed beautiful canoe and kayak landing areas. Most have parking and picnic areas. Beautiful stone steps allow easy and gentle entry into the water, with a kayak or canoe. Appendix A contains a listing and description of the Stream Team canoe landings.

As is common with many water bodies, there exist around the major ponds, streams and rivers in Middleton, flood hazard zones designated by the Federal Emergency Management Agency. In the 100-year flood hazard zones, there are some restrictions and limitations as to specific land and building uses. A further discussion of floodplain issues can be found in Section 4 (G)(4).

The Town of Middleton has worked over the last few years to develop a better picture of the important aquifer recharge land. Some of the incentive for this work has come through the town's participation in the Ipswich River Watershed Association (see Section 3A).

Representatives meet regularly to discuss common interests and create forums [for example, workshops on land use or a conference on underground storage tanks] to educate people on why and how this important and critical resource needs to be preserved and protected.

D. Vegetation

Native Americans, we have reason to believe, were here in great numbers. There were several tribes in the area we now call the North Shore. There is evidence that they cleared land for agriculture and periodically burned large areas to provide browsing for deer and other game, to enhance berry production, and to kill smaller trees so firewood could be more easily gathered. There are rare accounts by the first English settlers of large clearings and open forests that one could ride a horse through at a gallop.

It did not take long for the strange newcomers with their axes, fires, and livestock to clear the remaining forests. Shipbuilders sought the large trees, charcoal burners took anything left. By the end of the 17th century there was probably much more cleared land than forested. By the end of the Revolution the trees were largely gone. There are 19th Century accounts of peat mining here for fuel and of the importation of firewood from Maine. Even the steep slopes of the Berkshires to the west were 70% to 80% pasture by the time of the Civil War. Thereafter, with the explosion in the textile and shoe industries in the region, there was a gradual decline in grazing. By World War II forests once again covered much of the land, with the exception of the good bottomland along East and Peabody Streets. These bottomlands, bounded by the Essex Agricultural School to the east, Maple Street to the north, and South Main Street to the west, with their gentle uplands, are still largely cultivated or pastured today. Almost the entire northern and western parts of Town, except for the roads and land immediately around houses, are again forested. The great square formed by South Main, River and Boston Streets is again largely shrub and woodland. Development in this area in the past two decades has been intense, and the forest within this square is now fragmented.

All in all, plant life abounds and is found on every un-asphalted unbuilt surface of our thin glacial soils. Within a year or two it springs forth, even from exposed gravel where the soil has been stripped or disturbed. On higher ground, oaks (red, black, and white) predominate. Scattered among them are white pines, which in some places can be found in pure stands. Sprinkled throughout the oaks and pines are white ash, hickory, cherry, and other hardwoods species. Around the few remaining pastures and abandoned areas are red cedars, gray birch, black locust, barberry bushes, multiflora rose, and a great mix of other sapling trees and shrubs. On the shadier cooler north facing slopes, especially at higher elevations, are beeches, yellow, black and white birches, and thick stands of hemlocks.

At lower elevations are extensive wetlands of many kinds, ones typical of glacier sculpted land. Of the trees, red maple dominates, but there are also elm, black ash, swamp white oak, and now and then patches of Atlantic white cedar. The latter grow in thick dark stands in perennially flooded bogs. In recent years, beaver flooding has killed Atlantic white cedars surrounding Aunt

Bett's Pond and within Emerson Bog. One must wait for a sustained drought, or thick ice to explore them. Other wetlands, such as Emerson Bog (a very large impoundment) are covered with water from which grow vast shrub thickets of buttonbush and smaller patches of swamp and red osier dogwoods. Along the Ipswich River and its main tributaries are swamps and marshes characterized by swamp dogwood, buttonbush, river birch, willows, silver maple and numerous other wetland species. Some wetlands, such as those along Loneragan Road and Birch Street, comprise several hundred acres, which flood yearly and are always wet. Then there are large and small shaded woodland swamps where red maple and highbush blueberry dominate, the latter often forming impenetrable thickets.

It is also worthwhile to note, a 5.4 mile, 200 foot wide, right-of-way for high voltage electric lines. With no regard for topography, it cuts through the Town from Peabody in the south to North Andover. Under the great wires are shrubs, young trees that will never get very old, wild flowers, several berries, and almost all the species of plants found in Town. Within this band, kept short by periodic applications of herbicide to individual hardwoods and by the cutting of young evergreens, is a great mix of plant and animal life. Along this repressed way of undulating highs and lows can be found thickets of sweet fern, huckleberries, raspberries, lowbush blueberries, hazelnut, highbush blueberry, buttonbush, cattails, sphagnum moss, and cranberries. The high tension line forms a long corridor, broken by only four roads, for wildlife, such as deer, hunting hawks, numerous foraging song birds and dirt bike riders.

Throughout the last two decades, housing developments in upland areas have gradually isolated forests. Most new developments are characterized by large homes on one acre lots with good sized lawns where neither grazing nor cultivation takes place. Ironically, the grass is coming back, bounded not by stonewalls, but rather asphalt. How will these mini-fields within drives and roads affect wildlife habitat? They have certainly interrupted natural woodland wildlife corridors and yet they have let light into understory and groundcover plants. There is no legal hunting within 500 feet of these dwellings. If herbicides and pesticides were not allowed or severely restricted and the irrigation of lawns was banned, then these acres of thick grass surrounded by woods might bring people, other animals, and plants together in novel ways. And isn't this one of the purposes of an Open Space Plan?

The Appendices list some of the many plants and animals found in Middleton's 14.5 square miles. The comments with the list give some sense of their habitats and relative abundance. An effort was made to describe the Town's plants and the larger animals as they were and as they are, now. Most of the organisms listed here have been seen in the past year. Also, the organisms not mentioned - ones of which we are most unaware - may be the most important in the long run. They are the microorganisms of our living soils and waters which decompose pollutants and natural organic debris, filter water, release nutrients, and generally recycle. In the thicker soils of the 2,400 acres of wetlands, good bacteria, fungi and the myriad small creatures that feed on them abound.

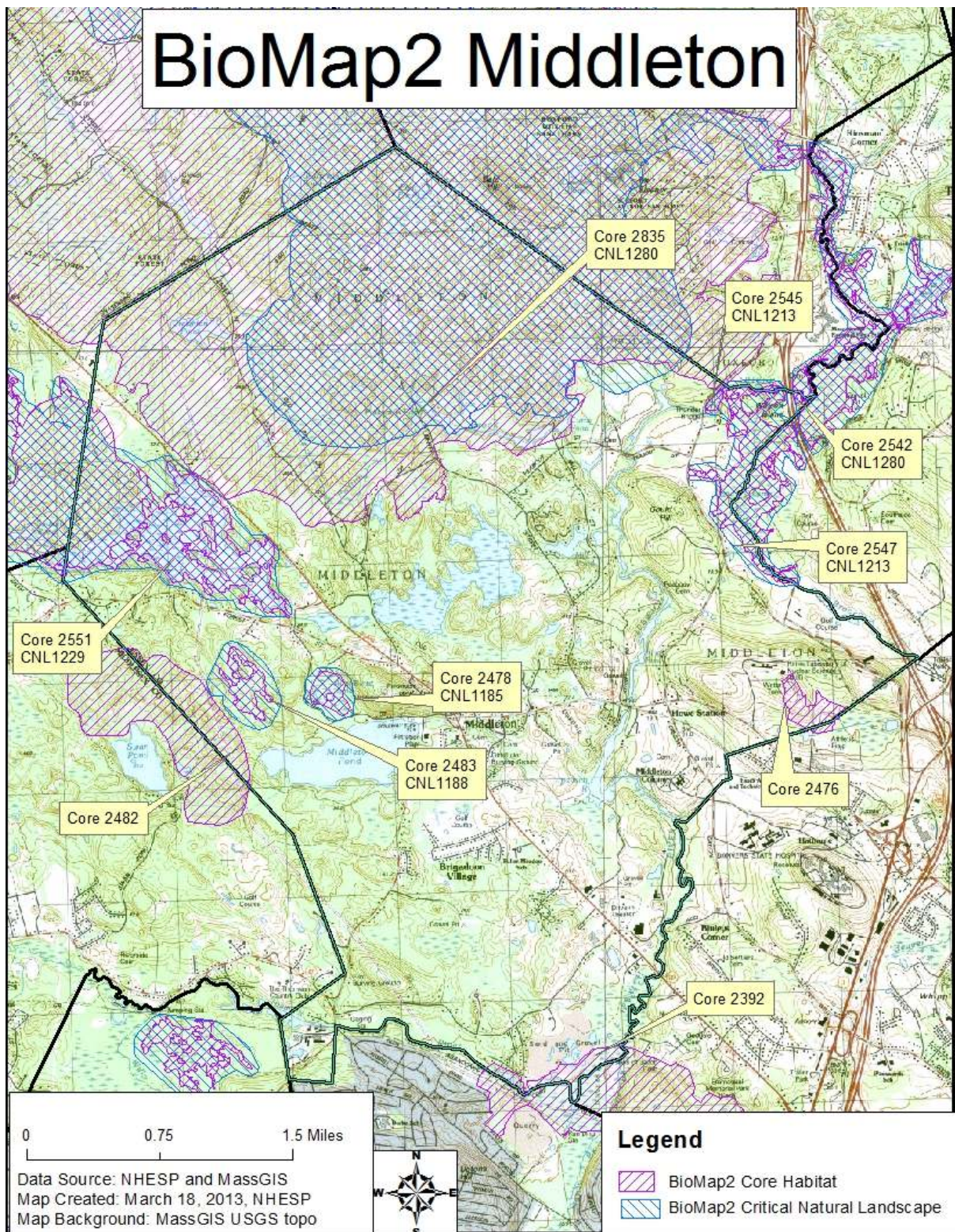


Figure 11. BioMap 2, Town of Middleton

(1.0) Public Shade Trees

The Town of Middleton does not have a designated tree warden. All trimming, removal and planting of trees on public property is performed by the Department of Public Works. There are no local bylaws related to shade trees or tree protection.

One of the most notable public trees in Middleton is known as the Curtis Oak (White oak), located on the southern side of Peabody Street. It is guessed that this 17-ft.circumference giant is over 400 year old. It survived generations of shipbuilders down at the coast who lusted after white oaks. The farmers owning Curtis Oak evidently kept it from them. Over the years the Town has worked with the homeowner to assure that changes to the property do not adversely affect the tree.

There is a fine row of old Shagbark hickories along the south side of King Street. When the Town Common is further developed, these will be noticeable and important. They flank Middleton Brook. Nearby there is a stand of mature sugar maples on the north slope of the Town Common land descending to Middleton Brook, across the brook from the hickories. When thinned out they will be handsome park trees and a good backdrop for the soccer field.

A significant stand of Yellow birches is present within Pike Messenger Park, owned by the Town of Middleton. Measures may be taken in the coming years to protect this grove from beaver damage. In the Howe-Manning School playground there is small grove of large white pines well worth nurturing. North Shore Agricultural and Technical High School on Maple Street at the Danvers town line has a large tree in the field adjacent to the school. During the recent permitting for the expansion of the school, the plans were designed to avoid this tree and it is protection is required in the Order of Conditions from the Middleton Conservation Commission.

Oakdale Cemetery has many venerable mature trees. Its back slope leading to the Ipswich River is covered with handsome hardwoods. Middleton's oldest graveyard, to the east-southeast of the Town Hall contains an impressive stand of White pines worthy of preservation.

Native species, such as, American chestnut, sugar maples, American elms, and larch should be encouraged for plantings along public roadways. At the 2012 Earth Day festival an elm with resistance to Dutch elm disease was planted near the bandstand. There is a large resistant native elm just 200 yards east of the Town Square, on the right side of Maple Street.

There are many mature catalpas planted throughout town that put on quite a show in June. 70 or so years ago on an Arbor Day the kids in Middleton school were given catalpa seedlings to take home. While not native to this region, Catalpas are not aggressively invasive and will thrive if the climate becomes warmer.

If future plans for the Town Common incorporate native shrubs, rather than non-native ornamentals, the paths may be interesting nature trails for nearby school children.

Rare Species

Of the uncommon plants known from Middleton, the rarest has not been seen in town for many years. Purple Milkweed, Endangered (E), is an herbaceous perennial plant of a variety of habitats including margins of Oak-Pine woodlands and open areas ranging from dry to quite moist. This type of habitat has declined in recent decades as succession to forest has occurred throughout the state.

The rare plants currently known in town were located in 2012 in northern Middleton in an area of mixed uplands and wetlands within BioMap2 Core 2835. Several natural patches of peatlands (fens) support Long's Wool-grass, Threatened (T), (also called Long's Bulrush), a globally rare, robust sedge of open peaty wetlands. In Massachusetts, Long's Bulrush is known to occur in acidic fen and wet meadow communities associated with rivers and depressions. Bog Sedge, Watch List (WL), is a perennial grass-like sedge that grows in dense clumps in acidic peatlands (bogs and fens).

Nearby uplands support two uncommon plant species. American Bittersweet, Species of Special Concern (SC), a native woody vine of the staff-tree family, bears seeds with orange fleshy seed coats. It is likely being out competed and threatened by the invasive Oriental bittersweet. Butternut (WL) is a deciduous tree native to eastern North America that grows on moist, fertile soils often along streams. It is susceptible to butternut canker that is devastating butternut trees in the wild.

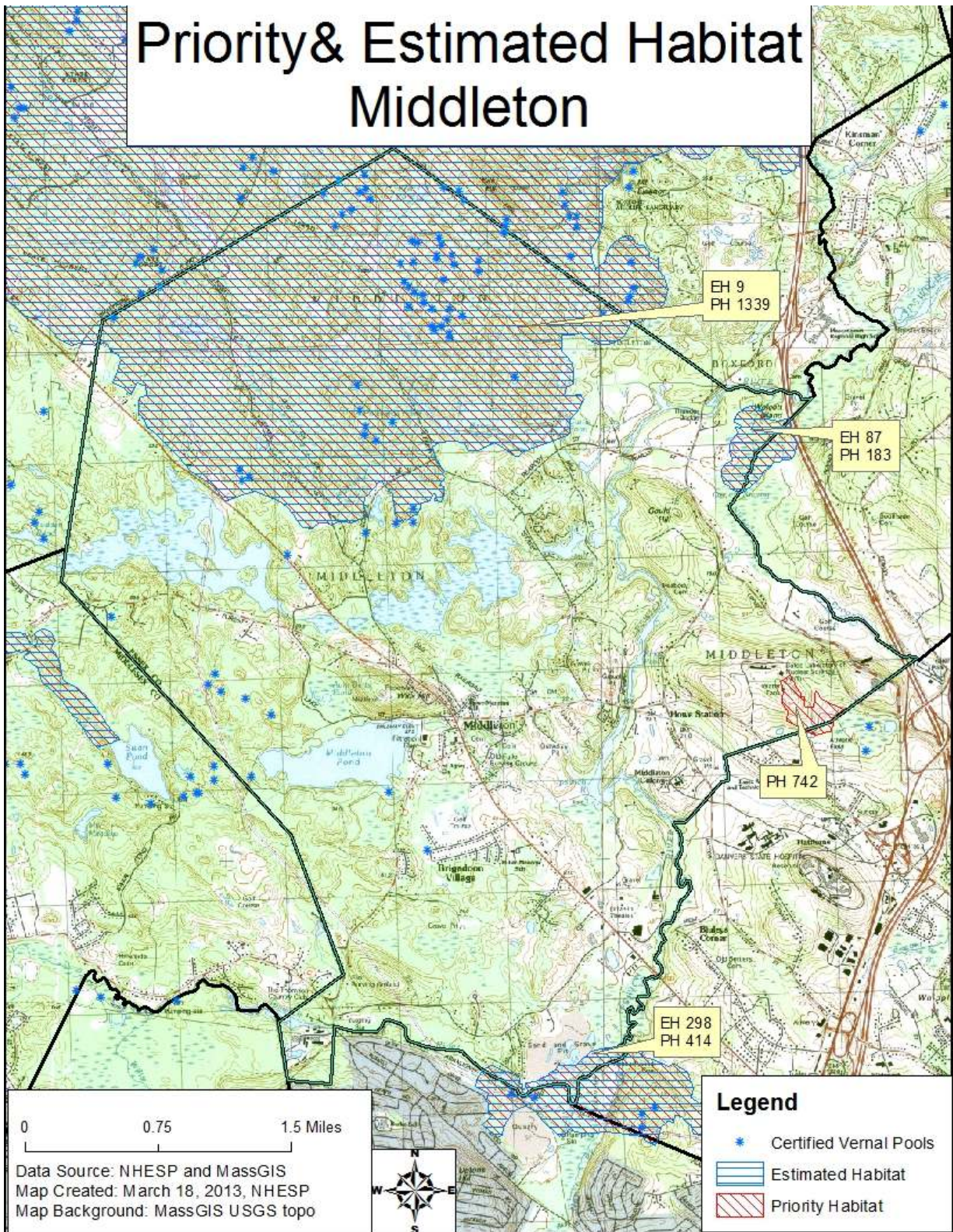


Figure 12. Estimated Habitat/ Priority Habitat, Town of Middleton

E. Unique Natural Resources (please note: this section and following sections designated by * were prepared by, and used with permission from Patricia Swain of the Massachusetts Natural Heritage and Endangered Species Program)

Natural Communities are recurring assemblages of plants and animals in similar chemical, moisture, geological, and topographic environments. In Massachusetts, the types are defined in the *Classification of Natural Communities of Massachusetts*, available on the NHESP website. Occurrences of uncommon types – called Priority Natural Communities - are considered to be priority for conservation. All types of natural communities provide important habitat for common and uncommon species and support the biodiversity of the town. NHESP keeps track of occurrences of Priority Types of Natural Communities, a complete list of which is on the NHESP website. Three types of Priority Natural Communities are known in Middleton.

Acidic Graminoid Fens (Vulnerable) are sedge and sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water may be present throughout much of the growing season. Although only one in Middleton has been surveyed for the NHESP database, BioMap2 Core 2835 in the northern part of town has several other wetlands that on aerial photos look quite similar. In this topography it is natural for the peatlands to occur patchily with somewhat different vegetation and even different peat conditions.

At the easternmost edge of Middleton along the Ipswich River, in the large BioMap2 Core 2835, is an occurrence of a Small-river Floodplain Forest (Imperiled) that, as mapped, barely makes it into Middleton. The area might well be surveyed to see if the community extends further. Small-River Floodplain Forests (Imperiled) are silver maple/green ash forests occurring on alluvial soils of small rivers and streams. They occur on small tributaries of the Connecticut and Nashua Rivers and along some small rivers of eastern Massachusetts. Despite the presence of exotic invasive species, this moderate sized occurrence is in good condition.

F. Fisheries and Wildlife

(1) Inventory

Please see Appendix III for a listing and brief comment on the species found in Middleton (and in most of the Ipswich River Basin) of the following vertebrate classes:

Mammals/Fish/Amphibians/Reptile/Birds/Rare, Threatened, and Endangered Species

The levels of development in Town have helped to create some excellent habitat areas for species such as deer. As areas are cleared for lawns and other landscaped areas, or as the playfields around the soccer and ball fields are created, there is an "edge" factor which attracts deer. Shrubs and low trees, along with some grasses, grow well in this edge area and these types of plants are good food for deer and great cover for many bird and mammal species. A similar type of feeding and habitat zone exists around the golf courses, where many deer are known to live within the confines of the area. Several towns within the Metropolitan Boston Area are grappling with the negative effects of deer overpopulation. Degradation of mature forests, an increase in vehicular deer accidents and the destruction of landscaping plants can occur in areas

overpopulated by deer. The deer population in Middleton has not yet exceeded the carrying capacity of the available habitat. Hunting is still legal in the less developed areas of town, which may keep the deer population in check. The quality of Open Space, particularly the plant diversity of an area, can be negatively impacted by deer. Monitoring for deer impacts on protected parcels is a proactive strategy that should be incorporated into the management plans for the town's Open Space.

Another species that has become more numerous during the past decade is the beaver. Seldom seen from Colonial times through the end of the 1990's, beavers are now present in every major stream in river in Middleton. By 2005 or so, former Middleton Conservation Agent, Pike Messenger I had identified over 30 beaver dams in town. By 2009 there were up to 40 or more. Currently there may be 40 to 50 dams, impounding approximately 300-400 acres. In Middleton alone, there are 7-9 dams across the Ipswich River in the 9 miles from North Reading to Topsfield; at least 8 crossing Boston Brook; Emerson Brook has 4 or 5; Nichols Brook about 4; and Pond Meadow Pond Brook has 3. This exponential increase in beaver activity during the past decade has significantly changed the wildlife habitat throughout Middleton.

(2) Vernal Pools *

Vernal pools are small, shallow ponds that do not support fish and that have annual or semiannual periods of dryness. Vernal pools are extremely important to many wildlife species. Some species of salamanders and frogs breed and lay their eggs exclusively in vernal pools while other species spend their entire life cycles in vernal pools. Vernal Pools are protected if they are within another resource area such as riverfront or wetlands, protected by the Massachusetts Wetlands Protection Act.

Middleton has at least 77 Certified Vernal Pools (CVPs) and 110 Potential Vernal Pools (PVPs) (identified from aerial photographs, needing verification on the ground) [see Figure 13]. In addition, areas of swamps will provide habitat for vernal pool species. Middleton's vernal pools are shown on the included map. Locations of PVPs are available as a datalayer from MassGIS at <http://www.state.ma.us/mgis/pvp.htm>. Clusters of vernal pools provide particularly good habitat for species that depend on vernal pools for habitat. The clusters mean that there are alternate habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species. In the very large BioMap2 Core 2835, Vernal Pool Core, a large cluster area extends into Boxford and North Andover, with a smaller one further west in the same Core going into North Andover. Core 2551 shares a vernal pool cluster with North Reading. Other clusters not selected as BioMap2 vernal pool cluster cores in southern Middleton just north of Core 2392. People in Middleton have done a good job of certifying vernal pools. Continuing to visit and evaluating more of the PVPs for certification would provide additional protection to these wetlands and the species that use them.

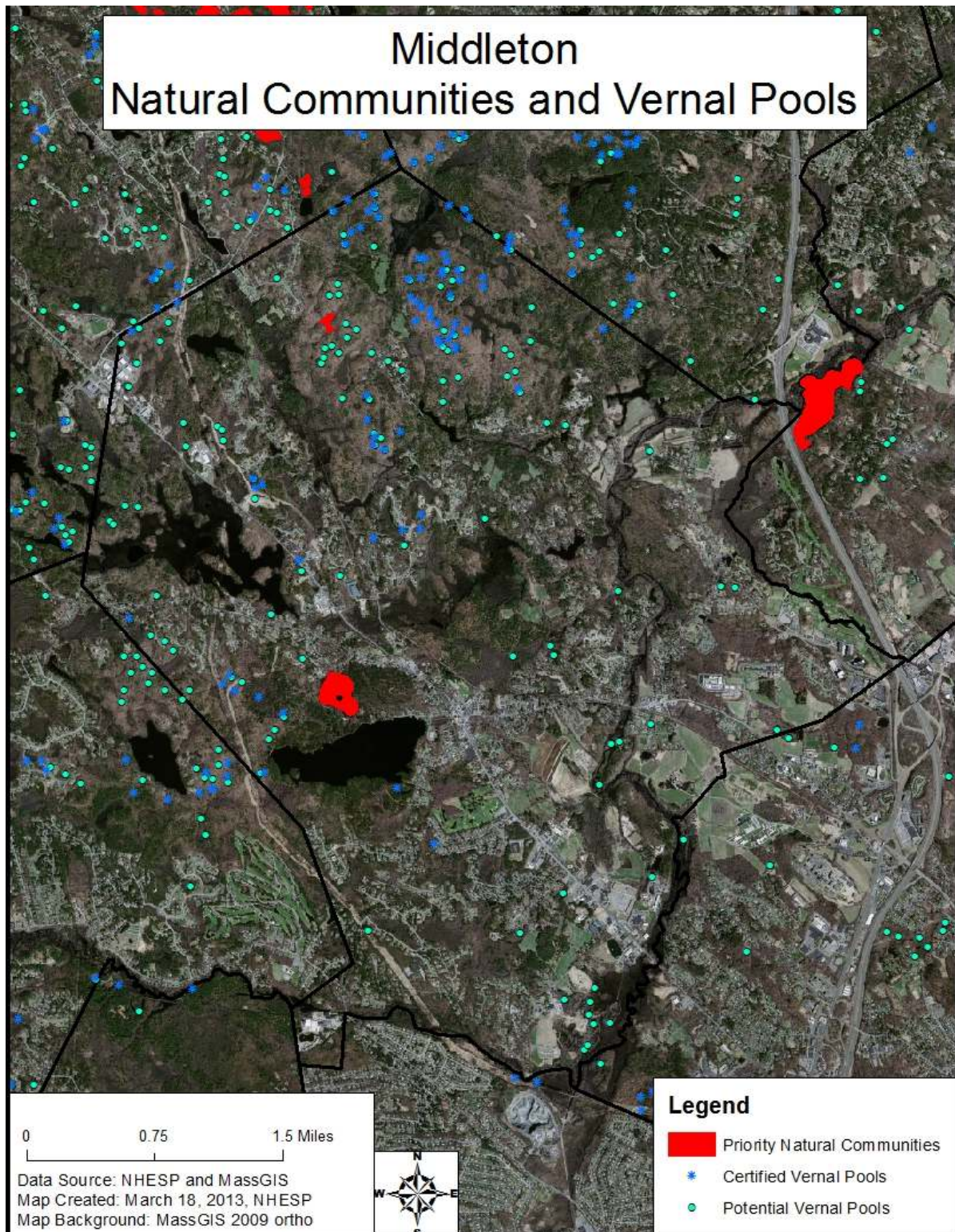


Figure 13. Middleton Natural Communities and Vernal Pools

(3) Wildlife Corridors

With the exception of the National Grid electricity transmission easement running north-south within the western portion of Middleton, the majority of wildlife corridors through town are associated with perennial streams and/or larger mosaics of protected conservation land. The Ipswich River facilitates wildlife movement along the southern and eastern borders of the town. Scattered parcels of conservation land are located along the river, in addition to 19 parcels held by the Massachusetts Division of Capital Asset Management (DCAM). These lot were formerly acquired by Essex County for conservation purposes. A warrant article approved at the May 2013 Middleton Town Meeting seeks to propose legislation to transfer the DCAM lots to the Town of Middleton or other entity that will enable them to be preserved as conservation land with Conservation Restrictions. Many developed lots along the Ipswich River have up to 200-foot wide strips of undisturbed vegetation adjacent to the river. The 1996 enactment of the Rivers Protection Act has facilitated the protection of the 200-foot Riverfront Area along the Ipswich River and other perennial streams.

(4) Rare Species

Many rare animal species currently known from Middleton are associated with wetlands, although most of these species use upland habitat as well. Adult and juvenile Blue-spotted Salamanders, Species of Special Concern (SC), inhabit upland forest during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest. Blue-spotted Salamanders are known from multiple locations in BioMap2 Core 2835 in the northern part of town where there are many wetlands and vernal pools surrounded by forest (and much credit should go to people in Middleton who have certified many of the vernal pools).

Four-toed Salamanders (delisted, that is removed from the state list because they have been shown to be more common than previously thought) nest in patches of sphagnum moss that overhang streams. The young drop into the streams where they live until they become adult, at which point they move to nearby forests to live. Protecting good populations of Four-toed Salamanders will help keep them from needing the additional protections of the endangered species act. The occurrence in Middleton is in the same general area of many wetlands, in BioMap2 Core 2835.

Blanding's Turtles, Threatened (T), inhabit a mix of seasonal pools, marshes, shrub swamps, forest, and open uplands. After overwintering in the deep muds of wetlands, Blanding's Turtles move overland to vernal pools and shrub swamps to feed and mate. Loss of only a few adults annually can cause populations to decline as they do not reproduce until late in life (14-20 yrs), and have low replacement rates due to low nest and juvenile survivorship. Roads are the primary cause of adult mortality. The Blanding's Turtles in the northern part of Middleton are part of an important regional population, that in town are associated with a mix of wetlands and uplands on and near protected open space.

There is an impressive update from 2012 of a Wood Turtle (SC) record in Middleton, previously reported in 1858. Wood Turtles are not abundant in the Middleton area. Wood Turtle habitat is streams and rivers preferably with long corridors of undeveloped, connected uplands extending on both sides of the waterways. Protecting all types of wetlands and their surrounding forests and other uplands enhances the habitats of these turtles and other species, as well as protecting water quality. All of the turtle species nest in sandy upland areas and are susceptible to becoming road kill when they move among parts of their habitats.

The two state-listed birds known from Middleton, Vesper Sparrows and Least Bitterns, have quite different habitats. Vesper Sparrows (T) are grassland birds whose habitats often include taller woody vegetation interspersed within the grassland. The habitats are typically dry, well-drained sites with a mixture of short grass, bare ground, and shrubs, trees, or other high structures from which males can sing, including telephone lines and poles. As with other grassland birds, its populations have declined with the decline of agriculture and the reforestation of the state. Least Bitterns, Endangered (E), are heron-like birds that typically nest in cattail marshes interspersed with open water and are very sensitive to disturbance. The occurrence in Middleton in BioMap2 Core 2547 is with Aquatic and Wetland Core components along Nichols Brook near the Ipswich River.

Middleton has two historic records of state-listed invertebrate species and none that are current. Eastern Pondmussels (SC), large freshwater mussels, are most abundant in southeastern Massachusetts. They inhabit streams, rivers, and small to large lakes and ponds; they show no preference for substrate, depth, or flow conditions. As sedentary filter feeders they are vulnerable to the alterations of water bodies. Kennedy's Emeralds (E) are dragonflies that inhabit bogs, fens, and swamps, often with flowing water. Surrounding upland forests provide protection while adults reach sexual maturity. Since the nymphs live in stream or lake water, as with the freshwater mussels, maintaining clean, free flowing water is important for providing habitat the species.

F. Scenic Resources and Unique Environments

1. Scenic Landscapes

(a) The Ipswich River

While Middleton has no volcanic peaks, waterfalls or other dramatic views that would draw tourists, it does have a lovely river meandering through and along its borders. Much of this eight-mile stretch of river passes through marsh, swamp, and woods, where human activities seem remote. On a three-mile canoe trip from Boston Street to South Main Street one can experience more than a mile of uninterrupted shade from high maples and swamp oaks. Houses are not seen, and when the leaves are on and the birds are singing, the hum of vehicles beyond the wide river corridor is not noticed. This woodland stretch of river widens out into a vast swamp of shrubs and herbaceous emergent plants. Here the narrow channel wanders in great loops through a low floodplain, a quarter mile or more wide. On such trips mink, wood ducks, beavers, painted turtles, hawks, and many other animals may be seen.

From South Main Street to Maple Street shrub marsh of a similar nature predominates, only the background vistas are very different. Gently rolling up from the floodplain are Richardsons' pastures, still open as much of the Town was less than a century ago. Just before Maple Street the lovely pastoral land falls behind as the river, its floodplain still fairly wide, enters higher land. There are stretches from Maple Street to Thunder Bridge (at East Street) where the paddler looks to the right and left up the sides of heavily wooded hills. The roads flanking the river are out of sight and hearing range.

With the generous help of the Stream Team, an Eagle Scout, along with many volunteers installed canoe / kayak information / conservation kiosks at six locations along the Ipswich River in Middleton, Topsfield and Ipswich. In addition, the Stream Team picked 5 areas in Middleton to clean up and turn into canoe /kayak put in and out areas with beautiful large stone steps into the water, picnic tables and nice perennial flowers. Those areas are, going down river from the center of Town: Farnsworth Landing, South Main Street; Log Bridge Landing, Logbridge Road; Mortalo Landing, Maple Street; Peabody Street Landing, Peabody Street; Thunder Bridge Landing and Swimming Hole, East Street. Between Mortalo Landing and Peabody Street Landing is Rachael's Rest. This pull-out, with river access only, has been established as a rest and picnic area.

(b) Named Streams

Thirteen or so miles of the Ipswich's major tributaries (also protected as "rivers" by the River Protection Act) also offer many fine views for those willing to brave the thickets along the rough terrain of their banks.

Punchard's Brook is largely wooded and shaded. Its water is relatively cool until it emerges into the marsh just east of River Street and it becomes part of the larger river. Its basin includes much of the area encompassed by South Main and Boston Streets.

Middleton Brook flows from Middleton Pond and passes through the Town's center. A Town Common is being developed within the vicinity of Middleton Brook between Main and King Streets. From King Street the brook passes into the bottom land of Richardsons' pastures. It, like Punchards, terminates in the floodplain of the Ipswich.

Emerson Brook flows from a large shallow impoundment of button bush and drowned white cedar swamp called Emerson Bog. The Bog collects water from North Reading, North Andover and Middleton. It is a vast haven for many fish and the herons and osprey that prey on them. You can ice skate for several miles among the bushes of this shrub swamp without re-crossing your trail. For many observers, Emerson Bog is truly scenic whether on a cold clear winter's night or in the summer, when the lush green is dotted with blazing white egrets and great blue herons. From the Danvers Water Company dam off Lake Street, Emerson Brook meanders on through large shrub swamps, a small white cedar swamp, two quiet ponds (Pout and Mill), and then drops to the river through the woods.

Boston Brook is the longest of Middleton's Ipswich tributaries. It begins in North Andover and in the wetter months flows strongly south in a wide floodplain flanking the old railroad right-of-way, a fine long level walk with water running all around. It then swings east through unspoiled

wooded hills and finally falls turbulently to quiet Prichard's Pond. This short stretch of "white water", bounding over rocks and under mature trees, is an uplifting sight, especially in the winter when the snow contrasts sharply with the dark stream. Boston Brook in its last quarter mile passes by hay fields.

Finally, making up much of the Topsfield/Middleton town line, is *Nichols Brook*. Its headwaters are in Danvers and the Ferncroft Heights area of Middleton. It flows about a mile north through a wide floodplain rich in wildlife. Just to the west, as it nears the Ipswich River, looms the Rubchinuk Landfill, an illegal landfill that has been capped with fill from the Boston Central Artery project. The landfill rises almost 100 feet, giving climbers a good view of the Nichols Brook basin and Topsfield to the east. It is ironic that debris from the great Lynn and Chelsea fires and urban renewal and the cap of "slightly contaminated fill" from the Artery project now uplifts citizens and provides truly open space for wildlife. Flood storage along Nichols Brook was lost when this landfill was built.

(c) Hills of Note

The Town's high drumlins offer fine views in all directions. From a cleared electric company right-of-way over Flint Hill (187 feet), there are broad vistas to the northwest and southeast. Will's Hill (264 feet), which rises above nearby Middleton Square, was historically used as pasture land. Without cows it has become forested. Perched on top is a large concrete reservoir, no longer used. Its walls are adorned with graffiti, its turbid water is home to turtles and goldfish. From its rim are some fine views. Other drumlins in the Town or close to its border with neighboring towns are Bare Hill (County Fair site, 217 feet), and Bald Hill (236 feet), just to the northeast in Boxford.

(d) In the Woods

Most of Middleton's land lies between the aforementioned waterways and drumlins. There are miles of woodland trails, remnants of cow paths and logging roads kept barely discernible by hikers, hunters, and deer. These provide access to rough glacier sculpted mini-valleys, knolls, and raw ledges. In the course of a mere half mile some trails provide the hiker with a cool beech-hemlock grove, high dry ledges of slow growing oaks, impassable swamps of button bush or high bush blueberry, red maple swamps, a dark white cedar bog, a stand of large red oaks and white pines, and knolls of cracked ledge and boulders. In much of the Town, particularly the western and northern parts, a walker must of necessity continuously climb up and down, around, and through now forested piles of rubble excavated and transported by recent glaciers. A jaunt up old Thomas Road, and then west from Bald Hill to Sharpeners Pond and back south between Essex and North Liberty Streets, is very different from season to season. This six-mile loop can be completed in forest without crossing a paved road and with only rare glimpses of buildings.

These are the natural scenes of Middleton, ones neither seen nor hardly even suspected on a drive through Town. One must leave the care to experience them.

2. Geologic Features

Middleton's 14.5 square miles make up a major portion of the center of the Ipswich River Basin. The Town's topography to a large degree was shaped by the glaciers that covered the area periodically for the past 100,000,000 years. Scoured ledge, drumlins, boulders, gravel and sand deposits, erratic, and thin poorly developed soils all testify to the origin of Middleton's patchwork of hills, exposed ledge, and poorly drained wetlands.

The most significant visible features are a major river and several large drumlins. See section 4.F.1.

3. Cultural, Archeological and Historic

Close to the summits of Will's Hill is a large stone that is believed to be a grinding stone used by Native Americans. A Native American is reported to have lived at the base of Will's Hill, and it is possible that the stone was his. The stone is oblong in shape and is in two sections. The larger bottom portion has a cavity – a saucer shaped indentation – which is where corn would have been placed. The smaller curved stone was then placed on top and stood on to created a side-to-side motion that ground corn to meal. The authenticity of the stone has yet to be verified.

The Town keeps the history of the community alive through its management and oversight of a few historic sites. George's House, located on Old South Main is considered to be the oldest house in Middleton.

There are a number of older homes in Middleton – some built prior to the incorporation of the Town in 1728. However, the creation of an historic district is not feasible as the homes are not close to one another. In 1990, the following four buildings in Middleton were accepted into the National Registry of Historic Places (<http://www.nps.gov/nr>) [see Figure 14]:

Lieut. Thomas Fuller, c. 1680, Old South Main Street
Deacon Edward Putnuam, Jr., c. 1750, Gregory Street
Joseph Fuller House, before 1714, Essex Street
Estey Tavern, built by Samuel Bradford, 1753

Other notable antique houses in Middleton are:

Bray Wilkins, c. 1701, Mill Street
The Abigail Bradstreet House, c. 1711, Maple and Washington Streets
Ebenezer Stiles Homestead, c. 1733, Essex Street
Edward Putnam, 1714, East Street
Jacob Fuller, c. 1714, South Main Street
Timothy Perkins House, c. 1721, Essex Street
Peabody-Wilkins, c. 1740, East Street – North Shore Jewish Community Center
Samuel Flint, 1746, Corner of River and Boston Streets
Capt. Andrew Fuller, 1750, King Street
Lieut. John Flint, 1782, East Street

Joseph Symonds, 1792, Thomas Road

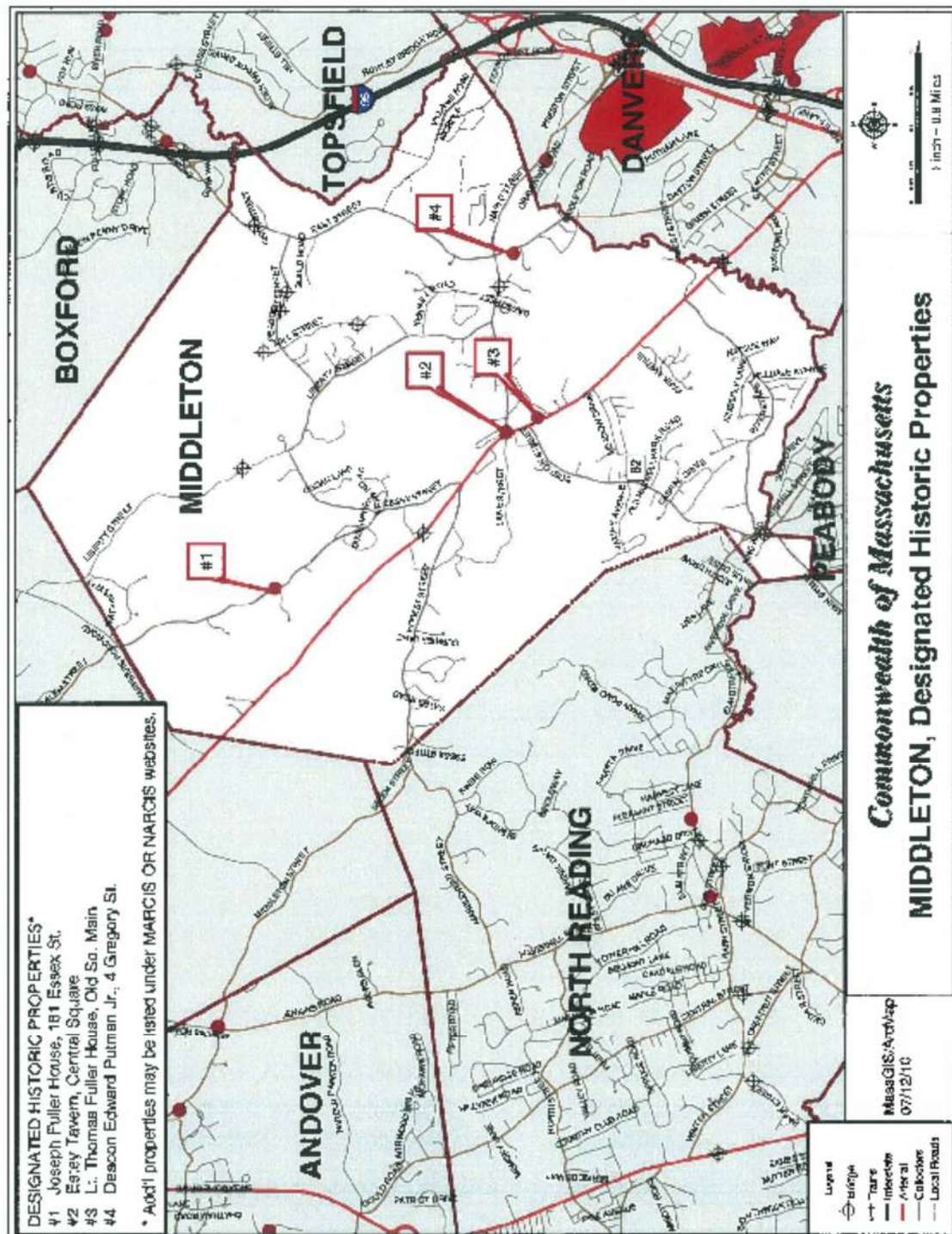


Figure 14. Designated Historic Properties



Figure 15. Unique Features Map

The Joseph Fuller House on Essex Street was where Middleton Minutemen chose to meet in 1775 to organize in the fight against the British. It is here that eight of them made the decision to march to Lexington and Concord to fight. They arrived a day late and were unable to participate in the battle.

G Environmental Challenges

1. Hazardous Waste Sites under Chapter 21E

The Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup lists 72 sites where Reportable Releases of Oil and/or Hazardous Material have occurred within the Town of Middleton (see Figure 16). There are no known areas of protected Open Space that are adversely impacted by contamination from hazardous waste sites.

2. Landfills

The landfills listed below all date from the 20th Century. They may contain some hazardous waste. The Town Landfill and the Rubchinuk Landfill are to be monitored for the next two decades.

a. Municipal

Between 1976 and 1996, Middleton operated an unlined landfill within 500 feet of the Ipswich River, at the end of Natsue Way, off River Street. There is a levee-like berm and an artificial wetland between it and the river (Map32, Lot10). The site was acquired with the understanding that when it could no longer be used as a landfill, it would be turned into a recreation area. The landfill was closed to trash on July 1, 1996 and the ten acres where trash was buried were capped according to the latest Massachusetts Department of Environmental Protection (DEP) standards. The capping was completed in November 1996. The site will be monitored according to DEP standards for the next 20 years. Because of the 5% slope on the cap, and the presence of numerous gas venting pipes, the capped area is unsuitable for recreational fields.

A Transfer Station and Recycling Center were built between the old landfill site and the Ipswich River. A very small amount of wetland filling and appropriate replication was necessary to accommodate the Transfer Station. Two soccer fields were built in this area in 2004. The Town landfill during the period of 1950 to 1970 was located on private land, north of the Town landfill on Natsue Way (now Map 32, Lots 6A and 6B). The area comprised roughly six acres and was filled to a depth of five to twelve feet with municipal waste. It is now grown over into a field of mixed weeds and shrubs.

A Town landfill used prior to 1950 was located on private land. See (v) below.

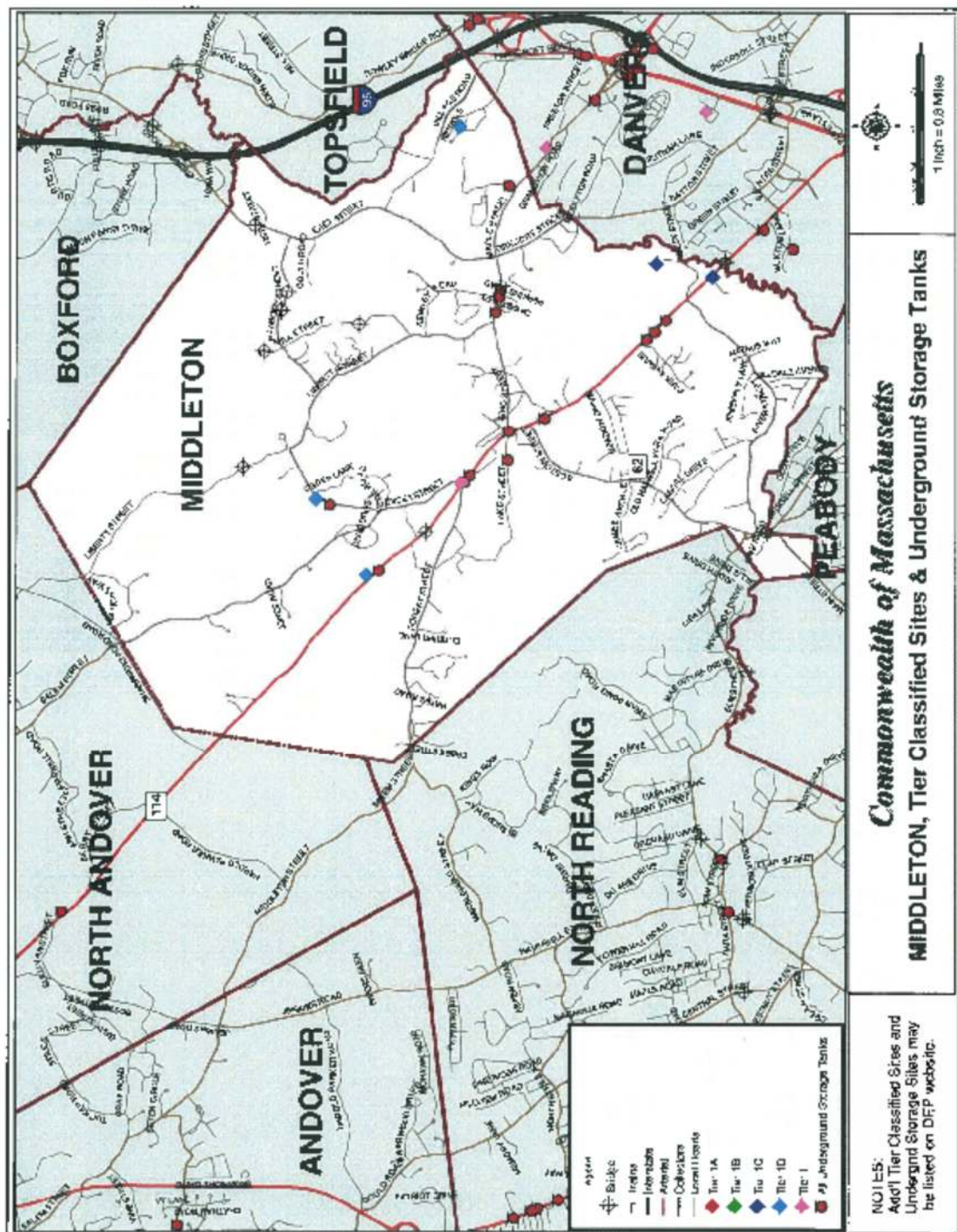


Figure 16. Tier Classified Sites and Underground Storage Tanks, Middleton

b. Private

- i. Rubchinuk's Landfill between Nichols Brook and East Street (Map 8, Lot 25) is an illegal landfill located 800 feet south of the Ipswich River, and 500 feet west of Nichols Brook. It was capped during the late 1990's with "low level contaminated fill" from "The Big Dig" Third Harbor Tunnel in Boston. The DEP, who initiated the closure plan, classified the material as suitable for disposal at an existing unlined landfill. A Receiver was paid \$1,816,000 to take the fill. The money was used to cap the landfill and was intended to fund long-term monitoring. It is not known whether funds received for taking the fill will be sufficient to meet monitoring expenses.

The potential problem lies in its proximity to the river and the absence of knowledge as to its contents. Part of this dump is resting on five-or-so acres of buried wetland, once part of the Nichols Brook floodplain. There is a 600 foot man-made pond that runs east from it to the high waters of the brook. This landfill has test wells around it from which water samples are periodically taken and tested for heavy metals, volatile organic compounds, and other substances. Recent monitoring has shown no subsurface migration of contaminants from this landfill.

- ii. Muzichuk's Landfill, a two acre site on North Main street, east side 200 feet south of Piedmont Street (Map 9, Lot 64), is comprised partially of filled wetland. The filled area can be clearly seen in a 1991 aerial photograph. The landfill contains shredded tires, municipal waste, white metal, and other materials. Since it was an auto junkyard for many years there are probably oils and other chemicals in its "soils". It still has cars on it and is within a Watershed Protection District.
- iii. A second Muzichuk Landfill is located on the west side of North Main Street (Map 9, Lot 19B). In the 1970's municipal waste from Cambridge was brought onto this lot. As much as five acres were filled with it and other material until the once undulating area was level. Later tires were shredded and stored here. It is in a Reservoir Watershed Protection District.
- iv. Johnson's Landfill is situated between North Main and Essex Streets, behind what is now the DPW (Map 16, Lot 80 and Map 10, Lot 9G). In the 1960's and 1970's out-of-town municipal waste and other materials were dumped here, in some places to a depth of twenty-two feet. The results from groundwater samples showed silver, chromium, lead, and arsenic in amounts "of concern." This landfill was capped in 1987. It is now covered with grass and other herbaceous plants. Groundwater beneath this landfill flows into a wetland just to the north.
- v. A former Town Landfill on Essex Street (Map 17, Lots 87, 88, and 89) was active until the early 1950's. It is located in the triangle between the old railroad line (now electric company Right-of-Way) and Essex Street. About one and one-half acres were filled with trash to a depth of between two and twenty feet. This landfill is not capped, and trash can still be seen on its back slope. There are now houses and fifty to sixty-year-old trees on each of the three lots. There have been no reports of undesirable leachate or odors

emanating from the fill on this site.

- vi. An old Danvers State Hospital landfill is located off Gregory Street, near the Danvers town line (Map 20, Lot 5). There are two shallow landfills, side-by-side, each covering about three quarters of an acre, surrounded by a hayfield. The Massachusetts Department of Food and Agriculture filed with the Conservation Commission in 1997 for a permit to clean up these two sites. Permission was granted. The Department tested for hazardous wastes and none were found.

3. Erosion

Erosion is not currently a serious problem in Middleton because of the coarse nature of most of its soils and the rapid growth of ground cover over disturbed areas. In the past there was probably much more erosion due to over-grazed pastures and periodically cultivated fields and to the absence of environmental regulations. When subdivisions are developed large areas are sometimes clear-cut and stumped. This is soon followed by excavating, filling, and stockpiling. During such periods, there is high potential for erosion.

The Conservation Commission and Planning Board might reduce potential further erosion from development by minimizing clear cutting or dividing large developments, particularly in sensitive areas, into sections, permitting clearing and development in only one section at a time. In recent years the Environmental Protection Agency (EPA) began requiring National Pollutant Discharge Elimination System (NPDES) permits for most construction sites with over 1 acre of disturbance. Throughout the past ten years the requirement for a General Permit for Stormwater Discharge from Construction Activities has resulted in more detailed erosion control plans on larger construction sites.

4. Periodic Flooding

There are a number of areas in Town which are susceptible to flooding at fairly regular intervals. In the past two decades major floods have covered and closed streets in the lower parts of Peabody Street, East Street and Thunder Bridge Land and in the South Main, Lonergan Road and log Bridge Road areas. On average, about every ten years there have been floods that have exceeded 100-year flood elevations. 100-year floodplains as mapped by the Federal Emergency Management Agency (FEMA) are protected (see Figure 17). The higher floodplains are not.

- i. One of the older high-density developments in Middleton - Brigadoon - is located off South Main Street. The lower part of Brigadoon has a history of flooding. There is no sewer service to this development and the impact of the sewage in soils with a high water table is of major concern.
- ii. The low areas of Peabody and East Streets flood with major rains and cause damage to residences abutting these roads. FEMA maps, dated 1980, do not designated these areas as floodplains, however, it is well documented that they are floodplains. During the late 1990's the Middleton Conservation Commission asked FEMA to do a re-study in light of

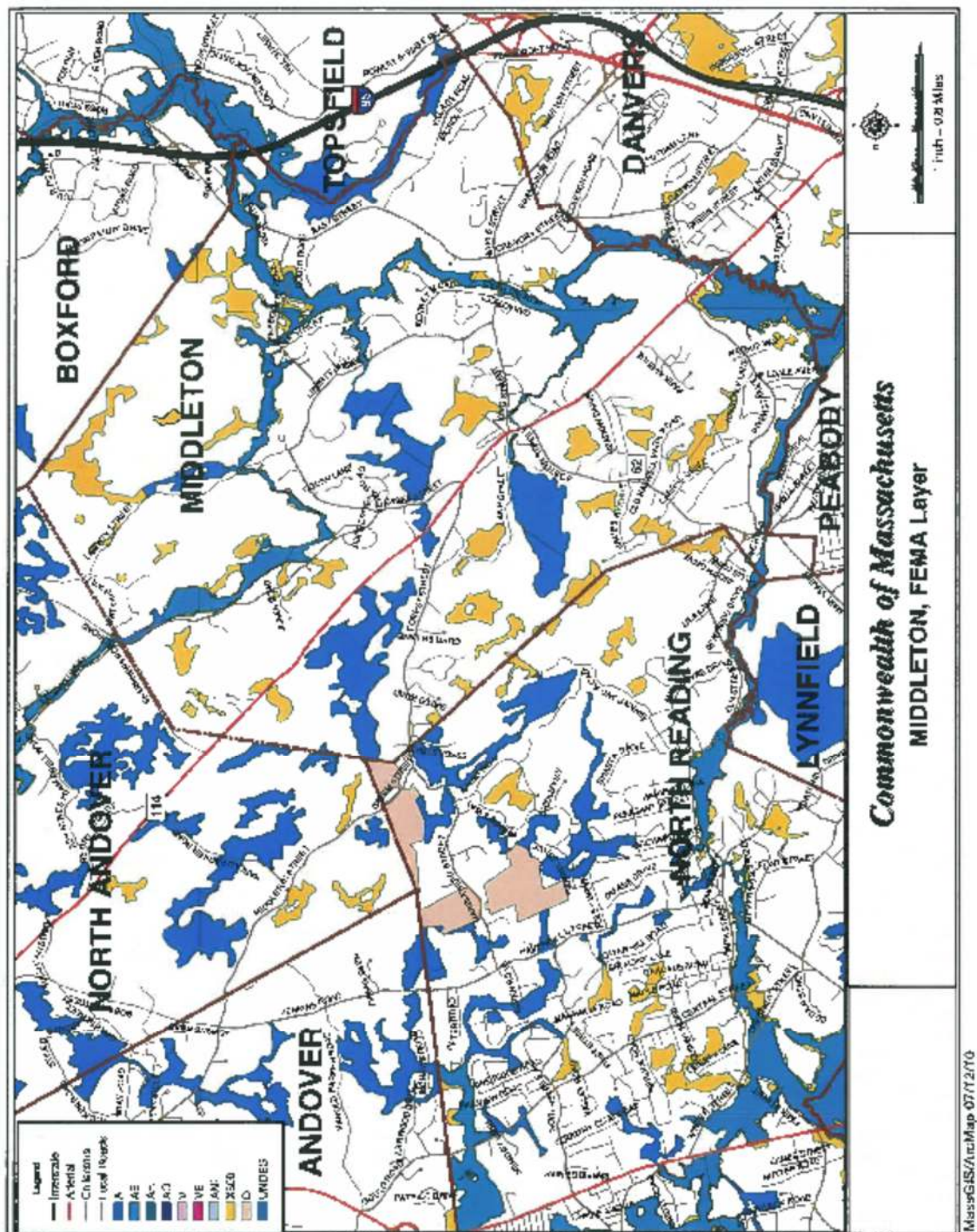


Figure 17. FEMA Flood Zones, Middleton

observations made during the great floods of 1987 and 1996. New FEMA maps issued and adopted in 2012 did not make significant changes in the flood elevations throughout Middleton. Many areas that have flooded in the past have elevations above FEMA 100-year floodplain elevations. Future building within these upper floodplains will further reduce the available flood storage along the rivers.

- iii. The area which was once known as Paradise Park, between River and South Main Streets, and Lonergan Road has been, and is being, heavily developed along South Main Street. In the flood of October 1996, eleven to twelve inches of rain fell over a period of two days on already saturated soils. The Ipswich River rose up over its official floodplains, to crest at record levels, at least since regular records were started in 1938. Water covered the golf driving range and areas directly behind Dailey's Restaurant. Several feet of water covered much of Lonergan Road. There has been some loss of flood storage in this area.

5. Sedimentation

Since there is not much erosion, there is not much sedimentation. The Ipswich River and its tributaries were very low this past year (2012) due to a prolonged drought, so there were many chances of seeing sediments in their lowest parts. However, no major cases were seen or reported. There is always the potential of sedimentation when uplands are cleared near wetlands.

It should be noted that not all sedimentation is undesirable. In natural floodplains there are healthy doses of enriching sediments during periodic floods.

6. Development Impact

Middleton can perhaps be better understood by its surroundings. To the south are the suburbs of Boston; to the east are the commercial centers of Danvers and Salem; to the northeast, the gentle once-fair agricultural lands of the North Shore; and to the west and north the prosperous suburbs of the Merrimack's old textile cities. Middleton, formerly just a crossroad, has been discovered. The commercial strip on Route 114 in Danvers creeps northwest and has spilled into Middleton. Commuters to and from the Northeast's technology highway, Route 128, are building large homes on the Town's remaining uplands.

Middleton is one of the few areas that is convenient to Route 128 and to Boston and still has land available for development. However, not that prospective homeowners are willing to pay several hundred thousand dollars for a building lot, the pressure is on to turn marginal land into building lots. This is done primarily by bringing in fill to build the land up to give it the required four foot separation from groundwater needed to install a septic system under the State's Title V Sanitary code. The October 1996 storm, with 12 inches of rainfall, along with the 2006 flooding, showed that a number of developed areas are subject to extensive flooding, even in a fifty-year flood event.

In the past decade, hundreds of new homes have been built in Middleton. Thanks in part to the Wetlands Protection Act (WPA) they have not been built in wetlands. Almost all of the new

houses have been built with septic systems. While these systems are at least 100 feet from the wetlands, they are built at higher elevations and may in time adversely affect the groundwater that feed the wetlands. Many of the Town's homes - both old and new - are near wetlands and some are in floodplains. As land values have risen, developers are putting ever-increasing pressure on the wetlands as they try to squeeze in lots.

Of great concern to the Ipswich River Watershed Association are the excessive water withdrawals from the river. Recent outdoor watering restriction bylaws enacted in Middleton (2005), and nearby towns within the Ipswich River watershed, should help restore river flows. Water bans are mostly partial and some are late in being ordered. Middleton, in the midst of a building boom, is in the geologic center of this watershed. River, stream, pond, and wetland protection is more vital than ever.

Many of the Town's households get water from private wells. These wells range in depth from groundwater near the surface to 1,200 feet. Many see no problem because most of the wells, especially the newer ones, go deep into aquifers in the bedrock which obtain their water from great distance over time. How much connection is there between groundwater and that in the deeper aquifers? A USGS geologist when asked this question recently said that not a great deal was known for this area but that there are connections and that withdrawals from aquifers might in time affect groundwater and visa versa. There are cracks in the bedrock. As the number of deep wells increases what will be the effect on surface and groundwater?

The breakup of wildlife corridors due to development is of concern, as side streets are built off of larger roads such as Boston Road, East Street, Liberty Street and Essex Street. During the past year and a half alone, three new subdivisions have been approved along the western side of East Street, adjacent to the Ipswich River.

One problem well known to all residents is the greatly increased traffic, especially at certain times on State routes 62 and 114. Traffic jams on Routes 93, 128, 495 or 95 appear to lead to Routes 114 and 62 being used as alternative routes. Will there be increased air pollution problems? Are there already? What of noise pollution? Air and noise pollution are also concerns associated with the proliferation of drive-thru windows during recent years. An anti-idling ordinance was passed in 2011, which will reduce air pollution in some areas. Certainly the potential for pollutants (salt, tire and brake residues, oils, gasoline) in surface runoff from roads has increased.

7. Ground & Surface Water Pollution

Point and Non-point Source

Other problems that will occur with development are point and on-point sources of pollution. As the asphalt and concrete acreage increases, the groundwater recharge areas decrease, and runoff of road salt and oil increases. The Ipswich River is especially vulnerable because the upstream towns, where much of the water originates, are densely populated and industrialized, while the lower towns are not. This is the reverse of the situation for most rivers.

Passage of a local Stormwater Bylaw would reduce the pollutant load from impervious areas and new construction. A draft Bylaw has been prepared, which may be presented to voters in 2014.

Detention Ponds

Practically every sub-division built since the 1980's has at least one man-made stormwater management pond, known as a retention or detention pond. They were designed to catch surface runoff during intense periods of rain or thawing. The water is retained or detained to be release slowly into wetlands and streams so erosion, sedimentation, and flood damage are reduced or eliminated. Since they soon become thickly vegetated, they further function as living filters of pollutants and sediments. The former are broken down, the latter held in place.

Communities of plants and animals become established rather quickly within them. One at Ferncroft Heights was built in early spring and had plants growing in it by early fall. A detention pond below Campbell Road, off Liberty Street, had a population of crayfish a year after completion. A green heron was seen perched over its thick stand of cattails. Frogs, insects, small crustaceans, and birds thrive in and around them as they do in most ponds. Lakes and ponds are transitory geologic formations. What will be the fate of these interesting man-made ponds? Will people fill them in more quickly than will natural processes? Who will maintain them? Will lawn herbicides, pesticides, and fertilizers in runoff affect the communities that form in these relatively new ecosystems?

8. Forestry Issues

Forestry activities take place on both private and New England Forestry Foundation properties, predominantly in the northern part of Middleton. During an average year several Forest Cutting Plans are proposed and implemented. The New England Forestry Foundation owns a 148 acre forest named Prichard Forest, consisting of several parcels located along North Liberty Street. This forest has been enlarged over the years since Charles R. Prichard, Jr. first donated land in 1986.

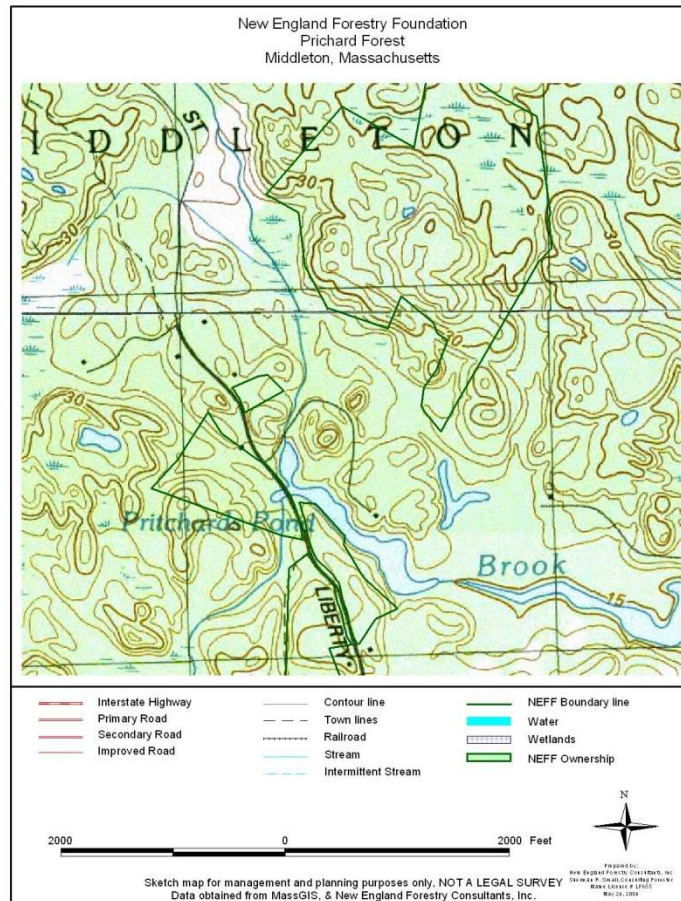


Figure 18. Prichard Forest

According to their website (<http://www.newenglandforestry.org/home.html>),

"The mission of New England Forestry Foundation is to conserve New England's working forests through conservation and ecologically sound management of privately owned forestlands in New England, throughout the Americas and beyond.

This mission encompasses:

- Educating landowners, foresters, forest products industries, and the general public about the benefits of forest stewardship and multi-generational forestland planning.
- Permanently protecting forests through gifts and acquisitions of land for the benefit of future generations.
- Actively managing Foundation lands as demonstration and educational forests.
- Conservation, through sustainable yield forestry, of a working landscape that supports economic welfare and quality of life.
- Supporting the development and implementation of forest policy and forest practices that encourage and sustain private ownership."

9. Environmental Equity

A Minority Environmental Justice Population is present within the southeast portion of Middleton. This determination is based on 2010 United States Census data, and includes demographic information and population statistics from the Essex County Correctional Facility in addition to the Town of Middleton. The minority population within southeastern Middleton reside primarily within the correctional facility. The location of the facility does not unfairly burden inmates with environmental challenges such as exposure to air pollution, polluted groundwater, noise pollution or other environmental hazards. Inmate access to nearby municipal Open Space and Recreational opportunities, although available, is not permitted.

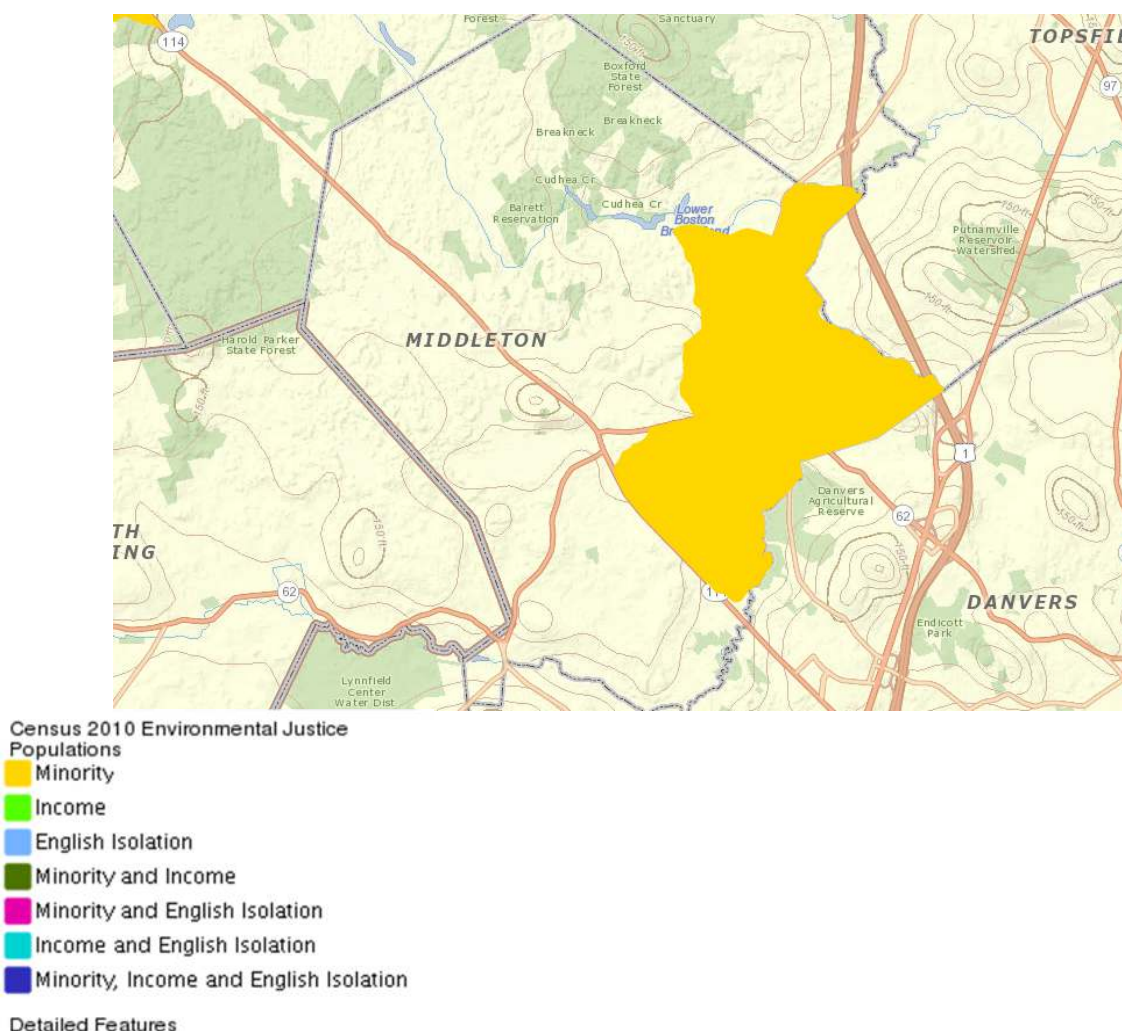


Figure 19. Environmental Justice Populations, Middleton

Residents throughout Middleton have access to nearby Open Space and Recreational assets. Sports fields are located in the southern, central and northeastern parts of Town. While preserved conservation parcels are primarily located within the northern part of Middleton,

canoe landings and public access to the Ipswich River are located in the southern and eastern portion of the town. In several locations, small riverside parks are present within highly developed commercial areas, providing residents and visitors alike an opportunity to experience the natural world in the midst of an urban environment.

Section 5 Inventory of Lands of Conservation and Recreation Interest

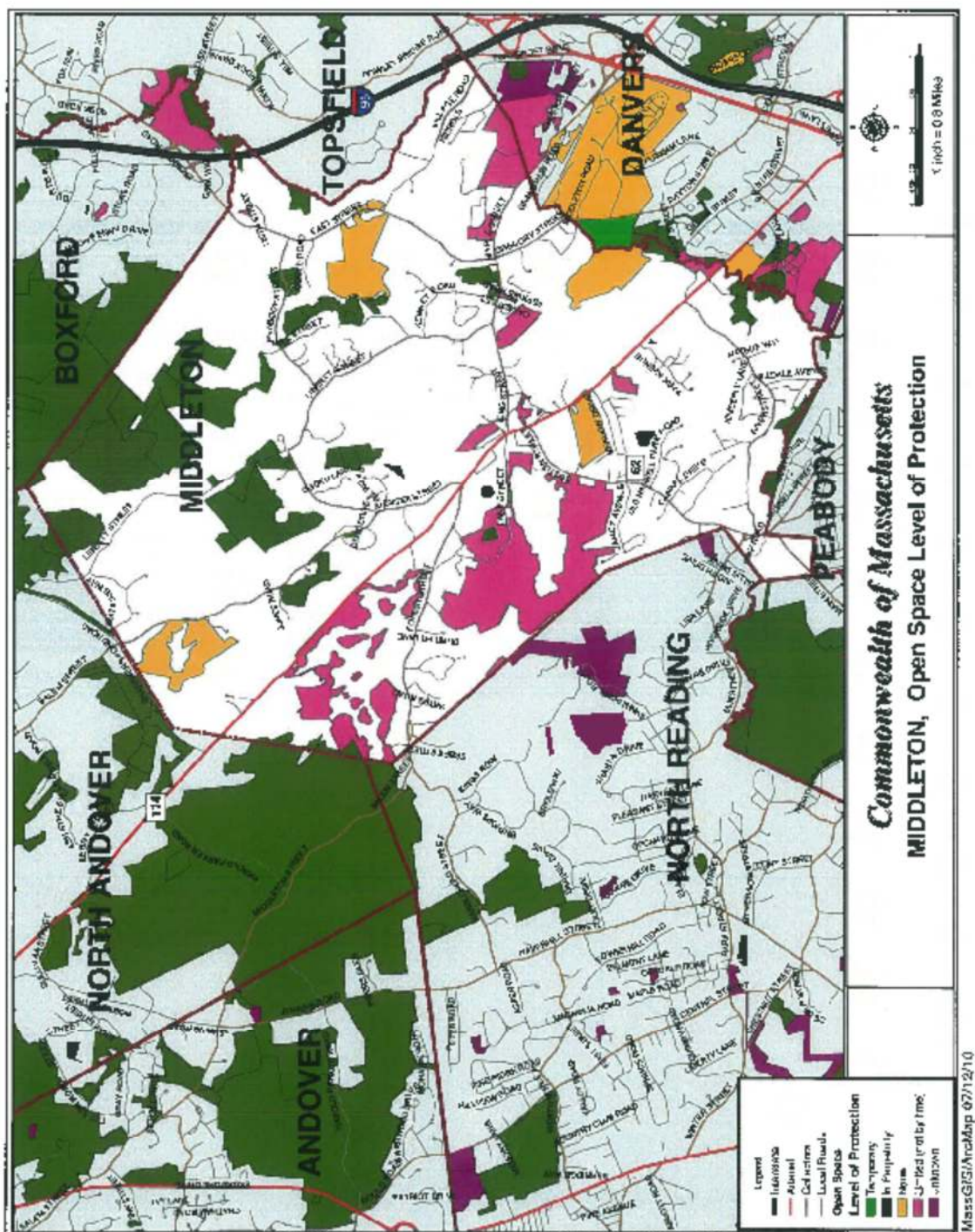


Figure 20. Open Space Parcels and Level of Protection, Middleton

Private Parcels- Unprotected

Throughout the Town, there are a number of parcels which provide some level of benefits for conservation and open space purposes. While the uses of these parcels differ widely, they all, in their own way, contribute to the character of the Town.

Chapter 61, 61A, 61B and Mixed Chapter Properties

In an attempt to preserve, or at least maintain an incentive to preserve, some of the state's important forest, agricultural and open space lands which are privately held, there is tax relief available to the owners of these types of land. As long as certain requirements are met-- acreage limits, income from the sale of forest or farm products, etc.-and as long as the use of the property does not change (from cucumber fields to condos) land classified under one of the provisions of Chapter 61 is subject to reduced real estate taxes. Back taxes and penalties would be levied if the use does change.

Under Massachusetts General Law Chapter 61 land is classified for use as Forest land (Chapter 61), Agricultural land (Chapter 61A), or Open Space or Recreational land (Chapter 61B). In Middleton all three classifications are employed.

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0005-0000-0016	COTE ANNE TRAGERT	56 NORTH LIBERTY ST		016	16.51	mixed use chapter property				
0011-0000-0014	CUDHEA TR PETER W / CUDHEA FAM TR	25 NORTH LIBERTY ST		016	4.50	mixed use chapter property				
0029-0000-0051 A	BLAIS JAMES TR / PARK AVENUE RLTY TR I	51 PARK AVE		017	11.49	mixed use chapter property				
0007-0000-0010	COURTFIELD LLC / % ANWAR WISSA	56 PEABODY ST		017	33.50	mixed use chapter property				
0013-0000-0113 A	PAIKOS TR JAMES / JOHN PAIKOS IRR TR	74 PEABODY ST		017	12.25	mixed use chapter property				
0012-0000-0009	RICHARDSON GREEN INC	161 LIBERTY ST		017	62.30	mixed use chapter property				
0008-0000-0002	SCHARFENBERGER TR GILBERT E / SCHARFENBERGER FAM RLTY TR	150 EAST ST		017	18.16	mixed use chapter property				
0008-0000-0021	HART DOUGLAS W / HART NANCY A	11 THUNDER BRIDGE LN		018	9.43	mixed use chapter property / stable				

0008-0000-0003	MARTIN GRACE M /	160 EAST ST		018	11.50	mixed use chapter property				
0019-0000-0106	BROWN ROBERT / BROWN KATHLEEN A	210 MAPLE ST		037	20.00	mixed use chapter property / farmstand, crops				
0032-0000-0134	RICHARDSON GREEN INC	15 RIVER ST		037	88.89	mixed use chapter property / barn, pasture	None			
0029-0000-0184	BROWN TR ET AL FRANK / FRANK B W BROWN NOM TR	105 SOUTH MAIN ST		038	49.42	mixed use chapter property / golf course	None			
0026-0000-0014	DANVERS FISH & GAME CLUB / % JENKINS ROBERT	20 BIRCH RD		038	80.59	mixed use chapter property / Fish & Game Club	None		Yes/?	
0005-0000-0015	CUDHEA TR PETER W / CUDHEA FMLY TR	NORTH LIBERTY ST		061	60.13	mixed use chapter property / dwelling, forestry, trails	None			
0029-0000-0188 C	RICHARDSON FARMS INC /	REAR SOUTH MAIN ST		073	243	mixed use chapter property / barns, fields, borrow pit	None			
0007-0000-0006	SAWYER FARM LLC / % WISSA	176 EAST ST		0167	183	mixed use chapter property	None			
0009-0000-0017	RICHARDSON GREEN INC	NORTH MAIN ST		601	8.50	Chapter 61 Forest Land	None			
0009-0000-0049	RICHARDSON GREEN INC	NORTH MAIN ST		601	21.21	Chapter 61 Forest Land	None			
0009-0000-0066	RICHARDSON GREEN INC	NORTH MAIN ST		601	1.61	Chapter 61 Forest Land	None			
0009-0000-0015	RICHARDSON GREEN INC	NORTH MAIN ST		601	9.75	Chapter 61 Forest Land	None			
0009-0000-0016	RICHARDSON GREEN INC	NORTH MAIN ST		601	8.00	Chapter 61 Forest Land	None			
0006-0000-0004	RICHARDSON GREEN INC	OFF THOMAS RD		601	5.80	Chapter 61 Forest Land	None			
0006-0000-0009	RICHARDSON GREEN INC	OFF THOMAS RD		601	29.61	Chapter 61 Forest Land	None			
0014-0000-0028 C	RUBCHINUK TR JOHN / RUBCHINUK TR ENID L	EAST ST		716	18.70	Chapter 61A (buildings, roads, ponds)	None			
0018-0000-0010	RICHARDSON GREEN INC	LIBERTY ST		717	#####	Chapter 61A (woodlots)	None			
0032-0000-0006	RICHARDSON GREEN INC	RIVER ST		718	12.85	Chapter 61A (pasture)	None			
0018-0000-0010 B	RICHARDSON GREEN INC	LIBERTY ST		718	3.33	Chapter 61A (pasture)	None			
0004-0000-0016	RICHARDSON FARMS INC /	OFF NORTH LIBERTY ST		718	#####	Chapter 61A (pasture)	None			
0029-0000-0187	RICHARDSON FARMS INC /	SOUTH MAIN ST		718	21.50	Chapter 61A (pasture)	None			
0010-0000-0035	RICHARDSON FARMS INC /	ESSEX ST		718	15.80	Chapter 61A (pasture)	None			

0010-0000-0045	RICHARDSON FARMS INC /	ESSEX ST		718	23.00	Chapter 61A (pasture)	None			
0010-0000-0032	RICHARDSON FARMS INC /	ESSEX ST		718	3.00	Chapter 61A (pasture)	None			
0010-0000-0033	RICHARDSON FARMS INC /	ESSEX ST		718	4.00	Chapter 61A (pasture)	None			
0010-0000-0034	RICHARDSON FARMS INC /	ESSEX ST		718	3.00	Chapter 61A (pasture)	None			
0004-0000-0018	RICHARDSON FARMS INC /	ESSEX ST		718	23.10	Chapter 61A (pasture)	None			
0004-0000-0019	RICHARDSON FARMS INC /	OFF NORTH LIBERTY ST		718	21.00	Chapter 61A (pasture)y	None			
0005-0000-0012	RICHARDSON FARMS INC /	NORTH LIBERTY ST		722	#####	mixed use chapter property	None			
0008-0000-0008	SCHARFENBERGER GILBERT E /	EAST ST		722	5.00	mixed use chapter property	None			
0012-0000-0014	RICHARDSON GREEN INC	MILL ST		801	6.91	Chapter 61B (hiking trails)				
0012-0000-0013	RICHARDSON GREEN INC	MILL ST		801	17.00	Chapter 61B (hiking trails)				
0007-0000-0009	SMITH TR CAROLE A / SMITH TRUST 4	PEABODY ST		801	5.00	Chapter 61B (hiking trails)				

Undeveloped Private Vacant Land (Parcels > 5 acres)

0014-0000-0020	ROBERTO LOUIE TR / ROBERTO RITA M TR	8 TOWNE RD	130	86.08
0022-0000-0001	RICHARDSON GREEN INC /	NORTH READING LINE	132	51.75
0017-0000-0037	RICHARDSON FARMS INC /	WILLS HILL	130	47.45
0015-0000-0100	RICHARDSON GREEN INC /	TAPLEY ST	130	30.68
0025-0000-0185	POLLOCK RONALD E / POLLOCK MILTON R JR	WALNUT LN	132	26.00
0011-0000-0013	JACQUES J THOMAS / HAYNES HOWARD D	SCHOOL ST	132	25.27
0025-0000-0063	FRAUMENI JR ALFRED V /	BOSTON ST	130	23.10
0010-0000-0005	NEW ENGLAND POWER CO / % PROP TAX DEPT	NORTH MAIN ST	130	20.00
0009-0000-0019 B	MUZICHUK JOHN / MUZICHUK NELLIE J	NORTH MAIN ST	131	17.00
0001-0000-0005	RICHARDSON FARMS INC /	NORTH LIBERTY ST	130	15.22
0011-0000-0023	BUTLER THEODORE H TR / BUTLER DONNA J TR	SCHOOL ST	130	15.20
0014-0000-0051	FERNCROFT HOLDINGS LLC /	LOCUST ST	130	14.64
0016-0000-0033	NEW ENGLAND POWER CO / % PROP TAX DEPT	OFF UPTON HILLS LN	132	12.18
0007-0000-0008	DECOULOS TR NICHOLAS J / SOUTH PARISH RLTY TR	EAST ST	132	12.00

0022-0000-0004	RICHARDSON GREEN INC /	FOREST ST	132	11.50
0010-0000-0044	NEW ENGLAND POWER CO / % PROP TAX DEPT	NORTH MAIN ST	130	10.50
0011-0000-0010	LECOLST FRANK T JR / LECOLST FAMILY TRUST	SCHOOL ST	132	9.82
0012-0000-0010	RICHARDSON GREEN INC /	LIBERTY ST	132	9.00
0017-0000-0061	FRAUMENI ALFRED V JR /	97 NORTH MAIN ST	130	8.95
0020-0000-0023 A	KNOLL HOLDINGS LLC /	VILLAGE RD	130	7.47
0010-0000-0021 H	KUNZ JOHN O /	8 BISHOP LN	132	7.32
0014-0000-0009 A	MAIDMENT TR CATHERINE MARY / CHAMPLAIN TR ELEANOR L	EAST ST	131	7.00
0010-0000-0038	CASSAR SCALIA CONCETTA /	ESSEX ST	132	6.00
0033-0000-0099	LIMA TR JOAQUIM / LIMA TR MARIA	RIVER ST	130	5.75
0024-0000-0014	MITCHELL EVERETT W EST OF / % RONALD GARMEY EX	BOSTON ST	130	5.73
0014-0000-0013	OLDE BOXFORD ESTATES LLC /	3 NORMA WAY	130	5.72
0017-0000-0110 A	SAUCHUK WILLIAM /	OFF LIBERTY ST	132	5.36
0025-0000-0212	NADEAU ET AL GARY /	FIFTH AVE	131	5.21
0012-0000-0020	RICHARDSON GREEN INC /	PEABODY ST	130	5.15
0017-0000-0048	PRIME INVESTMENT FOREST ST LLC /	NORTH MAIN ST	131	5.00

Private Parcels- Protected

Non-Profit Parcels- Unprotected

Educational Institutions

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition& Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0020-0000-0016	MASS INST OF TECHNOLOGY / OFFICE OF THE TREASURER	21 MANNING AVE		942	91.80	University Research	None		No/?	
0020-0000-0016 A	MASS INST OF TECHNOLOGY / OFFICE OF THE TREASURER	MANNING AVE		942	6.18	University Research	None		No/?	

Private Cemeteries

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition& Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
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Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0013-0000-0047	ELLIOT FAMILY HEIRS / ELLIOT CEMETERY	MILL ST		953	0.04					
0025-0000-0088	FULLER CEMETERY / MEMORIAL HALL	OLD SOUTH MAIN ST		953	1.00					
0010-0000-0015	INGALLS FAMILY CEMETERY /	ESSEX ST		953	0.21					

Camps

0004-0000-0002	BOYS CLUB OF LYNN	210 ESSEX ST		958	121.578	Non-profit Recreation	None	Yes		
0004-0000-0002 A	BOYS CLUB OF LYNN /	210 ESSEX ST		958	1.00	Non-profit Recreation	None	Yes		

Religious Organizations

Map/ Lot Number	Ownership	Address	Mgmtt Agny	Zone Code	Lot Size	Current Use	Condition	Rec. Pot.	Public/ ADA Access	Grant?
0025-0000-0201	MIDDLETON CONG CHURCH /	11 WEBB ST		960	2.30		None			
0024-0000-0001 A	ROMAN CATH ARCH OF BOSTON / ST AGNES PARISH	22 BOSTON ST		960	0.97		None			
0024-0000-0001	ROMAN CATH ARCH OF BOSTON / ST AGNES REC	24 BOSTON ST		961	0.50		None			

Miscellaneous

0032-0000-0128	A P GARDNER POST 227 AMER /	69 RIVER ST		954	1.50					
0017-0000-0097 A	NORTH SHORE HERITAGE ASSO	59 NORTH MAIN ST		957	1.60					

Non-Profit Parcels- Protected

Essex County Greenbelt, The New England Forestry Foundation and The New England Society for the Preservation of Antiquities are non-profit organizations dedicated to the preservation of open space, forests and historical sites respectively. The properties listed below are

located within the northern part of Middleton, in areas that historically have not been impacted by development. Sustainable forestry takes place on the New England Forestry Foundation parcels.

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0005-0000-0016 A	ESSEX COUNTY GREENBELT	NORTH LIBERTY ST	ECGB	950	30.01	Non-profit Conservation	In Perpetuity		Yes/ No	
0033-0000-0016	ESSEX COUNTY GREENBELT	RIVER ST	ECGB	950	2.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0014-0000-0029	ESSEX COUNTY GREENBELT	EAST ST	ECGB	950	7.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0017-0000-0111	ESSEX COUNTY GREENBELT	BURKE RD	ECGB	950	3.20	Non-profit Conservation	In Perpetuity		Yes/ No	
0033-0000-0014	ESSEX COUNTY GREENBELT	RIVER ST	ECGB.	950	4.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0013-0000-0104 A	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB.	950	2.13	Non-profit Conservation	In Perpetuity		Yes/ No	
0013-0000-0104 B	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB.	950	2.16	Non-profit Conservation	In Perpetuity		Yes/ No	
0013-0000-0107	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB	950	0.17	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0024 B	ESSEX COUNTY GREENBELT	LIBERTY ST	ECGB.	950	11.85	Non-profit Conservation	In Perpetuity		Yes/ No	
0012-0000-0015	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB.	950	17.50	Non-profit Conservation	In Perpetuity		Yes/ No	
0012-0000-0018	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB.	950	4.50	Non-profit Conservation	In Perpetuity		Yes/ No	
0007-0000-0005	ESSEX COUNTY GREENBELT	PEABODY ST	ECGB.	950	5.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0008-0000-0019 C	ESSEX COUNTY GREENBELT	WALCOTTS ISLAND	ECGB	950	3.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0024 A	ESSEX COUNTY GREENBELT	LIBERTY ST	ECGB	950	9.77	Non-profit Conservation	In Perpetuity		Yes/ No	
0006-0000-0005	ESSEX COUNTY GREENBELT	SECOND PASTURE	ECGB	950	13.50	Non-profit Conservation	In Perpetuity		Yes/ No	
0006-0000-0006	ESSEX COUNTY GREENBELT	BALD HILL AREA	ECGB.	950	11.63	Non-profit Conservation	In Perpetuity		Yes/ No	
0006-0000-0008	ESSEX COUNTY GREENBELT	PINE HILL LOT	ECGB.	950	10.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0005-0000-0008	ESSEX COUNTY GREENBELT	NORTH LIBERTY ST	ECGB.	950	8.25	Non-profit Conservation	In Perpetuity		Yes/ No	

0006-0000-0002	ESSEX COUNTY GREENBELT	CAPT BILL LOT	ECGB	950	40.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0006-0000-0002 A	ESSEX COUNTY GREENBELT	LIBERTY ST	ECGB.	950	3.50	Non-profit Conservation	In Perpetuity		Yes/ No	
0002-0000-0001	ESSEX COUNTY GREENBELT	POND MEADOW	ECGB	950	#####	Non-profit Conservation	In Perpetuity		Yes/ No	
0002-0000-0003	ESSEX COUNTY GREENBELT	NORTH ANDOVER LINE	ECGB	950	2.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0005-0000-0003	ESSEX COUNTY GREENBELT	ISLAND PASTURE	ECGB	950	39.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0009-0000-0014	MASSACHUSETTS AUDUBON SOC	NORTH MAIN ST	ECGB.	950	4.50	Non-profit Conservation	In Perpetuity		Yes/ No	
0012-0000-0012 B	N E FORESTRY FOUNDATION /	NORTH LIBERTY ST	ECGB	950	58.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0011 B	N E FORESTRY FOUNDATION /	SCHOOL ST	ECGB.	950	1.25	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0011 C	N E FORESTRY FOUNDATION /	NORTH LIBERTY ST	ECGB.	950	9.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0016	N E FORESTRY FOUNDATION /	NORTH LIBERTY ST	ECGB.	950	16.12	Non-profit Conservation	In Perpetuity		Yes/ No	
0005-0000-0015 C	N E FORESTRY FOUNDATION /	LIBERTY ST	ECGB	950	50.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0011	N E FORESTRY FOUNDATION /	NORTH LIBERTY ST	ECGB	950	7.60	Non-profit Conservation	In Perpetuity		Yes/ No	
0011-0000-0011 A	N E FORESTRY FOUNDATION /	SCHOOL ST	ECGB	950	1.33	Non-profit Conservation	In Perpetuity		Yes/ No	
0005-0000-0015 A	N E FORESTRY FOUNDATION /	NORTH LIBERTY ST	ECGB	950	2.00	Non-profit Conservation	In Perpetuity		Yes/ No	
0014-0000-0010	SOCIETY FOR PRESERVATION OF / NEW ENGLAND ANTIQUITIES	EAST ST	ECGB	950	0.76	Non-profit Conservation / Peabody Family Cemetery			Yes/ No	
0025-0000-0022	SOCIETY FOR PRESERVATION OF / NEW ENGLAND ANTIQUITIES	MT VERNON ST	ECGB	950	0.04	Non-profit Conservation			Yes/ No	

Public Parcels- Unprotected

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition& Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0020-0000-0020 A	MASSACHUSETTS COMM / ESSEX CO CORRECTIONAL FACILITY	20 MANNING AVE		922	20.00	County Correctional Facility	None	No	No/?	No

0019-0000-0005	MASSACHUSETTS COMM / DEPT OF MENTAL HEALTH	GREGORY ST		923	10.00	Adolescent Residential Treatment	None	No	No/ Yes	?
0026-0000-0015	MASSACHUSETTS COMM / DEPT OF MENTAL HEALTH	37 GREGORY ST		923	40.20	Adolescent Residential Treatment	None	No	No/ Yes	?
0008-0000-0018	MASSACHUSETTS COMM / MASS HIGHWAY	I-95		924	2.40	Interstate Layout	None	No	No /No	No
0021-0000-0008	ESSEX COUNTY AGRICULTURAL	MAPLE ST		927	27.40	Agricultural/ Tech High School	Potential	Yes	Yes/Yes	?
0026-0000-0015 A	MASSACHUSETTS COMM / DEPT OF FOOD & AGRICULTURE	GREGORY ST		929	72.30	Agricultural	Permanent ?	Yes	Yes/ No	?

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0010-0000-0017 Z	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST	BOS	930	5.07	Undeveloped (for Municipal Purposes Only)	None	Yes	Yes// No	No
0020-0000-0027 Z	MIDDLETON TOWN OF / MEMORIAL HALL	EAST ST	BOS	930	17.41	Undeveloped (for Municipal Purposes Only)	None	Yes	Yes/No	No
0033-0000-0046	MIDDLETON TOWN OF / MEMORIAL HALL	SOUTH MAIN ST	Fire Dept.	930	3.50	Fire Station?	None	No	No/No	?
0029-0000-0080 A	MIDDLETON TOWN OF / MEMORIAL HALL	EDGEWOOD RD	Mid. School Com.	930	0.03	School Walkway	None	No	Yes/ Yes	No
0031-0000-0002 F	MIDDLETON TOWN OF / MEMORIAL HALL	RIVER ST	DPW	930	0.07	Road Layout	None	No	Yes/ No	No
0028-0000-0076	MIDDLETON TOWN OF / MEMORIAL HALL	186 BOSTON ST	DPW	930	0.26	Flint Cemetery	None	No	Yes/ No	No
0025-0000-0091	MIDDLETON TOWN OF / MEMORIAL HALL	KING ST	BOS	930	6.00	Future Town Common	None	Yes	Yes/Yes	No
0018-0000-0088 A	MIDDLETON TOWN OF / MEMORIAL HALL	SHORT ST	DPW	930	0.06	Drainage	None	No	Yes/ No	No
0018-0000-0134	MIDDLETON TOWN OF / MEMORIAL HALL	LIBERTY ST	BOS	930	0.10	Undeveloped?	None	?	?	?
0018-0000-0057	MIDDLETON TOWN OF / MEMORIAL HALL	PINE ST	BOS	930	0.62	Undeveloped?	None	?	?	?
0017-0000-0097 B	MIDDLETON TOWN OF / MEMORIAL HALL	PARK ST	DPW	930	0.30	Road Layout	None	No	Yes/ No	No
0017-0000-0097 C	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST	BOS	930	0.46	Undeveloped?	None	?	?	No

0015-0000-0055	MIDDLETON TOWN OF / MEMORIAL HALL	WOODLAND RD	BOS	930	0.14	Undeveloped?	None	?	?	No
0014-0000-0052	MIDDLETON TOWN OF / MEMORIAL HALL	LOCUST ST	BOS	930	0.75	Undeveloped?	None	?	?	No
0015-0000-0022 E	MIDDLETON TOWN OF / MEMORIAL HALL	EVANS RD	BOS	930	0.22	Undeveloped?	None	?	?	No
0014-0000-0039	MIDDLETON TOWN OF / MEMORIAL HALL	EAST ST	DPW	930	0.31	Drainage	None	No	No/No	No
0013-0000-0045	MIDDLETON TOWN OF / MEMORIAL HALL	MILL ST	BOS	930	5.10	Undeveloped?	None	?	?	No
0008-0000-0009	MIDDLETON TOWN OF / MEMORIAL HALL	EAST ST	DPW	930	0.77	Town Swimming Hole	None	Yes	Yes/No	
0017-0000-0059	MIDDLETON TOWN OF / MEMORIAL HALL	NORTH MAIN ST	Police Dept.	930	1.00	Police Station	None	No	Yes/ Yes	No
0008-0000-0016	MIDDLETON TOWN OF / MEMORIAL HALL	WALCOTTS ISLAND	BOS	930	28.50	Undeveloped?	Potential	Yes	Yes/ No	No
0008-0000-0025	MIDDLETON TOWN OF / MEMORIAL HALL	131 EAST ST	DPW	930	34.84	Soccer Field	None	Yes	Yes/Yes	No
0008-0000-0023	MIDDLETON TOWN OF / MEMORIAL HALL	129 R EAST ST	BOS	930	5.00	Undeveloped?	None	?	?	No
0025-0000-0079	MIDDLETON TOWN OF / MEMORIAL HALL	SOUTH MAIN ST	DPW	930	0.34	Merriam Cemetery	None	Yes	No/No	No
0025-0000-0127	MIDDLETON TOWN OF / MEMORIAL HALL	NORTH MAIN ST	DPW	930	0.50	Municipal Parking Lot	None	No	Yes/Yes	No
0024-0000-0063	MIDDLETON HISTORICAL INC /	9 PLEASANT ST	Hist. Comm.	931	0.53	Historical Society	None	No	Yes/ ?	No
0032-0000-0010	MIDDLETON TOWN OF / MEMORIAL HALL	11 NATSUE WAY	DPW	931	32.91	Transfer Station/ Fields	None	Yes	Yes/Yes	?
0025-0000-0168	MIDDLETON TOWN OF / MEMORIAL HALL	38 MAPLE ST	COE	931	0.56	Senior Center / Old Town Hall	None	No	Yes/ Yes	No
0025-0000-0080	MIDDLETON TOWN OF / MEMORIAL HALL	48 SOUTH MAIN ST	BOS	931	1.20	Memorial Hall / Town Hall	None	Yes	Yes/Yes	No
0025-0000-0122	MIDDLETON TOWN OF / MEMORIAL HALL	1 SOUTH MAIN ST	Library Board	931	1.00	Flint Memorial Library	None	Yes	Yes/ Yes	Yes
0025-0000-0001	MIDDLETON TOWN OF / MEMORIAL HALL	83 MAPLE ST	DPW	931	32.50	Oakdale Cemetery	None	No	Yes/ No	No
0025-0000-0031	MIDDLETON TOWN OF / MEMORIAL HALL	80 SOUTH MAIN ST	Midd. Hous. Author.	931	3.28	Elderly Housing	None	No	Yes/ Yes	?
0024-0000-0037 B	MIDDLETON TOWN OF / MEMORIAL HALL	LAKE ST	DPW	931	0.41	Pump House	None	No	No/ No	No
0016-0000-0079	MIDDLETON TOWN OF / MEMORIAL HALL	195 NORTH MAIN ST	DPW	931	7.41	Department of Public Works Building	None	Yes	Some/ No	No
0025-0000-0118	MIDDLETON TOWN OF / MEMORIAL HALL	17 MAPLE ST	BOS	931	1.60	Future Town Common	None	Yes	Yes/ No	No

0025-0000-0074	MIDDLETON TOWN OF / MEMORIAL HALL	11 SOUTH MAIN ST	BOS	931	0.10		None			
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Schools

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0033-0000-0044 C	NORTH SHORE REG VOCATIONAL /	BIXBY AVE	NSRV School Com.	933	0.40	Vocational School/ Scheduled to Close	None	Yes	Yes/Yes	?
0025-0000-0137	MIDDLETON TOWN OF / MIDDLETON SCHOOL DEPT	26 CENTRAL ST	Mid. School Com.	934	10.50	Howe Manning School	None	Yes	Yes/Yes	Yes
0029-0000-0070	MIDDLETON TOWN OF / MIDDLETON SCHOOL DEPT	143 SOUTH MAIN ST	Mid. School Com.	934	10.40	Fuller Meadow School	None	Yes	Yes/Yes	?
0033-0000-0041	NORTH SHORE REG VOCATIONAL /	30 LOG BRIDGE RD	NSRV School Com.	934	8.66	Vocational School Scheduled to Close	None	Yes	Yes/Yes	?
0033-0000-0041 B	NORTH SHORE REG VOCATIONAL /	30 LOG BRIDGE RD	NSRV School Com.	934	4.85	Vocational School Scheduled to Close	None	Yes	Yes/Yes	?

Municipal Land Taken for Tax Title

0025-0000-0123	MIDDLETON TOWN OF / MEMORIAL HALL	4 LAKE ST	Asses.	935	0.25	Tax taking	None	No	No/ No	No
0017-0000-0096	MIDDLETON TOWN OF / MEMORIAL HALL	65 NORTH MAIN ST	Asses.	935	1.00	Tax taking	None	No	No/ No	No
0015-0000-0029	MIDDLETON TOWN OF / MEMORIAL HALL	EVANS RD	Asses.	936	0.14	Tax taking	None	No	No/ No	No
0013-0000-0064 T	MIDDLETON TOWN OF / MEMORIAL HALL	SUMMIT AVE	Asses.	936	0.29	Tax taking	None	No	No/ No	No
0033-0000-0015	MIDDLETON TOWN OF / MEMORIAL HALL	LONERGAN RD	Asses.	936	6.00	Tax taking	None	No	No/ No	No
0032-0000-0057	MIDDLETON TOWN OF / MEMORIAL HALL	RICHARDSON RD	Asses.	936	0.38	Tax taking	None	No	No/ No	No
0032-0000-0058	MIDDLETON TOWN OF / MEMORIAL HALL	RIVERVIEW DR	Asses.	936	1.60	Tax taking	None	No	No/ No	No
0029-0000-0041	MIDDLETON TOWN OF / MEMORIAL HALL	STEVENS AVE	Asses.	936	0.40	Tax taking	None	No	No/ No	No
0015-0000-0054	MIDDLETON TOWN OF / MEMORIAL HALL	WOODLAND RD	Asses.	936	0.83	Tax taking	None	No	No/ No	No

0015-0000-0012 K	MIDDLETON TOWN OF / MEMORIAL HALL	DONOVANS WAY	Asses.	936	3.90	Tax taking	None	No	No/ No	No
0013-0000-0073	MIDDLETON TOWN OF / MEMORIAL HALL	SUMMIT AVE	Asses.	936	0.51	Tax taking	None	No	No/ No	No
0013-0000-0086	MIDDLETON TOWN OF / MEMORIAL HALL	ALLEN AVE	Asses.	936	0.12	Tax taking	None	No	No/ No	No
0013-0000-0064	MIDDLETON TOWN OF / MEMORIAL HALL	SUMMIT AVE	Asses.	936	0.26	Tax taking	None	No	No/ No	No
0013-0000-0068	MIDDLETON TOWN OF / MEMORIAL HALL	SUMMIT AVE	Asses.	936	0.49	Tax taking	None	No	No/ No	No
0013-0000-0069	MIDDLETON TOWN OF / MEMORIAL HALL	SUMMIT AVE	Asses.	936	0.11	Tax taking	None	No	No/ No	No
0013-0000-0056	MIDDLETON TOWN OF / MEMORIAL HALL	METCALF AVE	Asses.	936	0.18	Tax taking	None	No	No/ No	No
0009-0000-0041	MIDDLETON TOWN OF / MEMORIAL HALL	ROCKAWAY RD	Asses.	936	2.73	Tax taking	None	No	No/ No	No
0009-0000-0043	MIDDLETON TOWN OF / MEMORIAL HALL	MARTIN ST	Asses.	936	6.92	Tax taking	None	No	No/ No	No
0009-0000-0009	MIDDLETON TOWN OF / MEMORIAL HALL	NORTH MAIN ST	Asses.	936	4.10	Tax taking	None	No	No/ No	No
0009-0000-0040	MIDDLETON TOWN OF / MEMORIAL HALL	ROCKAWAY RD	Asses.	936	0.17	Tax taking	None	No	No/ No	No
0008-0000-0020 A	MIDDLETON TOWN OF / MEMORIAL HALL	INGALLS MEADOW	Asses.	936	3.00	Tax taking	None	No	No/ No	No
0004-0000-0008 H	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST	Asses.	936	2.10	Tax taking	None	No	No/ No	No
0013-0000-0051	MIDDLETON TOWN OF / MEMORIAL HALL	METCALF AVE	Asses.	936	0.01	Tax taking	None	No	No/ No	No
0013-0000-0051 B	MIDDLETON TOWN OF / MEMORIAL HALL	METCALF AVE	Asses.	936	0.01	Tax taking	None	No	No/ No	No
0018-0000-0027	MIDDLETON TOWN OF / MEMORIAL HALL	PEABODY ST	Asses.	936	1.13	Tax taking	None	No	No/ No	No
0011-0000-0020	MIDDLETON TOWN OF / MEMORIAL HALL	LIBERTY ST	Asses.	936	0.96	Tax taking	None	No	No/ No	No
0011-0000-0006	TOWN OF MIDDLETON	40 SCHOOL ST	Asses.	937	3.20	Tax taking	None	No	No/ No	No

Municipal Housing Authority

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition& Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0021-0000-0007	MIDDLETON HOUSING AUTHORITY /	1 -12 MEMORIAL DR	Hous. Auth.	970	2.73	Housing	None	None	Yes/ Yes	?

0025-0000-0027 A	MIDDLETON HOUSING AUTHORITY /	ORCHARD CIR		973	4.68	Housing	None	None	Yes/ Yes	?
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Municipal Utility Properties

0019-0000-0004	MIDDLETON TOWN OF / ELECTRIC LIGHT DIVISION	8 GREGORY ST		971	0.46	Electric Utility	None	None	No/ No	No
0024-0000-0018	MIDDLETON TOWN OF / ELECTRIC LIGHT DIVISION	EVON LN		971	0.80	Electric Utility	None	None	No/ No	No
0025-0000-0186	MIDDLETON TOWN OF / ELECTRIC LIGHT DIVISION	CENTRAL ST		971	1.00	Electric Utility	None	None	No/ No	No
0003-0000-0002 A	MIDDLETON TOWN OF / ELECTRIC LIGHT DIVISION	SHARPNERS POND RD		971	4.01	Electric Utility	None	None	No/ No	No
0025-0000-9999	DANVERS TOWN OF / ELECTRIC DIVISION	CENTRAL ST		988	7.93	Utility Easement	None	Rail Trail?	No/ No	No
0019-0000-9998	DANVERS TOWN OF / ELECTRIC DIVISION	MAPLE ST		988	5.18	Utility Easement	None	Rail Trail?	No/ No	No
0019-0000-9997	DANVERS TOWN OF / ELECTRIC DIVISION	MAPLE ST		988	0.77	Utility Easement	None	Rail Trail?	No/ No	No
0020-0000-9999	DANVERS TOWN OF / ELECTRIC DIVISION	OFF GREGORY ST		988	2.89	Utility Easement	None	Rail Trail?	No/ No	No
0017-0000-9999	DANVERS TOWN OF / ELECTRIC DIVISION	ESSEX ST		988	5.50	Utility Easement	None	Rail Trail?	No/ No	No
0019-0000-9999	DANVERS TOWN OF / ELECTRIC DIVISION	GREGORY ST		988	2.19	Utility Easement	None	Rail Trail?	No/ No	No

Public Parcels- Protected

State Forests

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0002-0000-0002	MASSACHUSETTS COMM / BOXFORD STATE FOREST	BOXFORD LINE	DCR	910	3.90	Mass. DCR (State Forest)	In Perpetuity	Yes	Yes/ No	?
0006-0000-0003	MASSACHUSETTS COMM / BOXFORD STATE FOREST	BOXFORD LINE	DCR	910	40.00	Mass. DCR (State Forest)	In Perpetuity	Yes	Yes/ No	?

0015-0000-0080	MASSACHUSETTS COMM / HAROLD PARKER STATE FOREST	BETTENCOURT RD	DCR	910	24.10	Mass. DCR (State Forest)	In Perpetuity	Yes	Yes/ No	?
0009-0000-0018	MASSACHUSETTS COMM / HAROLD PARKER STATE FOREST	NORTH MAIN ST	DCR	910	24.60	Mass. DCR (State Forest)	In Perpetuity	Yes	Yes/ No	?
0001-0000-0006	MASSACHUSETTS COMM / DEPT OF ENV MGMT	NORTH LIBERTY ST	DCR	910	51.04	Mass. DCR (State Forest)	In Perpetuity	Yes	Yes/ No	?

Former Essex County Conservation Land

The following parcels were purchased/ acquired by Essex County over the years for Conservation Land, therefore it can be assumed that they are protected by Article 97. When the County government dissolved, the properties were passed to the Commonwealth of Massachusetts. The Division of Capital Asset Management (DCAM) is not a conservation entity, and long-term protection of these parcels within this agency is not guaranteed. Middleton residents have voted to support legislation to transfer these parcels to the Town of Middleton, a non-profit conservation organization, or a conservation related State agency where permanent Conservation Restrictions can be put on the land.

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0033-0000-0045	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	BIXBY AVE		928	5.40	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0026-0000-0013 A	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	BIXBY AVE		928	6.89	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0032-0000-0054	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	RIVERVIEW DR		928	10.02	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0032-0000-0055	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	RIVER ST		928	10.47	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0113	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	PEABODY ST		928	2.62	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0019-0000-0023	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MAPLE ST		928	2.76	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0020-0000-0020 B	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MAPLE ST		928	30.00	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	

0013-0000-0105	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	PEABODY ST		928	5.60	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0111	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	PEABODY ST		928	5.53	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0112	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	PEABODY ST		928	3.40	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0040	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MILL ST		928	20.70	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0041	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MILL ST		928	11.70	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0044 B	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MILL ST		928	2.58	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0008-0000-0014	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	OFF THUNDER BRIDGE LN		928	0.90	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0036	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MILL ST		928	0.25	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0013-0000-0037	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MILL ST		928	12.90	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0020-0000-0020	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MAPLE ST		928	40.99	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0006-0000-0007	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	BALD HILL AREA		928	11.68	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	
0019-0000-0105	MASSACHUSETTS COMM / DIV OF CAPITAL ASSET MGMT	MAPLE ST		928	1.19	Former Essex County Conservation Land	Chapter 97?	Yes	Yes/ No	

Municipal Conservation Parcels

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
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0020-0000-0016 C	MIDDLETON TOWN OF / MEMORIAL HALL	49 LOCUST ST		932	6.87	Municipal Conservation	Limited	Yes	Yes/ No	?
0011-0000-0027 N	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST		932	11.15	Municipal Conservation	Limited	Yes	Yes/ No	?
0020-0000-0027 X	MIDDLETON TOWN OF / MEMORIAL HALL	EAST ST		932	17.60	Municipal Conservation	Limited	Yes	Yes/ No	?
0033-0000-0001	MIDDLETON TOWN OF / MEMORIAL HALL	SOUTH MAIN ST		932	0.69	Municipal Conservation	Limited	Yes	Yes/ No	?
0033-0000-0009	MIDDLETON TOWN OF / MEMORIAL HALL	SOUTH MAIN ST		932	14.51	Municipal Conservation	Limited	Yes	Yes/ No	?
0024-0000-0076 A	MIDDLETON TOWN OF / MEMORIAL HALL	LAKE ST		932	12.00	Municipal Conservation	Limited	Yes	Yes/ No	?
0018-0000-0018	MIDDLETON TOWN OF / MEMORIAL HALL	LIBERTY ST		932	3.50	Municipal Conservation	Limited	Yes	Yes/ No	?
0018-0000-0068	MIDDLETON TOWN OF / MEMORIAL HALL	RANDALL RD		932	1.44	Municipal Conservation	Limited	Yes	Yes/ No	?
0013-0000-0048	MIDDLETON TOWN OF / MEMORIAL HALL	MILL ST		932	5.06	Municipal Conservation	Limited	Yes	Yes/ No	?
0010-0000-0043	MIDDLETON TOWN OF / MEMORIAL HALL	NORTH MAIN ST		932	3.90	Municipal Conservation	Limited	Yes	Yes/ No	?
0012-0000-0012	MIDDLETON TOWN OF / MEMORIAL HALL	MILL ST		932	68.00	Municipal Conservation	Limited	Yes	Yes/ No	?
0012-0000-0012 C	MIDDLETON TOWN OF / MEMORIAL HALL	MILL ST		932	15.92	Municipal Conservation	Limited	Yes	Yes/ No	?
0010-0000-0010	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST		932	1.46	Municipal Conservation	Limited	Yes	Yes/ No	?
0010-0000-0017	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST		932	15.45	Municipal Conservation	Limited	Yes	Yes/ No	?
0010-0000-0017 A	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST		932	15.24	Municipal Conservation	Limited	Yes	Yes/ No	?
0010-0000-0008	MIDDLETON TOWN OF / MEMORIAL HALL	ESSEX ST		932	0.87	Municipal Conservation	Limited	Yes	Yes/ No	?
0009-0000-0013	MIDDLETON TOWN OF / MEMORIAL HALL	NORTH MAIN ST		932	6.90	Municipal Conservation	Limited	Yes	Yes/ No	?
0008-0000-0019	MIDDLETON TOWN OF / MEMORIAL HALL	I-95		932	22.00	Municipal Conservation	Limited	Yes	Yes/ No	?
0028-0000-0083	MIDDLETON TOWN OF / MEMORIAL HALL	SOUTH MAIN ST		932	9.00	Municipal Conservation	Limited	Yes	Yes/ No	?
0013-0000-0108 C	MIDDLETON TOWN OF / MEMORIAL HALL	PEABODY ST		932	1.65	Municipal Conservation	Limited	Yes	Yes/ No	?
0032-0000-0009 A	MIDDLETON TOWN OF / MEMORIAL HALL	OFF NATSUE WAY		932	39.41	Municipal Conservation	Limited	Yes	Yes/ No	?
0019-0000-0020 A	MIDDLETON TOWN OF / MEMORIAL HALL	PERKINS RD		932	1.89	Municipal Conservation	Limited	Yes	Yes/ No	?

0025-0000-0200	MIDDLETON TOWN OF / MEMORIAL HALL	WEBB ST		932	3.69	Municipal Conservation	Limited	Yes	Yes/ No	?
0029-0000-0051 X	MIDDLETON TOWN OF / MEMORIAL HALL	PARK AVE		932	16.36	Municipal Conservation	Limited	Yes	Yes/ No	?
0012-0000-0011 X	MIDDLETON TOWN OF / MEMORIAL HALL	MILL ST		932	22.00	Municipal Conservation	Limited	Yes	Yes/ No	?

Watershed Property

Map/ Lot Number	Ownership	Address	Mgmt. Agny	Zone Code	Lot Size	Current Use	Condition & Level of Protect.	Rec. Pot.	Public/ ADA Access	Grant
0024-0000-0074 A	DANVERS TOWN OF / WATER DEPT	LAKE ST		980	0.51	Watershed Land	Limited		No/ No	
0033-0000-0013	DANVERS TOWN OF / WATER DEPT	LONERGAN RD		980	6.00	Watershed Land	Limited		No/ No	
0024-0000-0061	DANVERS TOWN OF / WATER DEPT	15 PLEASANT ST		980	1.50	Watershed Land	Limited		No/ No	
0024-0000-0073	DANVERS TOWN OF / WATER DEPT	LAKE ST		980	1.39	Watershed Land	Limited		No/ No	
0023-0000-0004	DANVERS TOWN OF / WATER DEPT	MIDDLETON POND		980	2.50	Watershed Land	Limited		No/ No	
0024-0000-0037 A	DANVERS TOWN OF / WATER DEPT	LAKE ST		980	0.50	Watershed Land	Limited		No/ No	
0016-0000-0076	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	16.00	Watershed Land	Limited		No/ No	
0016-0000-0076 A	DANVERS TOWN OF / WATER DEPT	EMERSON BROOK		980	26.50	Watershed Land	Limited		No/ No	
0017-0000-0037 A	DANVERS TOWN OF / WATER DEPT	WILLS HILL		980	3.00	Watershed Land	Limited		No/ No	
0016-0000-0042	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	21.66	Watershed Land	Limited		No/ No	
0016-0000-0043	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	5.35	Watershed Land	Limited		No/ No	
0015-0000-0086 B	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	7.88	Watershed Land	Limited		No/ No	
0015-0000-0086 C	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	5.41	Watershed Land	Limited		No/ No	
0015-0000-0087 A	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	#####	Watershed Land	Limited		No/ No	
0015-0000-0079 A	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	23.00	Watershed Land	Limited		No/ No	
0015-0000-0081	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	7.16	Watershed Land	Limited		No/ No	

0015-0000-0086 A	DANVERS TOWN OF / WATER DEPT	FOREST ST		980	13.38	Watershed Land	Limited		No/ No	
0009-0000-0006	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	0.25	Watershed Land			No/ No	
0009-0000-0007	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	0.44	Watershed Land	Limited		No/ No	
0010-0000-0010 A	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	23.00	Watershed Land	Limited		No/ No	
0009-0000-0001	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	0.29	Watershed Land	Limited		No/ No	
0009-0000-0003	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	0.23	Watershed Land	Limited		No/ No	
0009-0000-0004	DANVERS TOWN OF / WATER DEPT	NORTH MAIN ST		980	0.75	Watershed Land	Limited		No/ No	
0024-0000-0072 B	DANVERS TOWN OF / WATER DEPT	LAKE ST		980	0.59	Watershed Land	Limited		No/ No	
0033-0000-0046 A	DANVERS TOWN OF / WATER DEPT	272 SOUTH MAIN ST		981	9.42				No/ No	
0024-0000-0037 C	DANVERS TOWN OF / WATER DEPT	40 LAKE ST		981	0.50				No/ No	
0024-0000-0037	DANVERS TOWN OF / WATER DEPT	30 LAKE ST		981	#####				No/ No	
0016-0000-0058	DANVERS TOWN OF / WATER DEPT	170 LAKE ST		981	1.92				No/ No	
0012-0000-0017 Z	DANVERS TOWN OF / WATER DEPT	PEABODY ST		988	0.46	Curtis Mill Site			Yes/ No	

SECTION 6--COMMUNITY GOALS

A. Description of Process

The continued goal of the Park & Recreation Department and Recreation Commission is to expand, improve and maintain our facilities. The facilities and programs that are added and developed each year continue to be the envy of area towns. Non-residents to some extent are welcome to use our facilities as long as there is no interference to permit holders. A spirit of cooperation continues with sports groups, leagues and organizations that jointly use the fields. This joint feeling of “ownership” assists with our philosophy of continuing the recreational resources for all residents to use and enjoy.

As described in the Introduction [Section 2] of this plan, there was a comprehensive gathering of input as to how the Town should proceed in the future in the areas of conservation and recreation planning and management. The two public forums and the discussions held with the Recreation Commission, the local land trust and a number of individuals all contributed to a solid understanding of public thought and sentiment on these important issues. While the development of this 2011 Plan is a continuum of the development of the 1998 Plan, and there is some consistency between the goals and objectives of the two plans, the process was entered into with a clean slate and an open mind as to how to shape the next five years.

B. Statement of Open Space and Recreational Goals

Like maple syrup, the essence of what the Town of Middleton should be and should look like comes from a distillation process of many individual thoughts and pieces of information. The essence of the messages quantified thus far is that Middleton is proud of three key elements--its open space, the recreation facilities and the significant natural resource base of clean water. There is a feeling that the Town and its people have worked hard over many, many years to protect and build up these elements. There is a belief that as the character of the community changes, due to population growth and commercial/industrial development, there should be an effort to insure that all of the residents, both old and new, have the ability to enjoy, and receive the benefits from, these elements which are essential components for the community.

SECTION 7--ANALYSIS OF NEEDS

A. Summary of Resource Protection Needs

A technical and professional review of the resource protection needs for the Town brings a focus to several areas. First, the Ipswich River, with the help of the Middleton Stream Team, and the Greenbelt has been recognized as a significant resource, and it is easy to see that the Greenbelt corridor throughout Middleton should be completed. There is the potential for some significant development along the river. To provide the protection which is warranted due to the Priority and Estimated Habitats and Sole Source designations, additional acquisitions in this area are needed.

Second is the Pike Messenger Conservation Park. This 35 acre area recently created, has seen many development projects attempts. It was formally called Locust-East (between Locust and East Streets) purchased by Middleton in 2003. In 2009, the Middleton selectman voted to rename the area to Pike Messenger Conservation Park, in honor of Pike Messenger for his dedicated years as Conservation agent. The goal within the next year is to create a nice parking area and create many trails to hike through the 35 acre site. Acquisition in an area such as this is important because of the amount of existing conservation land and the long-term efforts to protect as much of the land as is financially possible. Increased acquisition efforts would result in maximum protection for the extensive wetlands resources found in this area, and help in establishing a wildlife habitat zone which would allow for the greatest possible level of diversity.

In the 1960's, when the Town was zoned, Conservancy Districts were identified and included in the Zoning Bylaw. These districts are defined by their elevation above sea level and building in this area is not permitted.

B. Summary of Community Needs

An indicator for the future was expressed at the public hearing on the preparation of this plan. There, it was brought up and supported by people that, due to the expansive levels of growth in Middleton, efforts should be made to provide for more protection of land and water in Town. Between 2013 and 2019, there may be a decrease in new homes in Middleton, and therefore the strain that new residents would place on the existing resources will be less than in the past several years. There is still a need, however, to explore options for acquiring more land along Boston Brook and the Ipswich River.

Expressions of the communities want and need for recreational facilities, fields, indoor space and a need for Rails to Trails continue to surface. Youth sports leagues continue to request field space and upgrades.

It was made clear that Open Space is very important to the overall quality of the Town for the protection of water. Ground water quality discussed relates to drinking water and surface water and protecting the land that surrounds town wells in addition to land known as water recharge

areas. The conservation commission discussed the use of property tax dollars for the acquisition of open space in the future.

The Statewide Comprehensive Outdoor Recreation Plan (SCORP), Massachusetts Outdoors 2006 is a planning document that is used to determine “future needs and uses of outdoor resources for public recreation and relaxation.”

(<http://www.mass.gov/eea/docs/eea/dcs/massoutdoor2006.pdf>)

Information contained in the SCORP can be used along with community input to determine future Open Space and Recreation needs. For example, the SCORP shows that older demographic groups make more use of trails and greenways, and less use of lakes and ponds than younger members of the community. With Middleton’s aging population, this information suggests that further development of trails and greenways may correspond to the needs of a growing segment of the town. In addition, golf courses and parks are popular Open Space land uses amongst all adult age groups of Massachusetts residents.

Several trends documented in the SCORP for the Northeastern Region of Massachusetts, which includes Middleton, are:

- “In the Northeastern Region, road biking (14.1%) and playground activity (13.8%) were the highest ranked needs, and ice skating, while comparatively low at 4.5%, was higher than any other region.”
- “In terms of the most popular activities, the Northeastern Region is unremarkable, closely following the statewide patterns. Swimming, walking, sightseeing and tours, hiking and fishing top the list. However, interesting and distinctive preference patterns emerge at a more subtle level when activity levels are compared in detail with other regions. Among the more notable exceptions, baseball, sunbathing, horseback riding, off-road vehicle driving, snowmobiling, boating (motorized), and surfing are more often reported here than anywhere else in the Commonwealth. Also more popular than average are soccer, tot lot activity, and hockey (pond). While motor boating is most popular, sail boating and sailing are reported at their least popular level statewide, notwithstanding the great harbors of Marblehead, Salem, Manchester and Lynn. The same is true of football, sightseeing and tours and events, road biking, cross country skiing, fishing, and hunting. Also less frequently reported than other regions are roller blading and skating, running and jogging, and camping”.
- “When aggregated according to field, water, trail, passive and wilderness activities or pursuits, the strongest area seems to be that of water-based activities, followed by passive recreation activities. Wilderness activities are the least reported. These patterns imply the abundance of water (both coastal and fresh) and conservation resources, and hint at the relative scarcity of trail and wilderness types of resources.”
- “When expressed as inferred need for new recreational areas, these activities translate to the need for more playgrounds, neighborhood parks, and golf courses, and better access to agricultural lands, lakes and ponds, rivers and streams, and coastal beaches. Need was nearly as strongly expressed for bikeways and trails or greenways. The least need was identified for historic and cultural sites and then wetlands.”

These trends should be considered when making decisions concerning the acquisition, upgrade or management of Open Space or Recreation land in the coming years.

C. Management Needs

More needs to be accomplished to manage and promote conservation facilities and areas. People have indicated a need for hiking trails and cross-county ski trails, but both of these already exist in some fashion on most conservation parcels. Clearly, the availability and the options for use, of these parcels must be better publicized. Handouts are available in the conservation office. Many people stop in and call to pick up our new Hiking for Health & History in Middleton booklet and to inquire about fishing and kayaking areas.

We must publicize and promote the conservation land, and educate people as to the appropriate uses and benefits [e.g. educational, natural resource protection] of all of these parcels.

In summary, the important needs that have been identified are:

- Expand conservation land holdings, especially where existing parcels can be added to.
- Form a proactive task force to deal effectively with the political and funding issues relating to land acquisition.
- Continue efforts to protect important water resource areas, especially along greenbelt areas.
- Improve and expand recreational facilities.
- Promote and manage conservation lands so that residents are familiar with and can easily use these parcels.

SECTION 8--GOALS AND OBJECTIVES

The goals and objectives outlined below have been arrived at through a multi-step process. First, the goals and objectives included in the **1998 Open Space and Recreation Plan** were reviewed. Second, the needs highlighted in Section 7 were compared to the 1998 items to see if some issues remained as important focal points. Third, groupings were made to bring together a comprehensive listing of goals and objectives which respond to the concerns of the residents of the Town of Middleton. The general goals stayed the same from the 1998 Plan, but the objectives have changed based on accomplishments since 1998 and new circumstances. Areas targeted for possible acquisition for conservation purposes, or lands which could be protected through some other mechanism are closely monitored by the Middleton Stream Team.

Goal 1: Acquire More Open Space Lands

The past high rate of residential development has made the acquisition of additional open space and conservation land a top priority. Many residents feel that some emphasis should be placed on purchasing land which is poised, or at least destined, for residential development. The effect of this acquisition program is to create new and broader opportunities for residents to experience a variety of benefits [walking, nature studies, photography, etc.] through the use of conservation land. Further, the acquisition of developable land will help place some limits on residential growth.

Objectives

- a. Work with Board of Selectmen, Finance Committee and Capital Improvements Committee to develop support for appropriations for land acquisition funding.
- b. Work with developers and land owners to acquire gifts, easements or restrictions for conservation purposes.
- c. Initiate, when available, Self-Help applications for acquisition monies.
- d. Conduct on-going reviews on the availability of land to purchase, especially Chapter 61 property.

A key area for land acquisition is for land adjacent to the Town's primary rivers and brooks.

Goal 2: Protect Aquifers and Groundwater Recharge Areas

The importance of protecting the public drinking water supply is almost universally accepted and has been widely heralded by a variety of reports and conclusions from several committees, consultants and other concerned groups. In this era of fiscal constraints, it will be important to layer and combine open space and water protection-related acquisitions.

Objectives

- a. Coordinate land acquisition activities of the Conservation Commission, the Water Department and the Board of Selectmen, and conduct acquisition programs in concert with the findings of the Zone II study.
- b. Continue involvement with the regional Stream Team. Work with this group on issues such as public education and awareness of land use in relationship to drinking water protection.

Goal 3: Provide for Public Access to Conservation Lands and Manage in Accordance with Community Needs

The importance of this goal was mentioned often during the review and analysis process of this plan. Knowing access points and trail locations, along with the understanding that appropriate management is occurring on conservation parcels, is key to developing and maintaining public support for continued conservation efforts.

Objectives

- a. Establish management guidelines for conservation lands.
- b. Continue work with volunteers and organizations, agencies, and other individuals to undertake trail development and other field activities.
- c. A guide to conservation land and hiking trails has been developed and will be updated when necessary.

Work has been done on these objectives for the Pike Messenger Conservation Park areas, but additional work is necessary. For any new acquisitions, the issues of trail development and management should be part of the review process prior to final purchase.

Goal 4: Expand and Improve Recreational Facilities

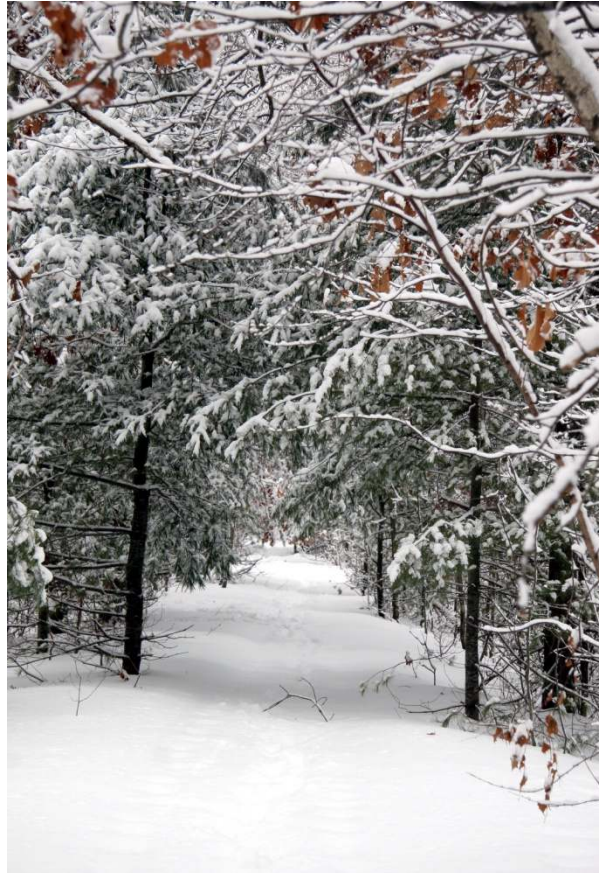
As the Town's population continues to grow, there are new demands placed on the recreational infrastructure every day. The intensive use of fields and facilities, and the sheer number of new participants in the various leagues and programs, requires constant attention to this important component of the community.

Objectives

- a. Complete build-out of the East Street and Natsue Way recreation areas.
- b. Continue to seek out funding sources for expansion and management projects.

New facilities to study include a community swimming pool, expansion of the rails-to-trails corridor, a skating pond, tennis courts and satellite playgrounds.

The rails to trails corridor is utilized extensively for biking, walking and jogging linking up with the Bay Circuit trail. It is also used for cross-country skiing during the winter months. If the line expands into surrounding towns, this would be an excellent regional project.



Collaborate with Mass department of Transportation to improve sidewalks along Route 114 with possibility of exploring bike lanes.

General Goals and Objectives

1. Regional Planning

There is a great need for increased regional planning in the areas of conservation space and recreation facilities. Two factors which certainly impact this need are limited town-specific funds and increased competition for state or federal matching grants.

For Middleton, examples of regional plans could include greenbelts along the Ipswich River and Boston Brook and connections between conservation lands, or the extension of rails-to-trails. The work of the Middleton Stream Team, along with the increased regional discussions on broader financial and public safety issues, could lead to open doors for resource protection and facility sharing.

The combination of town-initiated regional planning and the development of the public/private partnership which is incorporated into the specific goals and objectives outlined above will help to insure that Middleton works in parallel with the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Implementation of the SCORP program will help meet the needs of all the residents of the Commonwealth. The goals and objectives of this plan will complement the SCORP objectives.

2. Accessibility

The **1998 Open Space and Recreation Plan** contained the following reference to the need for accessibility:

"Another issue that must be incorporated in new plans and improvements is one of handicapped accessibility. An effort should be made to create accessibility to one or more existing conservation areas, and for any new acquisitions this should be part of the discussion and consideration process."

While there has been some limited discussion since then on this issue, there has not been any of the necessary site work done to create truly accessible areas. Some work, such as the installation of appropriately designed picnic tables, is fairly easy. Other work, such as an accessible loop trail in a conservation parcel, would take more planning and funding. In either case, the Town is committed to, but needs to be more proactive in, creating opportunities for all its citizens.

SECTION 9--SEVEN YEAR ACTION PLAN

The Seven Year Action Plan creates a framework for proactive initiatives and efforts by the Town of Middleton to insure that the needs, goals, objectives and desires of the residents of the Town are addressed. In looking back at the Five Year Plan contained within the **1998 Open Space and Recreation Plan**, it is clear that many goals were met and achieved. It is also clear, though, that several action goals still need a dose of time, energy and money. These three items are the key to whether or not, or to what degree, a specific objective is met. As shown throughout this plan, the Town of Middleton has grown, and though growth has slowed down at the present, there remain increasing demands on staff and increasing competition for funds. Like a family who might plan a vacation but finds the funds needed for car repairs, braces or other necessities, the Town faces an on going juggling act with staff's time and budgetary constraints.

The Action Plan primarily outlines possible additions to the Conservation Commission's land holdings. These areas focus on expanding existing open space parcels and creating protection for ground and surface waters and wildlife habitat.

Seven Year Action Plan

CONSERVATION	2013	2014	2015	2016	2017	2018	2019
Distribute copies of Open Space and Recreation Plan	X						
Identify environmentally sensitive habitat for possible acquisition.	X	X	X	X	X	X	X
Seek regular funding through Town Meeting for land acquisition.	X	X	X	X	X	X	X
Identify land that abuts existing conservation land and inform owners of development scenarios that promote open space protection.		X	X	X	X	X	X
Submit Self-Help or Conservation Fund applications for land acquisition.		X	X	X	X	X	X
Re-Print guide books for accessible conservation land and distribute to residents.		X		X		X	
Complete transfer of land off Debush to the Town, Conservation Commission, improve Pike Messenger Conservation Park.	X	X					
Establish management guides for conservation land.		X	X	X			
Work to bring a Rails-to Trails program, Selectman, recreation.	X	X	X	X	X	X	X
Continue involvement with the Stream Team and Essex Greenbelt.	X	X	X	X	X	X	X
Solicit and coordinate volunteer activities for conservation projects, including trail clearing, marking and signage.	X	X	X	X	X	X	X
Improve Accessibility for handicapped individuals.		X	X	X	X	X	X
Continue work on water conservation.	X	X	X	X	X	X	X
RECREATION							

Distribute copies of Open Space and Recreation Plan.	X						
Pursue Town Meeting for funding and grants for build-out of recreation Areas. Work for safer recreation areas.	X	X	X	X	X	X	X
Seek Funding for additional recreation, existing facilities.	X	X	X	X	X	X	X
Coordinate and cooperate with School Department on facility use issues.	X	X	X	X	X	X	X

Goals/Objectives (in order of priority)	Action
	Distribute copies of Open Space and Recreation Plan (Conservation Agent)
Acquire More Open Space	<p>Identify environmentally sensitive habitat for possible acquisition. conservation, public funding. (Conservation Agent/ Stream Team/ Conservation Com.)</p> <p>Seek regular funding through Town Meeting for land acquisition. (Conservation Commission) [CPA Funding]</p> <p>Identify land that abuts existing conservation land and inform owners of development scenarios that promote open space protection. (Conservation Commission/ Stream Team)</p> <p>Submit Self-Help or Conservation Fund applications for land acquisition. (Conservation Commission, Conservation Agent)</p> <p>Complete transfer of land off Debush to the Town, Conservation Commission, improve Pike Messenger Conservation Park. (Town Manager/ Conservation Agent) [NHESP Escrow Fund]</p> <p>Continue involvement with the Stream Team and Essex Greenbelt. (Conservation Commission/ Planning Board)</p>
Protect Aquifers and Groundwater Recharge Areas	<p>Identify environmentally sensitive habitat for possible acquisition. conservation, public funding. (Conservation Agent/ Stream Team/ Conservation Com.)</p> <p>Seek regular funding through Town Meeting for land acquisition, (Conservation Commission) [CPA Funding]</p> <p>Submit Self-Help or Conservation Fund applications for land acquisition. (Conservation Commission, Conservation Agent)</p> <p>Complete transfer of land off Debush to the Town, Conservation Commission. (Town Manager/ Conservation Agent)</p> <p>Continue involvement with the Stream Team and Essex Greenbelt. (Conservation Commission/ Planning Board)</p>

Continue work on water conservation. (Conservation Commission/ Planning Board/ Water Department)

Provide for Public Access to Conservation Lands and Manage in Accordance with Community Needs

Re-Print guide books for accessible conservation land to and distribute to residents, conservation commission. (Health Director/ Conservation Agent)

Establish management guides for conservation land. (Conservation Agent/ Conservation Commission)
[Conservation Account Funding]

Work to bring a Rails-to Trails program to Middleton. (Selectman, Recreation, Trails-to-Trails Committee, Health Director)

Continue involvement with the Stream Team and Essex Greenbelt. (Conservation Commission/ Planning Board)

Solicit and coordinate volunteer activities for conservation projects, including trail clearing, marking and signage. (Conservation Commission)

Improve Accessibility for handicapped individuals. (Town Manager, Board of Selectmen, DPW Director)

Expand and Improve Recreational Facilities

Pursue Town Meeting for funding and grants for build-out of recreation Areas. Work for safer recreation areas. (Recreation)

Seek Funding for additional recreation, existing facilities. (Recreation)

Improve Accessibility for handicapped individuals. (Recreation, Town Manager, Board of Selectmen, DPW Director)

Coordinate and cooperate with School Department on facility use issues. (Recreation)

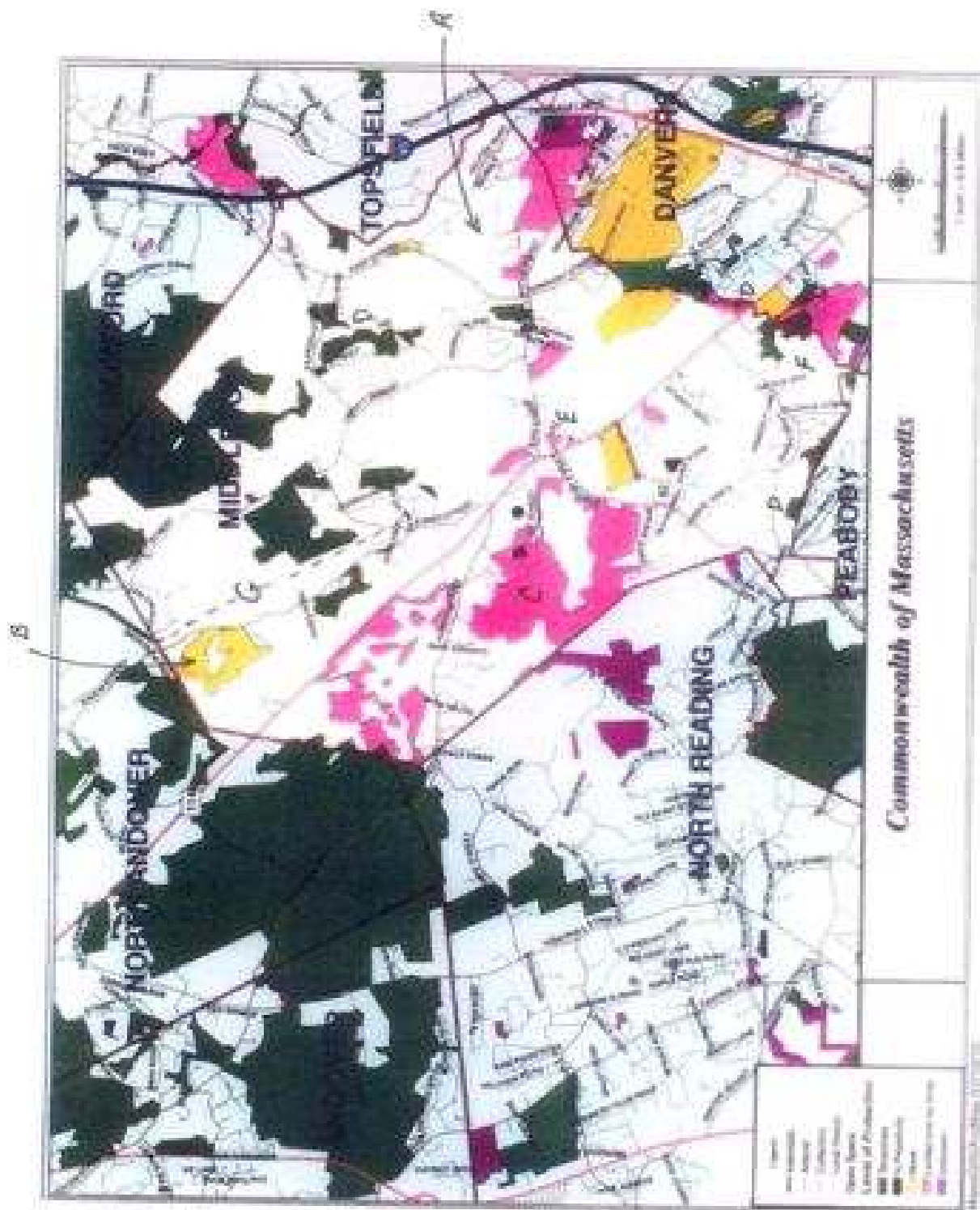


Figure 21 Seven Year Action Plan Map

A. Pike Messenger Park

Improve Pike Messenger Conservation Park.

- B. Creighton Pond Camp
Identify land that abuts existing conservation land and inform owners of development scenarios that promote open space protection.
- C. Watershed Lands
Continue work on water conservation.
- D. DCAM Lands
Identify environmentally sensitive habitat for possible acquisition.
- E. Town Common
**Improve Accessibility for handicapped individuals.
Pursue Town Meeting for funding and grants for build-out of recreation Areas.**
- F. Natsue Way
Complete transfer of land.
- G. Rail Trail
Work to bring a Rails-to Trails program.

SECTION 10--REFERENCES

The following references were consulted during the preparation of the 2013 Open Space and Recreation Plan update: Massachusetts Open Space Protection Programs: Preserving the Future, [EOEA, 1995]; Massachusetts Outdoors: For Our Common Good, [SCORP, EOEA, 1988]; Soil survey of Essex County, Massachusetts, Northern Part, [USDA, SCS, 1978]; Massachusetts Department of Revenue, Division of Local Services, [DER 2010-2011].

The following references were used to develop the original Open Space Plan in 1998.

BIBLIOGRAPHY

Environmental Resources

Roberts, John L., *The Glacial History of North Andover*, (North Andover Historical Society, 1977).

Sears, John Henry, *The Physical Geography, Geology, Mineralogy, and Paleontology of Essex County Massachusetts*, (Essex Institute, Salem 1905).

Soil Survey of Essex County, Massachusetts, Southern Part, (Soil Conservation Service, USDA, 1984).

Zink, George E. and Waldo Holcombe, *Rocks, and Minerals Glaciation*, (Brooks School, North Andover, 1960).

Growing Greener, A Conservation Planning Workbook for Municipal Officials in Pennsylvania, Prepared for the Pennsylvania Department of Conservation and Natural Resources by The Natural Lands Trust, 1997.

Protecting a River, A Volunteer's Guide to the Ipswich River Watershed Conservation Strategy, Ipswich River Watershed Association, Edited by Kerry Mackin. Second Edition, June 1994.

Topographic Maps (North Reading, Salem, Ipswich, and Lawrence Quadrangles), U.S. Geological Survey, 1987.

Federal References

Design Guide for Accessible Outdoor Recreation, Prepared by Interagency Guidelines Task Group for Accessible Outdoor Recreation. United States Department of Agriculture. United States Department of Interior. Interim Draft for Review. 2300—Recreation, September 1990.

Moore, Robin C., Goltsman, Susan K., Iacofano, Daniel S., *Play For All Guidelines: Planning, Design and Management of Outdoor Play Settings for All Children*. MIG Communications, 1987.

Historical References

C.F. Jewett & Co., *Standard History of Essex County Massachusetts*,, pages 301-304, Boston, 1878.

Watkins, Lura Woodside, *Middleton, Massachusetts A Cultural History*, Essex Institute, Salem, Massachusetts, 1970.

Middleton Historical Guide, Flint Public Library, 1975.

Municipal References

Town of Middleton Open Space & Recreation Plan

Eliot, Charles W., Planning Consultant, *"The Master Plan" Comprehensive General Development Plan*, (Middleton Planning Board, 1966).

Krieger, Alex, Mackin, Anne, *A Design Primer for Cities and Towns*, (Massachusetts Council on the Arts and Humanities, 1989).

An Open Space & Recreation Plan for the Town of Ipswich, Town of Ipswich, 1994

Business Resource Guide, 1997, Middleton Board of Trade, 1997.

Draft Open Space and Recreation Plan, Town of Andover, 1994.

Growing Greener, A Conservation Planning Workbook for Municipal Officials in Pennsylvania, Prepared for the Pennsylvania Department of Conservation and Natural Resources by The Natural Lands Trust, 1997.

Harvard Open Space Plan, Town of Harvard, Mass., 1979

MassGIS Datalayer Descriptions and Guide to User Services, Executive Office of Environmental Affairs, July 1997.

Open Space and Recreation Plan, Town of Boxford, 1988.

Open Space and Recreation Plan, Town of Danvers, 1996.

Open Space and Recreation Plan, Town of Dedham, 1991.

Rules and Regulations Governing the Subdivision of Land in the Town of Middleton, Massachusetts, (Middleton Planning Board), 1987.

Wenham's Landscape: Guiding Growth for Tomorrow, The Open Space and Housing Study Committee, 1989.

Zoning By-law of the Town of Middleton, Massachusetts, compiled and printed by the Planning Board of Middleton, Massachusetts, 1997.

1996 Annual Report, Town of Middleton Massachusetts, 1996.

SECTION 11—LETTERS OF REVIEW

Appendix II – Letters of Review



Deval Patrick
GOVERNOR

Timothy Murray
LIEUTENANT GOVERNOR

Richard K. Sullivan, Jr.
SECRETARY

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

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

July 9, 2012

Candace Wheeler
8 Rockholm Road
Gloucester, MA 01930

Re: Open Space and Recreation Plan

Dear Ms. Wheeler:

Thank you for submitting the draft Open Space and Recreation Plan for Middleton to this office for review and compliance with the current Open Space and Recreation Plan Requirements. This plan has been conditionally approved through July 2017. Conditional approval will allow the town to participate in DCS grant rounds through July 2017, and a grant award may be offered to the town. However, no final grant payments will be made until the plan is completed.

Once the following items are addressed, your plan will receive final approval:

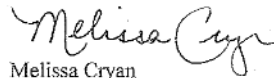
1. Planning Process and Public Participation – this section should describe how the public meetings were advertised.
2. Population Characteristics – information on population density and the town's industries and employment trends must be added.
3. Growth and Development Patterns – the Infrastructure section is missing information on the town's sewer systems.
4. Vegetation – information on the town's public shade trees must be added.
5. Fisheries and Wildlife – a more thorough inventory needs to be included, as well as information on any wildlife corridors in the town.
6. Scenic Resources and Unique Environments – any unusual geologic features and cultural and historic features must be added.
7. Environmental Challenges – this section is missing. Please add it and be sure that it includes information on hazardous waste sites, landfills, erosion, chronic flooding, sedimentation, development impact, ground and surface water pollution, forestry issues and environmental equity issues. Environmental equity refers to looking at the distribution of open space in the community and noting if there is a section (or sections) of the town that does not have access to it.
8. Section 5 – a table that lists all town-owned conservation and recreation properties needs to be added to this section with the following column headers: ownership, management agency, current use, condition, recreation potential, type of grant (if any) used to purchase or renovate the property, public access, zoning, and degree of protection. All Chapter 61 lands, Conservation Restrictions, and Agricultural Preservation Restrictions must be listed.
9. Analysis of Needs – the Community Needs section must have information on the SCORP and how it pertains to Middleton. It can be found online at

<http://www.mass.gov/eca/docs/eca/dcs/massoutdoor2006.pdf>. The needs of special groups, such as the handicapped and the elderly, should be included as well.

10. Action Plan – DCS now allows for Action Plans to be written for seven years, which will make the OSRP good for seven years instead of five. If you spread the goals and objectives in the Action Plan out over seven years, instead of five in the final version of the plan, we will accept the plan for an additional two years. The action plan needs to list the goals and objectives in some sort of priority order, and identify a funding source and responsible party for each. The dates should be updated (it currently starts in 2011).
11. Letters of Review – letters from the Planning Board and Chief Municipal Officer are missing. Please send them in.
12. Maps – the Unique Features and Inventory maps are missing. Please include them
13. ADA – the review sheets of all town-owned conservation and recreation properties are missing.

Congratulations on undertaking such an important task. Please contact me at (617) 626-1171 or melissa.cryan@state.ma.us if you have any questions or concerns, and I look forward to reviewing your final plan.

Sincerely,



Melissa Cryan
Grants Manager

cc: Judith Schmitz, Conservation Agent



Smart Growth & Regional Collaboration

November 7, 2011

Michele F. Grenier
Middleton Conservation Agent
195 North Main Street
Middleton, MA 01949

Dear Ms. Grenier:

Thank you for submitting the Town of Middleton Open Space and Recreation Plan 2011 to the Metropolitan Area Planning Council (MAPC) for review.

The Division of Conservation Services (DCS) requires that all open space plans must be submitted to the regional planning agency for review. This review is advisory and only DCS has the power to approve a municipal open space plan. While DCS reviews open space plans for compliance with their guidelines, MAPC reviews these plans for their attention to regional issues generally and more specifically for consistency with *MetroFuture*, the regional policy plan for the Boston metropolitan area.

The following are our recommendations for amendments to the Middleton Open Space and Recreation Plan:

Duration of the Plan - The Division of Conservation Services now allows open space and recreation plans to be good for seven years if a seven year action plan is submitted. If you add two more years' worth of activities to your action plan it will extend the life of the plan.

Consistency with *MetroFuture* - *MetroFuture* is the official regional plan for Greater Boston, adopted consistently with the requirements of Massachusetts General Law. The plan includes 65 goals as well as 13 detailed implementation strategies for accomplishing these goals. We encourage all communities to become familiar with the plan by visiting the web site at <http://www.metrofuture.org/>.

The open space and recreation plan does not specifically mention *MetroFuture*. We encourage communities to include a brief paragraph about *MetroFuture* in Chapter III under Regional Context. Ideally this paragraph should explain ways in which Middleton's Open Space and Recreation Plan will help to advance some of the goals and implementation strategies in *MetroFuture* that relate specifically to open space, recreation, and the environment generally.

In the case of Middleton's plan, we do see several connections between your plan and *MetroFuture*, particularly in regard to Strategy 7A: *Bring Strategic and Regional Perspectives to Local Open Space Planning*. The Middleton Plan includes a discussion of regional resources including the Ipswich River and acknowledges the importance of regional planning in the area of conservation and recreation (page 41). In addition, the adoption of a conservancy overlay district, a flexible development bylaw and a watershed overlay protection district are all examples of smart growth that are encouraged by *MetroFuture*.

We are also pleased to see that Middleton has adopted the Community Preservation Act (CPA), which is a key strategy recommended by *MetroFuture*. Specifically in regard to CPA, you are undoubtedly aware that state matching funds for CPA

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Michelle Cicco'lo, *President* • Lynn Duncan, *Vice President* • Marilyn Contreas, *Secretary* • Taber Keally, *Treasurer* • Marc Draisen, *Executive Director*

communities have declined precipitously in recent years. We encourage you to support *An Act to Sustain Community Preservation* (HB 765 / SB 1841), the CPA reform bill that has been filed in the Legislature by Senator Cynthia Creem (D-Newton) and Representative Stephen Kulik (D-Worthington). This legislation would slightly broaden the eligible uses of CPA funds (at local discretion), and ensure that matching funds will not fall below 75% of locally-raised revenues. Please contact your state legislators to let them know of Middleton's support for this critical legislation.

Population Characteristics – There is a section titled "Population Characteristics" on page 12 but this section focuses more on a narrative description of the town rather than an analysis of demographic characteristics. Tables 2-4 do not sufficiently explore the population characteristics in a way that can be related to open space and recreation needs. This section should include a breakdown of the age of the current and projected population as well as information on households. The MAPC Data Center can assist you with obtaining and interpreting this information and can be reached by calling Holly St. Clair at (617) 451-2770 Extension 2014.

Environmental Justice We note that the plan does not address the issue of Environmental Justice (EJ) as required by the 2008 guidelines for preparing an open space plan. The environmental justice guidelines are spelled out in more detail in the 2008 Open Space and Recreation Planners Workbook.

In brief, the guidelines indicate two levels of addressing EJ. If a municipality includes EJ populations as defined by the state you must include certain information. If a city or town does not have identified EJ populations you are still required in the inventory section to consider and describe park and recreation inequities within the community as well as strategies to address those inequities. Although Middleton does not include any EJ populations as defined by the state, it does need to address park and recreation inequities.

You should consult the workbook for more details on these requirements and discuss these new requirements with the staff at the Division of Conservation Services. The workbook is on-line at http://www.mass.gov/envir/dcs/pdf/osrp_workbook.pdf.

Middleton's Open Space and Recreation Plan should serve the town well as it continues its efforts to preserve open space and provide for the recreational needs of its residents.

Thank you for the opportunity to review this plan.

Sincerely,



Marc D. Draisen
Executive Director

Cc: Melissa Cryan, Division of Conservation Services
Christine Lindberg, MAPC Representative, Town of Middleton

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Michelle Ciccolo, *President* • Lynn Duncan, *Vice President* • Marilyn Contreas, *Secretary* • Taber Keally, *Treasurer* • Marc Draisen, *Executive Director*

APPENDIX I

STUDY OF OPEN SPACE AND RECREATION PROGRAMS FOR PEOPLE WITH DISABILITIES

The Americans with Disabilities Act (ADA) was enacted to give civil rights protection to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for those with disabilities in public accommodations, employment, transportation, state and local government services and telecommunications.

Section 504 of the Rehabilitation Act of 1973 requires all communities to conduct a self-evaluation study on their facilities and programs. It applies to properties improved, directly or indirectly, with federal money.

This section is prepared as part of a Town-wide Section 504 evaluation. It refers to Town policy, and evaluates programs, services, and lands under the jurisdictions of the ADA Coordinator and Conservation Commission.

SECTION 504 SELF-EVALUATION FOR CONSERVATION COMMISSION AND ADA Coordinator.

The self-evaluation consists of three parts: administrative requirements, program accessibility, and employment practices.

PART I - Administrative

Requirements

The designated ADA Coordinator for the Town of Middleton is Richard F, Bienvenue, CBO, Building Commissioner, 195 North Main Street, Middleton, MA 01949, (978) 777- 2850.

The Conservation Agent for the Town of Middleton is Michèle F. Grenier, P.W.S., C.S.W., 195 North Main Street Middleton, MA, 01949, (978) 777-1869.

Appendix I - ADA Accessibility Inventory

Appendix I - ADA Accessibility Inventory

Open Space & Recreation Plan

2. Grievance Procedure

EQUAL ACCESS TO FACILITIES AND ACTIVITIES

Maximum opportunity will be made available to receive citizen comments, complaints, and/or to resolve grievances or inquiries.

STEP 1:

The ADA Coordinator will be available to meet with citizens and employees during business hours.

When a complaint, grievance, request for program policy interpretation or clarification is received either in writing or through a meeting or telephone call, every effort will be made to create a record regarding the name, address, and telephone number of the person making the complaint, grievance, program policy interpretation or clarification. If the person desires to remain anonymous, he or she may.

A complaint, grievance, request for program policy interpretation or clarification will be responded to within ten working days (if the person making the complaint is identified) in a format that is sensitive to the needs of the recipient, (i.e. verbally, enlarged type face, etc).

Copies of the complaint, grievance, or request for program policy interpretation or clarification and response will be forwarded to the appropriate Town agency (i.e. park commission, conservation commission). If the grievance is not resolved at this level it will be progressed to the next level.

STEP 2:

A written grievance will be submitted to the ADA Coordinator Assistance in writing the grievance will be available to all individuals. All written grievances will be responded to within ten working days by the ADA Coordinator in a format that is sensitive to the needs of the recipient, (i.e. verbally, enlarged type face, etc.). If the grievance is not resolved at this level it will be progressed to the next level.

STEP 3:

If the grievance is not satisfactorily resolved, citizens will be informed of the opportunity to meet and speak with the Board of Selectmen, with whom local authority for final grievance resolution lies.

TOWN OF MIDDLETON

3. Public Notification Requirements

The Americans with Disabilities Act requires the Town to provide notice of ADA requirements as follows:

- A. Post at all program sites in large print;
- B. Make available upon request in other alternative formats, e.g. audiotape, Braille, ASCII computer diskette, etc.;
- C. Include in employment applications, program applications, and program application forms;
- D. Announce test of this notice verbally at public meetings and program meetings;
- E. Include in program handbooks and other publications;
- F. Provide notice via captioned cable television and broadcast television.

Public notice has been given to employees and to the public that the Town does not discriminate on the basis of disability. Addendum E, ADA/504 Self-Evaluation and Transition Plan, includes an Executive Order from James Caffrey, 504 Coordinator at that time, that all applicable administrative and employment practices are to conform to the law, and the manner in which this is to be done.

4. Participation of Individuals with Disabilities or Organizations Representing the Disabled Community

Middleton Town Meeting has established the Middleton Commission on The inventory of Middleton's facilities under the jurisdiction of the

Conservation Commission was completed in two phases. In the initial phase, a general inventory and assessment of existing facilities was performed. In the second phase, a much more thorough documentation of the sites was undertaken. On the following pages are the inventories.

Appendix II Wildlife Habitat Information & Species Lists

Commonwealth of Massachusetts Wayne F. MacCallum, *Director*

Natural Heritage & Endangered Species Program Field Headquarters,
Westborough, MA 01581 **Tel:** (508) 389-6360 **Fax:** (508) 389-7891 An Agency of the
Department of Fish & Game <http://www.nhesp.org>

Rare Species and Natural Communities Documented in the Town of Middleton

AS OF March 15, 2013 Scientific Name	Common Name	MESA Status	Most recent Year
VERTEBRATES			
Ambystoma laterale	Blue-spotted Salamander	SC	2011
Hemidactylium scutatum	Four-toed Salamander	Delisted	2007
Emydoidea blandingii	Blanding's Turtle	T	2008
Glyptemys insculpta	Wood Turtle	SC	2012
Ixobrychus exilis	Least Bittern	E	2007
Pooecetes gramineus	Vesper Sparrow	T	2007
INVERTEBRATES			
Ligumia nasuta	Eastern Pondmussel	SC	1932
Somatochlora kennedyi	Kennedy's Emerald (dragonfly)	E	1920
VASCULAR PLANTS			
Asclepias purpurascens	Purple Milkweed	E	1880
Carex exilis	Bog Sedge	WL	2012
Celastrus scandens	American Bittersweet	SC	2012
Juglans cinerea	Butternut	WL	2012
Scirpus longii	Long's Wool-grass	T	2012
NATURAL COMMUNITIES			
Acidic Graminoid Fen	S3 - Vulnerable		2013
Alluvial Atlantic White Cedar Swamp	S2 - Imperiled		1989
Small-river Floodplain Forest	S2 - Imperiled		1997
CERTIFIED VERNAL POOLS			
Certified Vernal Pool (67)		2000	

March 18, 2013

Judy Schmitz, PWS
Middleton Conservation Agent
Town of Middleton
195 North Main Street
Middleton, MA 01949

Via E-mail

Re: Open Space Plan: 97 – 1453 Town of Middleton
Dear Ms Schmitz:

Thank you for contacting the Natural Heritage and Endangered Species Program regarding the update for the Open Space and Recreation Plan for Middleton. Enclosed is information on the rare species, priority natural communities, vernal pools, and other aspects of biodiversity that we have documented in Middleton. We encourage including this letter, species list, appropriate maps, and the BioMap2 in the Open Space and Recreation Plan.

Based on the BioMap2 analysis and information discussed below, NHESP recommends land protection in the BioMap2 cores or protecting lands adjacent to existing conservation land – or, best, a combination of both when feasible. All of the areas discussed below are important for biodiversity protection in Middleton.

Enclosed is a list of rare species and natural communities known to occur or have occurred in Middleton. This list and the list in BioMap2 differ because this list and discussion include all of the uncommon aspects of biodiversity in Middleton that NHESP has documented and BioMap2 focused on occurrences with state-wide significance and included species from the State Wildlife Action Plan. In addition, the NHESP database is constantly updated and the enclosed list may include species of conservation interest identified in town since BioMap2 was produced in 2010, such as many of the plant records.

We recently sent a copy of NHESP's BioMap2 town focused report on BioMap2 Core Habitats and Critical Natural Landscapes (CNL) and their components in Middleton. I encourage you to download species, natural community, and BioMap2 fact sheets from our website to include in the OSRP with the species list and BioMap2 discussion. http://www.mass.gov/dfwele/dfw/nhesp/species_info/fact_sheets.htm and http://www.mass.gov/dfwele/dfw/nhesp/natural_communities/pdf/talus_forest_woodland.pdf

Fact sheets describing the various other components of BioMap2 are also available from our website. The components relevant to Middleton are Aquatic, Forest, Vernal Pool, and Wetland (Least disturbed Wetland complexes) Cores, and, in CNL, Landscape Block, and Upland Buffers of Aquatic and Wetland Cores. http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_methodology.htm

The components are described in full in the BioMap2 summary report available from: http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap2_summary_report.pdf

Many rare animal species currently known from Middleton are associated with wetlands, although most of these species use upland habitat as well.

Adult and juvenile Blue-spotted Salamanders (SC) inhabit upland forest during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest. Blue-spotted Salamanders are known from multiple locations in BioMap2 Core 2835 in the northern part of town where there are many wetlands and vernal pools surrounded by forest (and much credit should go to people in Middleton who have certified many of the vernal pools).

Four-toed Salamanders (delisted, that is removed from the state list because they have been shown to be more common than previously thought) nest in patches of sphagnum moss that overhang streams. The young drop into the streams where they live until they become adult, at which point they move to nearby forests to live. Protecting good populations of Four-toed Salamanders will help keep them from needing the additional protections of the endangered species act. The occurrence in Middleton is in the same general area of many wetlands, in BioMap2 Core 2835.

Blanding's Turtles (T) inhabit a mix of seasonal pools, marshes, shrub swamps, forest, and open uplands. After overwintering in the deep muds of wetlands, Blanding's Turtles move overland to vernal pools and shrub swamps to feed and mate. Loss of only a few adults annually can cause populations to decline as they do not reproduce until late in life (14-20 yrs), and have low replacement rates due to low nest and juvenile survivorship. Roads are

the primary cause of adult mortality. The Blanding's Turtles in the northern part of Middleton are part of an important regional population, that in town are associated with a mix of wetlands and uplands on and near protected open space.

There is an impressive update from 2012 of a Wood Turtle (SC) record in Middleton, previously reported in 1858. Wood Turtles are not abundant in the Middleton area. Wood Turtle habitat is streams and rivers preferably with long corridors of undeveloped, connected uplands extending on both sides of the waterways. Protecting all types of wetlands and their surrounding forests and other uplands enhances the habitats of these turtles and other species, as well as protecting water quality. All of the turtle species nest in sandy upland areas and are susceptible to becoming road kill when they move among parts of their habitats.

The two state-listed birds known from Middleton, Vesper Sparrows and Least Bitterns, have quite different habitats. Vesper Sparrows (T) are grassland birds whose habitats often include taller woody vegetation interspersed within the grassland. The habitats are typically dry, well-drained sites with a mixture of short grass, bare ground, and shrubs, trees, or other high structures from which males can sing, including telephone lines and poles. As with other grassland birds, its populations have declined with the decline of agriculture and the reforestation of the state. Least Bitterns (E) are heron-like birds that typically nest in cattail marshes interspersed with open water and are very sensitive to disturbance. The occurrence in Middleton in BioMap2 Core 2547 is with Aquatic and Wetland Core components along Nichols Brook near the Ipswich River.

Middleton has two historic records of state-listed invertebrate species and none that are current. Eastern Pondmussels (SC), large freshwater mussels, are most abundant in southeastern Massachusetts. They inhabit streams, rivers, and small to large lakes and ponds; they show no preference for substrate, depth, or flow conditions. As sedentary filter feeders they are vulnerable to the alterations of water bodies. Kennedy's Emeralds (E) are dragonflies that inhabit bogs, fens, and swamps, often with flowing water. Surrounding upland forests provide protection while adults reach sexual maturity. Since the nymphs live in stream or lake water, as with the freshwater mussels, maintaining clean, free flowing water is important for providing habitat the species.

Of the uncommon plants known from Middleton, the rarest has not been seen in town for many years. Purple Milkweed (E) is an herbaceous perennial plant of a variety of habitats including margins of Oak-Pine woodlands and open areas ranging from dry to quite moist. This type of habitat has declined in recent decades as succession to forest has occurred throughout the state.

The rare plants currently known in town were located in 2012 in northern Middleton in an area of mixed uplands and wetlands within BioMap2 Core 2835. Several natural patches of peatlands (fens) support Long's Wool-grass (T) (also called Long's Bulrush), a globally rare, robust sedge of open peaty wetlands. In Massachusetts, Long's Bulrush is known to occur in acidic fen and wet meadow communities associated with rivers and depressions. Bog Sedge (WL) is a perennial grass-like sedge that grows in dense clumps in acidic peatlands (bogs and fens). Nearby uplands support two uncommon plant species. American Bittersweet (SC), a native woody vine of the staff-tree family, bears seeds with orange fleshy seed coats. It is likely being out competed and threatened by the invasive Oriental bittersweet. Butternut (WL) is a deciduous tree native to eastern North America that grows on moist, fertile soils often along streams. It is susceptible to butternut canker that is devastating butternut trees in the wild.

Natural Communities are recurring assemblages of plants and animals in similar chemical, moisture, geological, and topographic environments. In Massachusetts, the types are defined in the *Classification of Natural Communities of Massachusetts*, available on the NHESP website. Occurrences of uncommon types – called Priority Natural Communities - are considered to be priority for conservation. All types of natural communities provide important habitat for common and uncommon species and support the biodiversity of the town. NHESP keeps track of occurrences of Priority Types of Natural Communities, a complete list of which is on the NHESP website. Three types of Priority Natural Communities are known in Middleton.

Acidic Graminoid Fens (Vulnerable) are sedge and sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water may be present throughout much of the growing season. Although only one in Middleton has been surveyed for the NHESP database, BioMap2 Core 2835 in the northern part of town has several other wetlands that on aerial photos look quite similar. In this topography it is natural for the peatlands to occur patchily with somewhat different vegetation and even different peat conditions.

An occurrence of Alluvial Atlantic White Cedar Swamp (AWCS) around Aunt Betts Pond in BioMap2 Core 2478 is moderate sized with good structural diversity. It is relatively undisturbed and is fairly well buffered by natural vegetation. Alluvial AWCS typically occur along smaller rivers and ponds where Atlantic white cedar is co-dominant with red maple. They receive annual flooding making them more mineral-rich than other Atlantic White Cedar wetlands.

At the easternmost edge of Middleton along the Ipswich River, in the large BioMap2 Core 2835, is an occurrence of a Small-river Floodplain Forest (Imperiled) that, as mapped, barely makes it into Middleton. The area might

well be surveyed to see if the community extends further. Small-River Floodplain Forests (Imperiled) are silver maple/green ash forests occurring on alluvial soils of small rivers and streams. They occur on small tributaries of the Connecticut and Nashua Rivers and along some small rivers of eastern Massachusetts. Despite the presence of exotic invasive species, this moderate sized occurrence is in good condition.

Middleton has 67 Certified Vernal Pools (CVPs) and 110 Potential Vernal Pools (PVPs) (identified from aerial photographs, needing verification on the ground). In addition, areas of swamps will provide habitat for vernal pool species. Middleton's vernal pools are shown on the included map. Locations of PVPs are available as a datalayer from MassGIS at <http://www.state.ma.us/mgis/pvp.htm>. Clusters of vernal pools provide particularly good habitat for species that depend on vernal pools for habitat. The clusters mean that there are alternate habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species. In the very large BioMap2 Core 2835, Vernal Pool Core, a large cluster area extends into Boxford and North Andover, with a smaller one further west in the same Core going into North Andover. Core 2551 shares a vernal pool cluster with North Reading. Other clusters not selected as BioMap2 vernal pool cluster cores in southern Middleton just north of Core 2392. People in Middleton have done a good job of certifying vernal pools. Continuing to visit and evaluating more of the PVPs for certification would provide additional protection to these wetlands and the species that use them.

The BioMap2 core areas and Contributing Natural Landscape are particularly valuable in ecological terms, and important to the conservation of a variety of species. Completing conservation protection of remaining unprotected land in those areas would enhance the viability of these special areas - size and continuity of open space is particularly important for supporting wildlife populations. Preventing habitat fragmentation is vital in protecting the ecosystem, for the rare species on the enclosed list, as well as for additional common species.

Many of the polygons of both aspects of BioMap2 extend into other municipalities: these large polygons provide opportunities to protect large unfragmented areas that will provide the best opportunities to limit further species loss from the Town and region. The BioMap2 Core and CNL polygons are available from MassGIS:

<http://www.mass.gov/mgis/biomap2.htm>. There is also an interactive application to see the broad outlines of the polygons in each Town that is linked from the NHESP website. BioMap2 is more up to date than BioMap and Living Waters, which it replaces.

BioMap2 and the original BioMap and Living Waters projects are focused on conservation and intended to be planning tools. They include non-regulated components of biodiversity and include broader areas than do the regulatory maps that NHESP also produces.

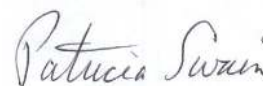
Estimated Habitat maps are created for use under the Wetlands Protection Act and Priority Habitat maps for use under the Massachusetts Endangered Species Act. These two sets of maps are created for regulatory use, shown in the *Natural Heritage Atlas* (the 2008 Atlas, the 13th edition is the current version). A letter sized map combining these maps is attached to this letter. These data layers are also available from MassGIS, requiring access to some form of GIS to view them, at <http://www.state.ma.us/mgis/wethab.htm> and <http://www.state.ma.us/mgis/prihab.htm>. Town commissions and boards are encouraged to request the assistance of the Natural Heritage and Endangered Species Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps in the *Natural Heritage Atlas*.

Management and monitoring of conservation lands become important as acquisition and protection are accomplished. All wetlands particularly need to maintain their natural water regime, including normal fluctuations and connections with the uplands and other wetlands. Water quantity and quality are ongoing issues for wetlands. Another aspect of managing conservation lands that is important in many areas is controlling invasive non-native species that alter the habitat and occupy space that native species would otherwise use. We strongly recommend monitoring conservation land, and removing non-native species before they become a problem and impact native species.

Please note that this evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should new rare species information become available, this evaluation may need to be reconsidered.

Please do not hesitate to contact me at (508) 389-6352 or by email at pat.swain@state.ma.us if you have any questions.

Sincerely,



Patricia C. Swain, Ph.D.
Ecologist

cc: Melissa Cryan, EOEEA, DCS

Exhibit III

Section 4—Environmental Inventory & Analysis F Fisheries and Wildlife

Vertebrate Animals of Middleton

The following listed have been sighted or their signs seen in Middleton, or just over the lines in Boxford, North Andover, or Topsfield. Thanks to Francis Masse, lifelong hunter and fisherman in Middleton; James MacDougall, Essex County Greenbelt Association; Bob Speare, Massachusetts Audubon Society, Ipswich River Wildlife Sanctuary; Mike Abel, Topsfield Conservation Agent and naturalist; and David Taylor, naturalist and teacher, Tri-town Regional School, for their help with these lists.

(i) Mammals

Bats	The three species listed below are mapped as inhabiting eastern Massachusetts. They are nocturnal for the most part. They are right up there with swallows as prodigious insect eaters. • Little Brown Bat, common • Big Brown Bat • Red Bat, a forest species
Beaver	Although rare in 1996, Beavers are now numerous in Middleton and have built dozens of dams/ponds throughout the town, including along the Ipswich River.
Coyote	There have been frequent sightings here the past few years.
Eastern Chipmunk	Very common.
White-tailed Deer	Very common throughout town, even in developed areas tracks and animals are frequently seen.
Field Mouse	
Fisher	In the past decade or so there have been more and more sightings. Their tracks were recently seen in fresh snow in the north part of town. Many think they are now fairly common.
Red Fox	Fairly common, there are fairly frequent sightings.
Gray Fox	Sightings reported.
White-footed Mouse	Common
Meadow Jumping Mouse	Common
Eastern Mole	
Star-nose Mole	Moles are not uncommon but sighting them is because of their tunneling lifestyle.
Norway Rat	Our common rat, yet is probably much less so than in the days of agriculture and open dumps.
Muskrat	Common along our waterways.
Mink	Are fairly frequently spotted along our waterways.
Moose	Tracks and scat are sometimes seen in the north part of town. One wandered onto North Main Street a few years ago and was seen by several people. They don't breed here but sometimes wander through.
Virginia Opossum	Common and not adverse to living near humans and their garbage despite our tendency to run them over, or theirs to get hit. A couple of decades or so ago opossum were rarely seen this far north.
Porcupine	Have been sighted in the north of town. These sightings are not confirmed. Rare here.
Eastern Cottontail Rabbit	Fairly common but their population fluctuates greatly year-to-year depending upon that of their predators.
Raccoon	Fairly common but not often seen since they are nocturnal. Many tracks were seen this summer along the river bottom where they had access to fresh water mussels usually covered with water. At this writing they are suffering a rabies epidemic.
River Otter	Their signs are often seen in the snow in the north part of town near streams. Now and then they are seen. MacDougall says they are common.
Shrews	These are smallest of our mammals and despite being common are not often seen. Marked shrews and short-tailed shrews are found here.
Striped Skunk	Common nocturnal animal, smelled after car accidents more than seen.
Gray Squirrel	Very common.
Red Squirrel	Very common.
Flying Squirrel	Common but rarely seen, nocturnal.

Sweet Gail	Not very common but patches here and there. This aromatic plant can be seen along Loneragan Road in the floodplain.
<i>Ground cover and emergent plants—a few of many found in wet areas</i>	
Purple Loosestrife	Very common invasive species, found in damp to very wet areas.
Skunk Cabbage	Very common harbinger of spring, good wetland indicator.
Broad-leafed Cattail	Very common especially in recently disturbed areas. Many new detention ponds in town are dominated by cattails, area must be wet all year.
Water and Swamp Smartweeds	Very common successional plants.
Sedges	There are many species, the best known are those that form clusters called tussocks, the stepping stones of many swamps.
Pickereel Weed	Very common emergent plant in the shallows of our streams, river, and ponds.
Arrow Arum	Common, habitat similar to that of pickereel weed.
Arrow Head	Common, often found with pickereel weed and arrow arum.
Common Reed Grass/Phragmites	An invasive species of much concern, it forms dense monocultures, perhaps a 100 patches can be found, especially in disturbed wetlands, around town, each year these patches get larger.
Burr-reed	Fairly common in river, fruit develops under water.
Ouch-me-not/Jewelweed	Very common in wet, somewhat shady areas.
Joe Pyeweed	Common around the edges of wet clearings and fields.
Sensitive Fern	Very common, good indicator of wetland.
Royal Fern	Very common.
Sphagnum Moss	Very common in areas continuously wet, major species of our acid bogs.

Ground cover non-woody plants, a few upland species

Canada Mayflower	Common in shaded woods
Lycopods (e.g. Ground Pine, Princess Pine)	Common in shady woods, ancient, non-flowering plant.
Sarsaparilla	Common in shady woods.
Partridgeberry	Common in shady woods, important animal food source.
Bracken Fern	Common in more sunny open woods, especially after fire.
Ladyslipper	No longer uncommon, found in shaded moist woods.

Plants that are noticeable around the edges of wetlands (upland—wetland transition)

Trees

American Elm	Common but not abundant.
Red Maple	Very common in wetland and on edges.
White Pine	Usually not in wetland but often in wet areas on edges.
Tupelo	A few scattered around town, common in South.
Poplars	Several species, fairly common in disturbed areas.
Willows	There are several species, common.
Eastern Hemlock	Fairly common.

Shrubs

Sweet Pepperbush	Very common around town's forested wetlands, good indicator of upper edge of wetland.
Spicebush	Common in shady moist areas, twigs and buds aromatic.
Arrow-wood (common wetland Viburnum)	Straight new stems with ridges.
Highbush Blueberry	Often in swamps as well as around edges, common.
Sheep laurel	Common, near wetland but usually above pepperbush.

Ground cover, most herbaceous.

Cinnamon Fern	Common.
Purple Loosestrife	Common invasive species in wetland and around edges.
Meadowsweet	Common.
Hard Hack / Steeplebush	Fairly common especially in disturbed areas.

Wetland plants

About one-quarter of Middleton's land area consists of swamps, marshes, bogs, wet meadows, streams, river, ponds, and a lake. These areas cannot be filled or otherwise altered as they come under the jurisdiction of the Wetland Protection Act and are additionally protected as Conservancy Districts under the Town's Zoning Bylaw.

Trees, wetland species

Red Maple	Very common, also called swamp maple, there are hundreds of acres of red maple swamp in town.
Silver Maple	Found along rivers edge, and in moist areas along the river's floodplain and in other wet areas.
Atlantic White Cedar	There are several perennially wet bogs around town where there are thick stands of these slow growing trees, the largest is probably around Aunt Beck's Pond where there are several acres. There are other fair sized stands in the north part of town.

Shrubs, wetland species

Speckled Alder	Very common successional plant in once-disturbed areas, fixes nitrogen from the air thus enriching the soil.
Buttonbush	Very common where there is shallow water most of the year, hundreds of acres can be seen in Emerson Bog. Along the river there are great stands also.
Swamp Azalea	A native rhododendron that graces our shady woodland swamps, its beautiful trumpet-like white blossoms can be smelled in early summer, common.
Swamp or Silky Dogwood	Very common in wet areas throughout town.
Red Osier Dogwood	Fairly common, stems bright red in spring.
High-bush Blueberry	Common in shaded woods both in and around wetlands.
Winterberry	Tall shrub that grows in thick clusters in continuously wet areas, female plants have bright red fruit that persist throughout winter, fairly common.
Leatherleaf	A short pretty shrub found commonly in bogs; cranberry and other bog plants are often found nearby.

Appendix II

Section 4—Environmental Inventory & Analysis

E. Vegetation

There are several hundred species of plants in our town ranging from the great Middleton oak on Peabody Street, that venerable resident may be 400 years old, to the almost microscopic duckweed that covers enriched late summer ponds. The following are some of the most noticeable that the reader might encounter on a walk from our uplands down to the river passing over wetlands and floodplain en route.

Major Upland Plants (About two-thirds of the town is forest or scrub upland.)

Trees—Upland Species

Red and Black Oaks	Very common here, these closely related species are believed to hybridize.
White Oak	Common, in earlier centuries important in shipbuilding.
Eastern White Pine	Wide range of habitat from wet to dry, very common, roughly 10% of our forest trees, there are several fairly pure stands in town.
Red Pine	There is a large almost pure stand that was planted about 40 years ago just south of Middleton Pond. Not a common tree here except in areas where planted.
Scotch Pine	There are a few of this import to be found here and there.
Pitch Pine	Found scattered here and there on poorer soils, not common here.
Red Cedar (Juniper)	A common successional tree in abandoned pastures, lives to be quite old.
Northern White Cedar (Arborvitae)	Not in the wild here, many are found where planted near houses.
Eastern Hemlock	Not uncommon in cooler, shadier areas, often found in moist spots, sometimes in thick stands.
Norway Maple	Not native, however, common alongside our roads where planted.
Sugar/Rock Maple	Fairly common throughout town, many were probably planted for their fine appearance, sap, and dense firewood. They come into their glory in October when they glow orange and yellow.
White Birch	There are many in town, but it is not the major tree species it is in the forests a hundred miles north of here.
Gray Birch	Smaller and less noticeable than white. An important tree in succession, commonly found around abandoned fields. It is short-lived.
Yellow & Black Birches	Common in cool moist areas, rich soils; crushed stems give off aromatic oil of wintergreen.
Black Locust	These are found in abandoned fields and clearings. They are a fast-growing successional tree.
White Ash	Very common especially around houses and disturbed areas generally.
Hickory	Found generally on richer soils.
Shagbark Hickory	Scattered throughout our woods and along roadsides, nuts are edible.
Pignut Hickory	Smoothen bark than shagbark, nuts bitter.
Black Cherry	Trees are found here and there throughout town, not a major forest tree but certainly an important one.
Choke Cherry	Smaller tree found in disturbed areas and those in succession.
American Beech	Found in richer soils in shady areas, not uncommon.

Shrubs, some common upland species

Huckleberries	Common understory shrub, many on dry areas of electric right-of-way.
Low bush Blueberries	Patches are found in electric right-of-way at higher elevations.
Witch hazel	Common in moist woods, blossoms in October and November.
Blackberries/Wild Raspberries	Common in disturbed areas.
Elderberry	Not widespread or abundant, found in good moist soils.
Gray-stemmed Dogwood	Not very common, but thick stands in some places.
Sweet Fern (not a fern)	Found in open dryer areas, common.
Barberry	Common in abandoned pastures and at the edges of clearings.
Honeysuckle	Many varieties, wide range of habitats, common.
Glossy Buckthorn	Ever more common invasive species, wide range of habitats.
Multiflora Rose	Very common on edges of roads and in clearings.
Oriental Bittersweet	Common invasive species of vine, replacing native species.
Greenbriar	Common thorned briar.
Poison Ivy	Very common, wide range of habitats.
Staghorn Sumac	Common in disturbed areas, a successional species.

Voles	Common but not often seen, when the snow melts you can often see their extensive network of tunnels. We have red voles, pine voles, and meadow voles.
Short-tailed Weasel and Long-tailed Weasel	In area but not often seen.
<u>Homo sapiens</u>	Over 6,000 live here by last count and this isn't counting the increased number passing through on our crowded roads.

(ii) Fish of the Ipswich River Basin

The following listed species are found in the waters of the basin. This is from a list compiled by Karsten Hartel, Museum of Comparative Zoology, Harvard University. Comments are from various sources and this writer's observations. Francis Masse, 60-year resident and fisherman of Middleton waters, was very helpful.

1. Native fish

Brook Trout	There are probably no longer any breeding populations in town. Stocks of mature brook trout are annually put in the Ipswich River. In the 1940s and 1950s fertilized eggs were put in Punchard's, Pond Meadow Pond, and Middleton Brooks with some success.
Redfin Pickerel	Found in sluggish clear waters among vegetation.
Chain Pickerel	Common in quiet waters of swamps, creeks, and pools that are well vegetated. In a recent accidental fish kill below the Emerson Bog dam at Lake Street many dead chain pickerel were found, they had come from Emerson Bog.
Golden Shiners	Common in many kinds of water habitats here.
Bridle Shiner	Small fish that were very common up until the early '60s, it is now found in only a fraction of its former sites.
White Sucker	Large fish found in virtually all of Massachusetts drainage basins.
Creek Chubsucker	An even larger sucker, fairly common in eastern Massachusetts.
Brown Bullhead/Hornpout	Hundreds, perhaps thousands, were accidentally released in September 1997 from the Lake Street dam into a dry stream bed where they suffocated. They had come down from Emerson Bog. This catfish is common in our sluggish waters with soft substrates.
Banded Sunfish	This small fish is common in our sluggish heavily vegetated waters.
Redbreast Sunfish	Not so common any more but reported in this decade.
Pumpkin Seed	Very common in standing or slow flowing water over mud. Some were found in the fish kill mentioned above.
Swamp Darter	Very small fish, quite common in slow and standing waters with muddy bottoms.
Yellow Perch	Many are caught by local ice fishermen in shallow well vegetated ponds with clear water. They are found in Middleton Pond and in great numbers in Emerson Bog. Well over half of the victims of the fish kill below Lake Street dam were yellow perch.
American Eel	Are found in a wide range of habitats. They are probably more common down river in tidal waters; however, they are caught in the river and its tributaries here.
White Perch	Were once found only in brackish waters. Now fairly common in quiet fresh waters over mud. They are caught in Middleton Pond and a few were recently found among the dead below the Lake Street dam.

2. Introduced species

Brown Trout	Were introduced to Massachusetts from Europe in the 1880s. They will sustain populations (reproduce) if pH is high and the water temperature is low. Fishermen think the only ones we have are those yearly stocked.
Rainbow Trout	Stocks are put in the Ipswich River each spring. It is reported that they do not reproduce in the Ipswich River basin.
Yellow Bullhead	This catfish likes sluggish backwaters. They are probably found in Middleton, Mill, Pout, Creighton Ponds and the ponds in Emerson Bog. Locals often call them horn pout.
Bluegill	Very common in vegetated bodies of water here.
Large-mouth Bass	Were introduced to Massachusetts waters in 1862. They've successfully reproduced, many bodies of water have breeding populations. They are caught in Middleton's ponds.
Black Crappie	Common now as a result of extensive stocking in the first half of this century.

(iii) Amphibians

The members of this ancient group of land/water vertebrates are much on the mind of naturalists and environmentalists these days. Many report a world-wide decline for reasons not yet fully understood.

Leopard Frog	Is reported as being in decline in this area. However, Speare reports many in the Topsfield Sanctuary. MacDougall saw them this year in the Loneragan Road area.
Green Frog	Common.
Tree Frog or Spring Peeper	Very common.
Gray Tree Frog	MacDougall sees them frequently in nearby Topsfield.
American Toad	Common.
Pickrel Frog	Common.
Wood Frog	Common. These are found in the spring in our many vernal pools. There are over thirty certified vernal pools in Middleton thanks to Leo Kenney and Jim MacDougall.
Bull Frog	Very common.
Spotted Salamanders	Very common.
Blue Spotted Salamander	MacDougall says they are relatively common. He has seen them many times in the north part of town.
Red-back Salamander	Common.
Two-line Salamander	Common.
Red-spotted Newt	Seen here but certainly not common. MacDougall thinks rare. Speare saw larval stage called red eft in Topsfield in the past year.

(iv) Reptiles

Green Snake	Found here and there but not very common.
Garter Snake	Very common.
Black Racer	Probably here but no recent sightings reported.
Northern water snake	Very common.
Milk Snake	Probably less common than when farms and more fields were here, but still fairly often sighted.
Eastern Painted Turtle	Very common.
Blandings Turtle	Is endangered. There have been rare sightings in the Ipswich River Basin.
Spotted Turtle	Not very common. Many report them to be on the decline. Speare sees them in early spring in Topsfield. MacDougall has seen them on the edge of the river in Peabody so they are here.
Stink Pot or Musk Turtle	Common in the Ipswich River.
Snapping Turtle	Very common.
Wood Turtle	<i>Observed in Middleton in 2012 (first sighting since 1800's)</i>

(v) Birds of the Area

The following list is from the Ipswich River Wildlife Sanctuary just a few miles down river in Topsfield. The list, with a few exceptions, is probably close to our list since we are both in the coastal migration flyways and have similar habitats.

In recent years wild turkeys have been often seen particularly in the northern half of town. They are probably best characterized as "occasional" here, the Sanctuary lists them as "rare". Ruffed Grouse are often seen throughout the town. "Uncommon" rather than the "occasional" on the list would be a better description of their sightings here.

Middleton Pond and Richardsons' fields are habitat to a large over-wintering population of Canada Geese.

Key to following list:

Sp = Spring (March 1-May 31)	R Rare
Su = Summer (June 1-Aug. 15)	O Occasional
F = Fall (Aug. 16-Nov 30)	U Uncommon
W = Winter (Dec. 1-Feb. 28)	C Common
A Aerial (in flight; overhead)	M Freshwater Marsh, Bog, Swamp
O Ocean	G Grassland (Fields, Meadows, Pastures)
B Beach/Tidal Flats	H Hedgerows, Thickets, Brushy Fields, Forest Edge
S Salt/Brackish Coastal Marsh	F Forest
P Pond, Lake, Stream, River	U Urban
	X Anywhere

	Sp	Su	F	W	Hab
Common Loon	R		R		A
Pied-billed Grebe	R	R	R		P,M
Great Cormorant	R			R	A
Double-crested Cormorant	C	U	C		A,P
American Bittern	C	R	C		M
Least Bittern	R	R	R		M
Great Blue Heron	U	R	U	R	P,M
Cattle Egret	U	R	U		G,M
Green-backed Heron	U	U	U		P,M
Black-crowned Night-Heron	O	O	O		P,M
Glossy Ibis	O	O	R		P,M
Snow Goose	R		R		A
Canada Goose	A	C	C	O	P,M
Wood Duck	C	C	C	R	P,M
Green-winged Teal	U	C	U	O	P,M
American Black Duck	C	C	C	O	P,M
Mallard	C	C	C	O	P,M
Northern Pintail	O	R	O		P,M
Blue-winged Teal	U	R	U		P,M
Northern Shoveler	R		R		P,M
Gadwall	R		R		P,M
American Wigeon	R		R		P,M
Redhead	R		U	R	P
Ring-necked Duck	C		R		P
Greater Scaup	R		R		P
Lesser Scaup	R		R		P
Common Goldeneye	U		O	O	P
Bufflehead	U		O	O	P
Hooded Merganser	U	R	O	O	P,M
Common Merganser	O		R	O	P
Ruddy Duck		R	R		P,M
Turkey Vulture	O		O		A
Osprey	R		R		A
Bald Eagle	O		R	R	A
Northern Harrier	U		U	R	A,G,M
Sharp-shinned Hawk	R	R	R	R	A,H
Cooper's Hawk	R	R	R	R	A,F
Northern Goshawk	R	R	R	R	A,F
Red-shouldered Hawk	U	R	R	R	A,F
Broad-winged Hawk	C	C	C	U	A,F
Red-tailed Hawk	R		R	R	A
Rough-legged Hawk	R		O	R	A,G,H
American Kestrel	R		R		A,C,H
Merlin	R		R		A
Peregrine Falcon	U	U	R	O	A
Ring-necked Pheasant	U	O	R	O	G,H
Ruffed Grouse	U	R	R	O	F
Wild Turkey	R	R	R	R	H,F
King Rail	U	R	R		M
Virginia Rail	U	R	R		M
Sora	O		R		M
Common Moorhen	R		R		M
American Coot	R		R		M
Killdeer	U	U	O		C
Greater Yellowlegs	O	O	O		P,M
Lesser Yellowlegs	R	O	O		P,M
Solitary Sandpiper	U	U	U		P,M
Spotted Sandpiper	U				P,M
Upland Sandpiper	R				G
Semipalmated Sandpiper	O	O	O		M
Least Sandpiper	O	O	O		M
Pectoral Sandpiper	O		R	R	M
Common Snipe	C	O	R	R	M
American Woodcock	U	R	O	R	G,M,F
Ring-billed Gull	A	A	U	A	A
Herring Gull	A	A	A	A	A
Great Black-backed Gull	C	C	C	A	A
Black Tern	R			O	M
Rock Dove	U	U	U	U	A,U
Mourning Dove	A	A	C		H,F
Black-billed Cuckoo	O	O	R		H
Yellow-billed Cuckoo	R				H

	Sp	Su	F	W	Hab
Eastern Screech-Owl	O	O	O	O	F
Great Horned Owl	O	O	O	O	F
Barred Owl	O	O	O	O	F
Long-eared Owl	R			R	F
Short-eared Owl	R			R	G,M
Northern Saw-whet Owl	R	R	R	R	F
Common Nighthawk	O	O	O		A,U
Chimney Swift	O	O	O		H
Ruby-throated Hummingbird	O	O	O	R	F,M
Belted Kingfisher	O	O	O		H,F
Yellow-bellied Sapsucker	O	C	O	C	F
Downy Woodpecker	C	C	C	O	F
Hairy Woodpecker	C	C	C	O	F
Northern Flicker	O	O	O	O	F
Pileated Woodpecker	R	C	R		H,F
Olive-sided Flycatcher	C	C	R		F
Eastern Wood-Pewee	C	C	R		H
Yellow-bellied Flycatcher	R		R		H
Alder Flycatcher	R	C			M
Willow Flycatcher	C	C	O		H,F
Least Flycatcher	O	C	O		H,P
Eastern Phoebe	C	C	U		F
Great Crested Flycatcher	C	C	U		H
Western Kingbird		C	U		G,M,H
Eastern Kingbird	C	C	U		A
Purple Martin	R	A	R		A,G,P,M
Tree Swallow	O	A	O		A
N. Rough-winged Swallow	U	O	O		A,M
Bank Swallow	U	O	O		A,M
Cliff Swallow	R	C	U		A
Barn Swallow	C	A	A	A	H,F
Blue Jay	A	A	A	A	X
American Crow	A	A	A	A	H,F
Black-capped Chickadee	A	A	A	A	H,F
Tufted Titmouse	C	C	C	C	F
Red-breasted Nuthatch	U	C	U	C	H,F
White-breasted Nuthatch	U	C	U	C	F
Brown Creeper	U	C	C	C	H
Carolina Wren	R	C	C	R	H
House Wren	C	C	C	R	H,F
Winter Wren	U	C	C	U	M
Marsh Wren	C	C	C	U	F
Golden-crowned Kinglet	C	U	U	U	H,F
Ruby-crowned Kinglet	C	U	U	U	P,H,F
Blue-gray Gnatcatcher	O	C	O	R	G,H
Eastern Bluebird	C	C	R		F
Veery	R		R		F
Gray-checked Thrush	O		R		F
Swainson's Thrush	U	R	O	R	H,F
Hermit Thrush	C	C	O		F
Wood Thrush	A	C	A	O	H,F
American Robin	C	C	U	R	H,F
Gray Catbird	C	C	C	U	H
Northern Mockingbird	O	C	R		H
Brown Thrasher	R	C	R		A,G
American Pipit	U		C	O	H,F
Cedar Waxwing	R			R	H
Northern Shrike	R	A	R	A	X
Loggerhead Shrike	A				H
European Starling	R				H,F
White-eyed Vireo	U	O	O		P,F
Solitary Vireo	C	C	R		P,F
Yellow-throated Vireo	O		R		H,F
Warbling Vireo	C	C	U		F
Philadelphia Vireo	C	C	U		H
Red-eyed Vireo	C	C	U		H
Blue-winged Warbler	R		O		H,F
Golden-winged Warbler	R		O		H
Brewster's Warbler (Hybrid)	O		O		H
Tennessee Warbler	O		O		H
Orange-crowned Warbler	O		O		H
Nashville Warbler	O		O		H

	Sp	Su	F	W	Hab
Northern Parula	U		O		H
Yellow Warbler	A	A	O		P,M,H
Chestnut-side Warbler	U	O	O		H
Magnolia Warbler	R		O		H,F
Cape May Warbler	O		O		H,F
Black-throated Blue Warbler	R		O		H,F
Yellow-rumped Warbler	C		U	R	H,F
Black-throated Green Warbler	U	O	O		H,F
Blackburnian Warbler	U	O	O		F
Pine Warbler	U	R	O		F
Prairie Warbler	U	R	O		H
Palm Warbler	U		U		G,H
Bay-breasted Warbler	O		U		H,F
Blackpoll Warbler	O		U		H,F
Black-and-white Warbler	C	U	U		F
American Redstart	C	U	U		H,F
Ovenbird	C	U	O		H,F
Northern Waterthrush	U		O		H,F
Louisiana Waterthrush	R				H
Kentucky Warbler					H
Connecticut Warbler			R		H
Mourning Warbler	R		R		H
Common Yellowthroat	A	C	U	R	P,M,H
Wilson's Warbler	O		O		H,F
Canada Warbler	O		O		H,F
Yellow-breasted Chat	R		O		H
Scarlet Tanager	C	C	C	C	F
Northern Cardinal	C	C	C		H
Rose-breasted Grosbeak	C	C	O		H,F
Indigo Bunting	O	R	O		H
Dickcissel			R		G,H
Rufous-sided Towhee	C	C	U	R	H
American Tree Sparrow	U		O	C	G,H
Chipping Sparrow	U	U	U	R	C,H
Field Sparrow	O	R	O	R	G,H
Savannah Sparrow	O		O	R	G
Grasshopper Sparrow			R		G
Fox Sparrow	O		O	R	H
Song Sparrow	A	A	C	U	H
Lincoln's Sparrow	R		R		H
Swamp Sparrow	C	C	U	R	M,H
White-throated Sparrow	C		C		H,F
White-crowned Sparrow	R		U		H
Dark-eyed Junco	C		O	C	H
Bobolink	U	U	O		A,G
Red-winged Blackbird	A	A	C	R	P,M
Eastern Meadowlark	R	R	R		G
Rusty Blackbird	O		O		P,F
Common Grackle	A	A	C	R	X
Brown-headed Cowbird	C	C	U		X
Orchard Oriole	R				F
Northern Oriole	C	U	O		F
Pine Grosbeak	R			R	H,F
Purple Finch	U		O		H,F
House Finch	C	U	C	O	H,U
Red Crossbill				C	A,F
White-winged Crossbill				R	A,F
Common Redpoll				R	A,F
Pine Siskin	R	R	R	R	A,H,F
American Goldfinch	C	C	U	O	H
Evening Grosbeak	R		R	O	A,H
House Sparrow	C	C	C	C	U