

# Open Space and Recreation Plan Town of Ayer, Massachusetts 2017 Update

Jennie Bergeron & Chris Hendershot  
The Conway School

## Contents

<b>1. Plan Summary</b>	<b>4</b>
<b>2. Introduction</b>	<b>5</b>
2A. Statement of Purpose	5
2B. Planning Process and Public Participation	5
2C. Outreach and Public Participation	6
<b>3. Community Setting</b>	<b>7</b>
3A. Context	7
3B. History of Community	23
3C. History of Farming	23
3D. Population Characteristics	25
3E. Growth and Development Patterns	36
<b>4. Environmental Inventory and Analysis</b>	<b>43</b>
4A. Geology, Soils, and Topography	43
4B. Landscape Character	49
4C. Water Resources	49
4D. Dams in Ayer	60
4E. Vegetation	61
4F. Wildlife and Endangered Species	62
4G. Scenic Resources and Unique Environments	65
4H. Environmental Challenges	70
<b>5. Inventory of Lands of Conservation and Recreation Interest</b>	<b>73</b>
5A. Private Parcels	74
5B. Public and Nonprofit Parcels.	75
5C. Process to Identify Priorities for Lands of Conservation Interest	76
<b>6. Community Vision</b>	<b>85</b>
6A. Description of Process	85
6B. Community Preservation Act	86
6C. Statement of Community Open Space and Recreation Goals	87
<b>7. Analysis of Needs</b>	<b>88</b>
7A. Summary of Resource/Protection Needs	88
7B. Summary of Community's Needs	90
7C. Management Needs, Potential Change of Use	93
<b>8. Community Open Space and Recreation Goals</b>	<b>95</b>
<b>9. Seven-Year Action Plan</b>	<b>96</b>
<b>10. Community Input</b>	<b>105</b>
<b>11. Works Cited.</b>	<b>106</b>
Appendix A: Map Sources.	107
Appendix B: Online Questionnaire Results	114
Appendix C: Bioremediation and Sustainability	122

## Maps

3A.1: Ayer Context .....	17
3A.2: Regional Context .....	19
3A.3: Land Use .....	21
3C.1: Population Distribution .....	28
3C.2: Walkability .....	32
3C.3: Regional Environmental Justice Populations .....	34
3D.1: Zoning .....	36
3D.2: Impervious Surface .....	40
3D.3: Developable Lands .....	41
4A.1: Topography .....	44
4A.2: Bedrock Geology .....	44
4A.3: Surficial Geology .....	46
4A.4: Agricultural Soils .....	46
4A.5: Soils and Geologic Features .....	48
4C.1: Regional Water Connections .....	57
4C.2: Water Resources .....	59
4D.1 Prime Forest .....	63
4E.1 Priority Habitat .....	64
4F.1 Scenic Resources and Unique Environments .....	69
4G.1 Environmental Challenges .....	72
5C.1 Open Space Inventory. ....	81
9A.1 Seven-Year Action Plan .....	97



# I: Plan

## Summary

This 2017 Open Space and Recreation Plan Update is a community document, meant to assist in the planning of Ayer's open space and recreation future. This update was written by two graduate students from the Conway School, Jennie Bergeron and Chris Hendershot, during the school's 2015 winter term (January-April) and modified by the Ayer Open Space and Recreation Plan committee. The goal of this document is to inventory and assess open space and recreation areas, needs, and opportunities in Ayer, and to provide equal opportunity and access to these places. The plan update aims to define and best meet Ayer's open space and recreation needs over the next seven years. This update was informed by two community meetings, an online public survey, and direct input from Ayer's community members. Local and regional organizations provided additional information relevant to Ayer's water, open space, and recreation.

### **What is an Open Space and Recreation Plan?**

An open space and recreation plan is a means by which towns evaluate existing open space and recreation facilities, and determine current gaps in services, or lands at risk, to establish priorities for protection. A state-approved open space and recreation plan provides a town with access to state grants and tax programs for recreation and open space projects. These funds are used to ensure the presence of and access to open space and recreation areas in every community. Towns are allowed to update their OSRP every seven years.

Open space for the purpose of this plan includes green infrastructure, waterways and water supplies, working farms, forests, wildlife habitats, parks, recreation areas, athletic fields, trails, and greenways.

Open space has been inventoried and evaluated for its significance as habitat, farmland, forest, wetlands, waterways, parks, conservation areas, proximity to environmental justice populations, and scenic and aesthetic value to the community. This assessment helps identify priority areas for protection. Public participation and feedback is a critical part of this process.

# Section 2: Introduction

## 2A. STATEMENT OF PURPOSE

This 2017 Open Space and Recreation Plan (OSRP) for Ayer, Massachusetts, is an update of the 2004 plan. The purpose of this update is to re-evaluate the community's goals and objectives in light of the recent increase in residential and industrial development. Ayer's last state- approved open space and recreation plan was completed in 1997. The 2004 document was reviewed by the state but not officially approved. To be eligible for state funding, Ayer must have an approved OSRP.

This plan evaluates Ayer's natural resources and social factors relevant to open space and recreation planning. It culminates in a set of goals, objectives and actions that provide a guiding framework for open space and recreation priority areas, to be implemented over the next seven years.

## 2B. PLANNING PROCESS AND PUBLIC PARTICIPATION

The Town of Ayer has formed an Open Space and Recreation Committee of local stakeholders to oversee the 2017 OSRP update. The following people generously contributed their time and knowledge towards the planning, information gathering, and public participation process. (\* indicates OSRP member.)

Beth Suedmeyer - Co-Chair OSRP Committee \*

Robert Pontbriand - Town Administrator

Mark Wetzel - DPW Superintendent

Tom Hogan - Assessor

Jeff Thomas - Parks and Recreation Director

Janet Providakes – Community Preservation Committee

George Bacon - Historical Commission

Laurie Nehring – People of Ayer Concerned about the Environment

Chief William Murray - Ayer Police Chief

Jeremy Callahan – Former Planning Board Chair

Gabe Vellante – Former Building Commissioner

Susan Copeland - Town Clerk and Tax Collector

Al Futterman - Nashua River Watershed Association

Carolyn McCreary - Green Communities Chair \*

Jessica Gugino - Conservation Commission \*

David Maher – Former Economic Development Director

Alan Manoian – Economic Development Director

Jason Mayo - Co-Chair OSRP \*, Parks and Recreation

Cindy Knox - Town I.T. Manager:

Jason Stanton - Montachusett Regional Planning

Ruth Maxant-Schulz – OSRP Committee \*

Eric Hebut – Ayer Department of Parks and Recreation

Ruth Rhonemus – Historical Commission

Beverly Schultz – OSRP Committee

A team of graduate students from the Conway School, Jennie Bergeron and Chris Hendershot, gathered community information and created the working draft and maps for this OSRP update. The public process was critical to the formation of the plan's goals and actions (see Section 7). Beth Suedmeyer, regional planning organizations, the community of Ayer, and numerous town departments have provided a wealth of information incorporated into this plan.

## 2C. OUTREACH AND PUBLIC PARTICIPATION

### Two public meetings were held to gather public input and an online survey was conducted.

The open space and recreation community meetings were held within census zones designated as Environmental Justice population areas, and close to the MBTA train stop and sidewalks. Meeting times were chosen to be convenient for those working daytime work schedules and make them available to a greater public audience.

The first meeting was held on February 19, 2015, at Ayer Town Hall. The meeting was advertised on the town website, via town email, in the town hall, and on social media. Despite inclement weather, the meeting was attended by ten community members and stakeholders, including members of the OSRP Committee, Community Preservation Committee (CPC), Conservation Commission, People of Ayer Concerned about the Environment (PACE), Parks and Recreation Department, Chief of Police, Planning Board, and other interested community members. The purpose of the meeting was to evaluate social and environmental factors related to open space and recreation in Ayer, and to gain public input about what community members value and are concerned about in town. Individual and group map exercises, as well as whole-group discussion took place at the meeting.

The second meeting was held on March 9, 2015 at the Ayer Town Hall. The public meeting was also advertised on the Town website, via Town email, in the Town Hall, and on public media. The meeting was attended by thirteen community members and stakeholders, including members of the OSRP Committee, Conservation Commission, PACE, Parks and Recreation Department, CPC, Planning Board, town youth, and other interested community members. The purpose of this meeting was to present working analyses with updated natural resource and social data related to open space and recreation in Ayer. Community members took part in a group discussion and made comments on individual and collective maps after the presentation. Participants identified and prioritized OSRP goals and discussed objectives related to them.

An online public survey was available for three weeks between February 18 and March 13, 2015. The survey was created to gain additional community input related to open space and recreation opportunities and concerns. There were 85 respondents, which accounts for approximately 1.2% of the population of Ayer.

Special thanks to Beth Suedmeyer for co-facilitation of community meetings, Beth and the Town for publicity efforts, and to Jeff Thomas and Jason Mayo of the Parks Commission for refreshments. Special thanks also to Cindy Knox for technical assistance at community meetings and for publicity efforts. The meetings were broadcast on Ayer's public television and archived on the town website. The invitation to participate in the online survey was made at the meetings.

Additional thanks go to Carolyn McCreary for the many hours of work on the final version of this report.



Keziah Salter points out Sandy Pond to her mom, Faith Salter, at a community meeting in their hometown of Ayer, MA.

# 3: Community Setting

## 3A. CONTEXT

### Location

Ayer is a small town (9.6 square miles), with a population of 7,427 that is located along the western boundary of Middlesex County, Massachusetts (census.gov). This part of western Middlesex County and northern Worcester County is commonly referred to as the Montachusett Region. The Montachusett Regional Planning Commission, MRPC, assists this region with its development projects. Ayer's central location, railroads, quick access to local open space recreation areas, and its proximity to the cities of Boston, Fitchburg, Lowell, Worcester and Nashua, New Hampshire have long made it a prime location for industrial, commercial, and residential development.

As seen in Map 3A.1, the Nashua River forms Ayer's western border and the town is the southern terminus of the Nashua River Rail Trail. Three highways, I-495, I-290, and Route 2, are all easily accessed from Ayer. The town is bordered by Groton to the north, by Harvard to the south, by Littleton to the east, and by Shirley to the west.

Approximately 19% of Ayer is part of the semi-autonomous Devens Regional Enterprise Zone (DREZ), which was formerly a large army base, Fort Devens.

### Topography

Ayer and the greater Montachusett Region are located in Massachusetts' central uplands. This area's topography was primarily shaped by the retreat of the Wisconsin Glacier, that completely covered New England approximately 12,000 years ago. The central uplands' topography is dominated by drumlin hills and flat deposits of glacial outwash. Historically, much of the region's old-growth forests were cleared for agriculture. Many of these regional agricultural areas were abandoned in the late 1800s and have since regrown, forming what is now known as the post-agricultural southeastern New England hardwood forest. The region's glacial and agricultural pasts continue to influence the conditions of Ayer's landscapes and ecosystems.

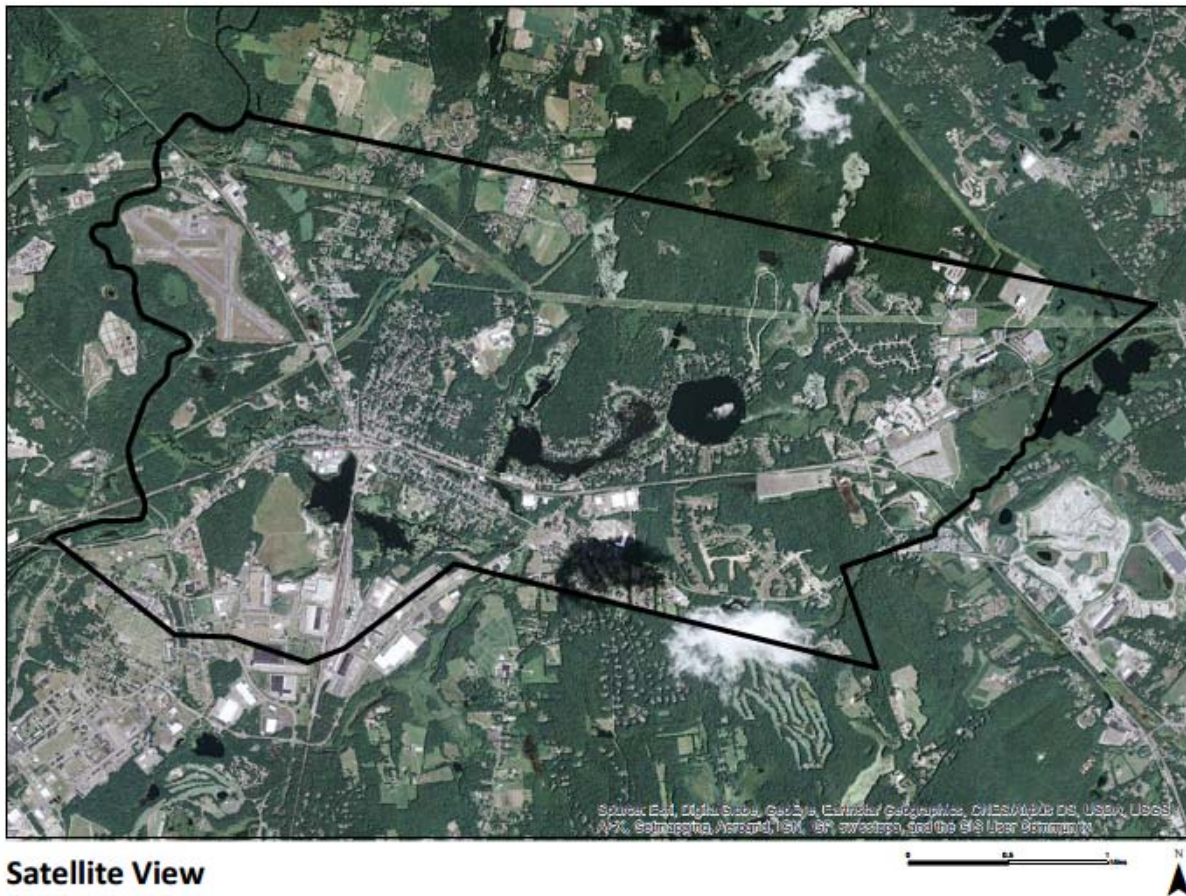
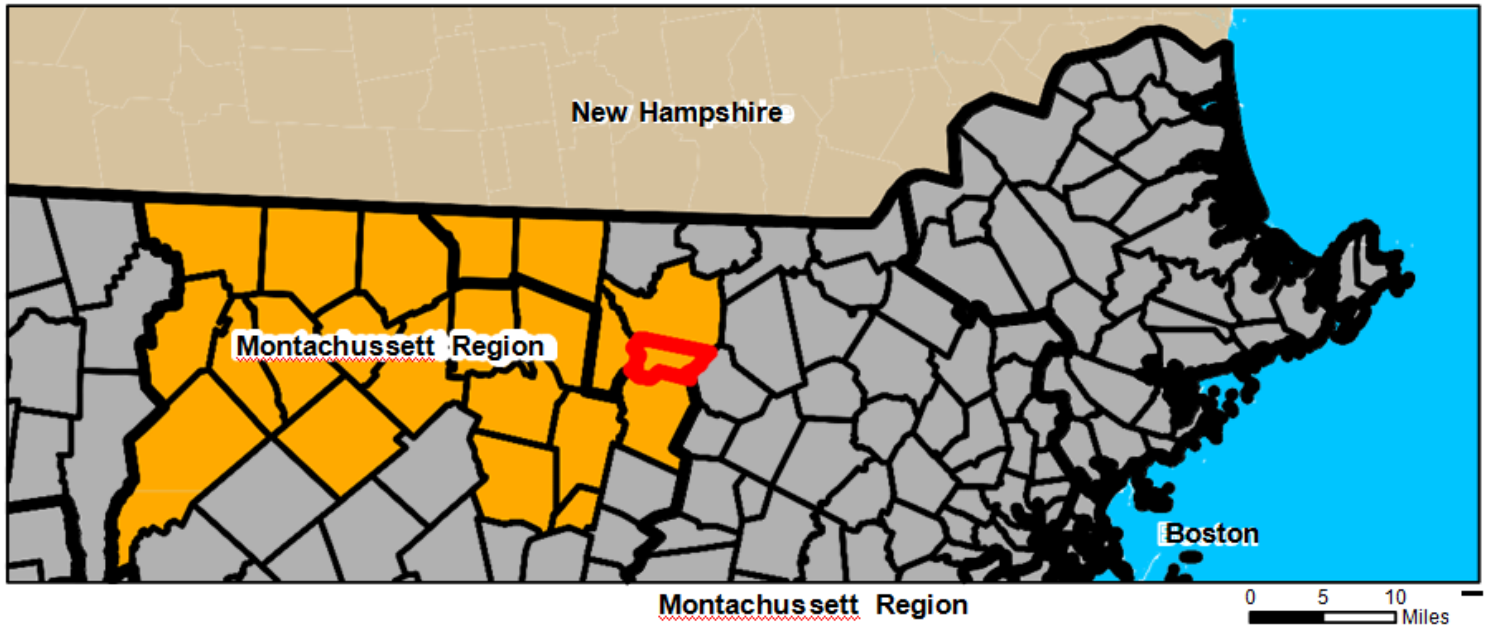
Ayer sits on the boundary of two regional watersheds. Most of Ayer's land is within the Nashua River Watershed, while a small section, east of Westford Road, drains into the Merrimack River Watershed. Both of these watersheds share a legacy of industrial pollution, which influences the landscapes and ecosystems of the Montachusett Region. The impact of the region's industrial history can be seen in the high levels of heavy metals and other pollutants found in Grove and Plow Shop Ponds, a direct result of a "history of pollution extending back more than 100 years" (Norton, Perry, Haines, 276). Ayer's current environmental and open space management practices affect the downstream areas of these watersheds and tributaries, as well as surficial water in Ayer.

### Socio-Economic Context

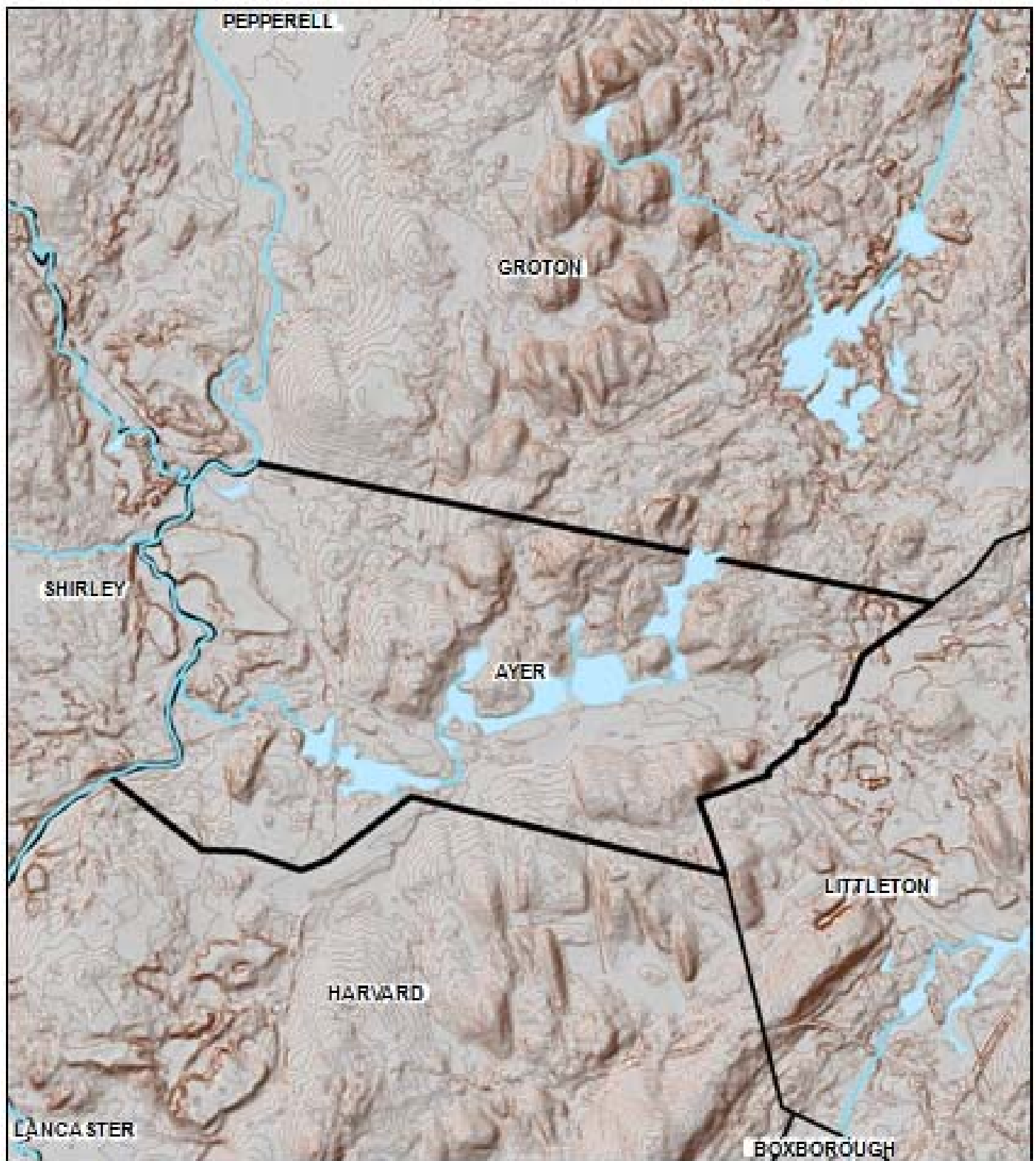
Ayer is a quickly growing, medium-density, suburban town located on the outer periphery of the Boston suburbs. The Town's economic status has improved since the last OSRP update in 2004. In the thirteen years between 2000 and 2013, Ayer's median household income rose by over \$13,700, to \$60,345. Ayer's household income is in the middle of the local spectrum, as its neighbors Harvard, Groton, and Westford have significantly higher median household incomes of over \$118,000. The median household income of Littleton and Shirley are comparable to Ayer's (census.gov).

The region's socio-economic situation directly influences how its network of open space and recreation areas are developed, managed, used, and viewed. It is important for towns to anticipate how changes in regional and global economic situations can affect the availability of funding needed to maintain open space and recreational areas.

The region's strong economic growth is catalyzing increased industrial and residential development of Ayer's remaining unprotected open space. To ensure enough open space for the town's future needs, the continued growth, preservation, and funding of Ayer's open spaces and recreation areas should become a Town priority.



**Satellite View**



**Topography**



### Shared Regional Resources and Land Use

This region contains an abundance of shared environmental and cultural resources. One of the region's most important environmental resources is the Nashua River. This river drains northward through the Montachusett Region into southern New Hampshire, where it joins the Merrimack River before draining into the Atlantic Ocean. A 3.5-mile portion of the river forms Ayer's western boundary. In the past, the region's paper mills and other industries severely damaged the Nashua River's ecosystem by dumping industrial waste directly into the river. Through a sustained grassroots effort, the Nashua River's ecosystem is gradually recovering and the Nashua River is now a nationally recognized example of river restoration ([nashuariverwatershed.org](http://nashuariverwatershed.org)). Most of the Nashua River riverfront in Ayer is protected and managed by the U.S. Fish and Wildlife Service as part of the Oxbow National Wildlife Refuge. This refuge is a major regional resource, forming a 1,667-acre, eight-mile riparian corridor of floodplain forest and wetlands through many neighboring towns ([fws.gov](http://fws.gov)).

Ayer lies within both the 25,630-acre Petapawag and the 37,450-acre Squannassit Areas of Critical Environmental Concern (ACEC). These ACECs protect many of the region's shared environmental resources, including a network of groundwater aquifers, ponds, streams, vernal pools, and wetlands. Additionally, twelve rare, endangered, or special concern species have been identified within these regional ACECs ([mass.gov/eea](http://mass.gov/eea)).

Ayer relies on portions of the Nashua and Merrimack River Basin aquifers for its drinking water supplies. These aquifers are part of a larger network that numerous neighboring towns share with Ayer.



The Banks of the Nashua River are now open space and recreation lands (taken from [wikipedia.org](http://wikipedia.org))

### Devens, Current and Future Ayer

The maps shown in this plan include the historic boundaries of Ayer, 19% of which is located inside the state owned Devens Regional Enterprise Zone (DREZ). This area was once home to Fort Devens, a large US military base, and Moore Army Airfield. Residents often refer to "historical Ayer" as Ayer's boundaries prior to the formation of Camp Devens in 1917. "Camp Devens was established on about 5000 acres of land leased then later purchased from 112 owners who sold 230 parcels of land in the towns of Ayer, Harvard, Lancaster and Shirley, to the United States of America".

[www.fortdevensmuseum.org/history.php](http://www.fortdevensmuseum.org/history.php) The camp was created to train New England soldiers for combat in WWI.

The current management of, and future plans for, this zone's former military base and airfield has been a long-running topic of debate. The DREZ contains large areas of underutilized buildings and facilities. There is the potential for this zone to be transformed into a significant resource for Ayer and the greater region. This area contains both valuable wildlife habitat and numerous potential opportunities for further open space and recreational development. While Fort Devens was active, the US Government conducted many studies of Devens and the surrounding region. A community member reported that Plow Shop Pond is one of the most well documented ponds in the country because of its pollution and history. The Devens area has even developed its own Open Space and Recreation Plan. The wealth of background information available

on this region has been a valuable resource in the development of Ayer's updated Open Space and Recreation Plan. This 2017 Open Space and Recreation Plan will therefore exclude the DREZ and primarily focus on Ayer. Coordinating future open space, recreation, and development projects with the DREZ could prove to be mutually beneficial.

**DREZ History:** The DREZ was established in 1994 by Massachusetts General Law 498 for governance of the Main and North Posts of the former Fort Devens for a period of up to 40 years. The towns of Ayer, Harvard and Shirley agreed to the "Reuse Plan." In that plan, the great scenic and natural resources on Devens, such as the Nashua River Corridor, are to be preserved through the designation of more than one third of the land to open space and recreation. The approximately 1300 acre open space linked network encompasses critical natural resources such as wetlands, floodplains, wildlife and plant habitat, and aquifers.

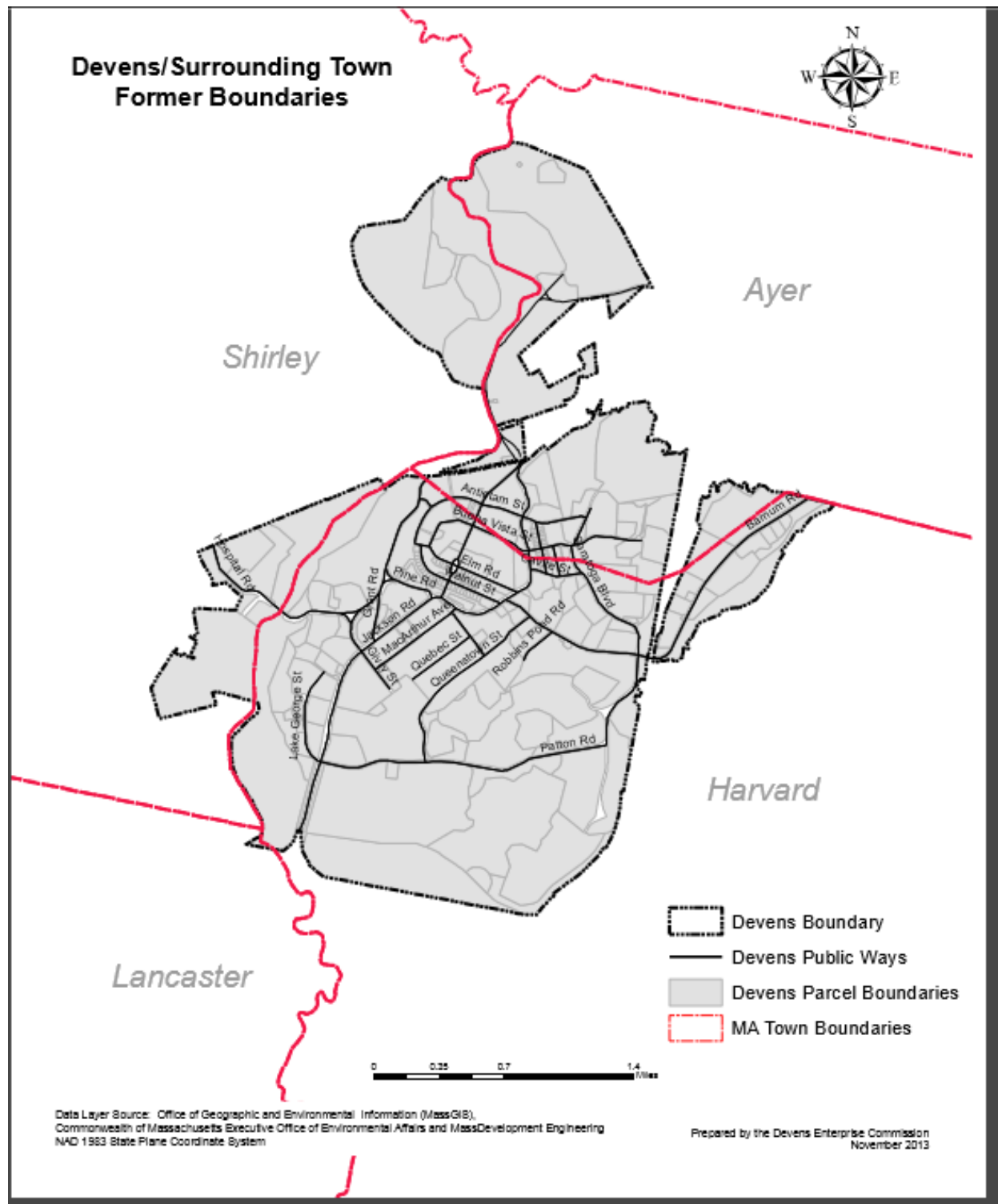
**Disposition:** According to MGL 498, on or before July 1, 2033, the Devens Commission along with the Boards of Selectmen of Ayer, Harvard and Shirley shall submit to the State a plan for the permanent governmental structure for the ongoing operation and administration of the DREZ, a process known as disposition. In 2006 the towns voted against the disposition proposal known as "Scenario 2B." That proposal would have created a new town of Devens and returned jurisdiction over portions of the DREZ to the towns of Ayer, Harvard and Shirley. As of this writing, no new proposal is being considered. If disposition were to reestablish Ayer to its historical boundaries, Ayer would then expand its jurisdictional authority to additional conservation lands and recreational facilities. The map on the following page shows the portion of the DREZ that were formerly under the jurisdiction of the 3 host communities. The Devens Conservation Map shows 5 conservation areas within historic Ayer: Shepley's Hill, Shepley's Hill Landfill, Grove Pond Area, Buena Vista Area and the North Post Buffer Area. The Devens Openspace and Recreation Plan Map shows areas suggested for additional protection and outlines the US Fish and Wildlife lands. The recreation area, **Willard Park**, is located off Ayer's West Main St. and contains one multi-use field and three softball fields. The maps in this document, "Open Space and Recreation Plan. Ayer, MA 2017" are maps of "historic Ayer" while charts, goals and objectives and much of the narrative, address aspects of the area currently under the governmental jurisdiction of the Town of Ayer, i.e. Ayer that is **not** in the DREZ.

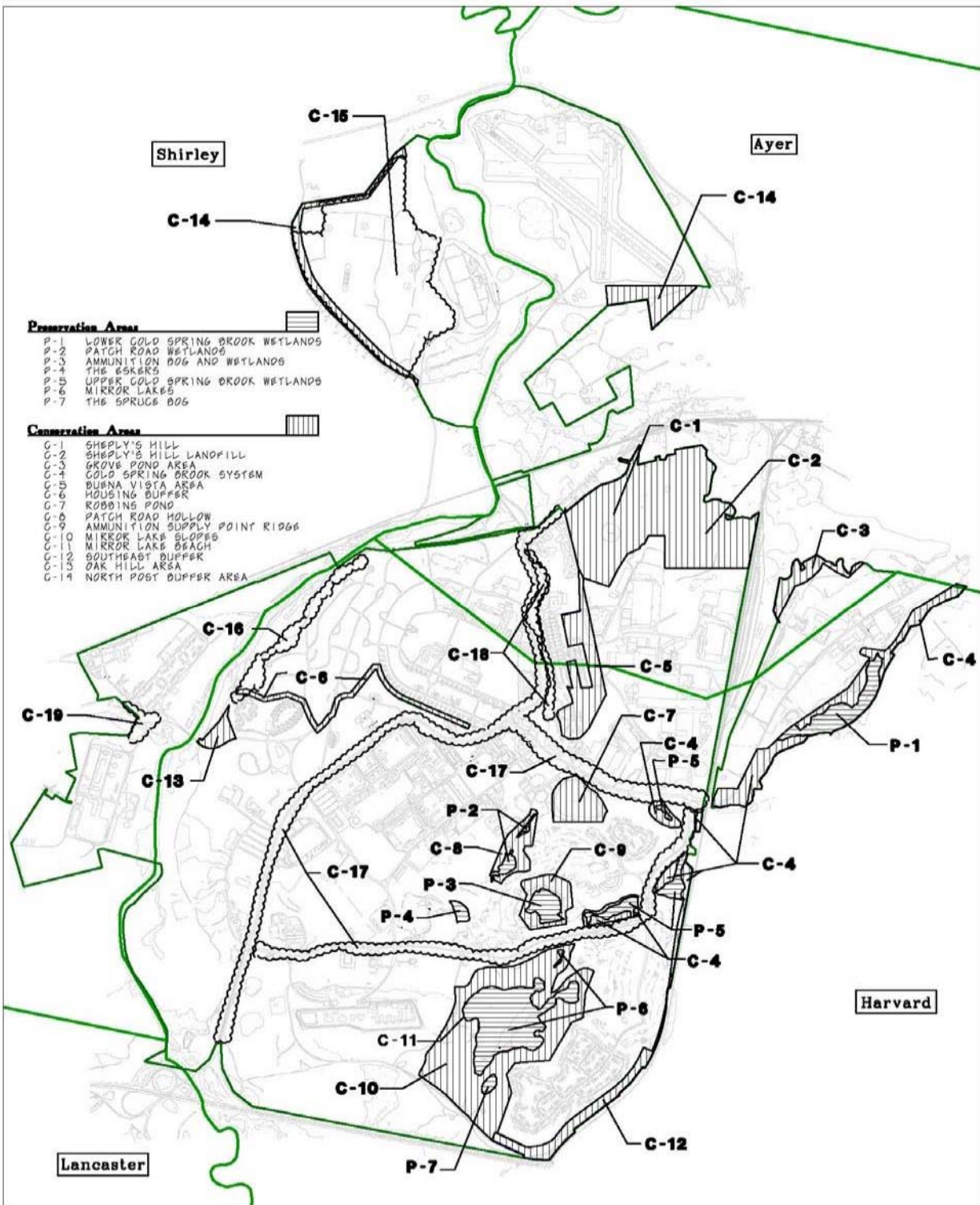


View of Devens parade grounds in winter

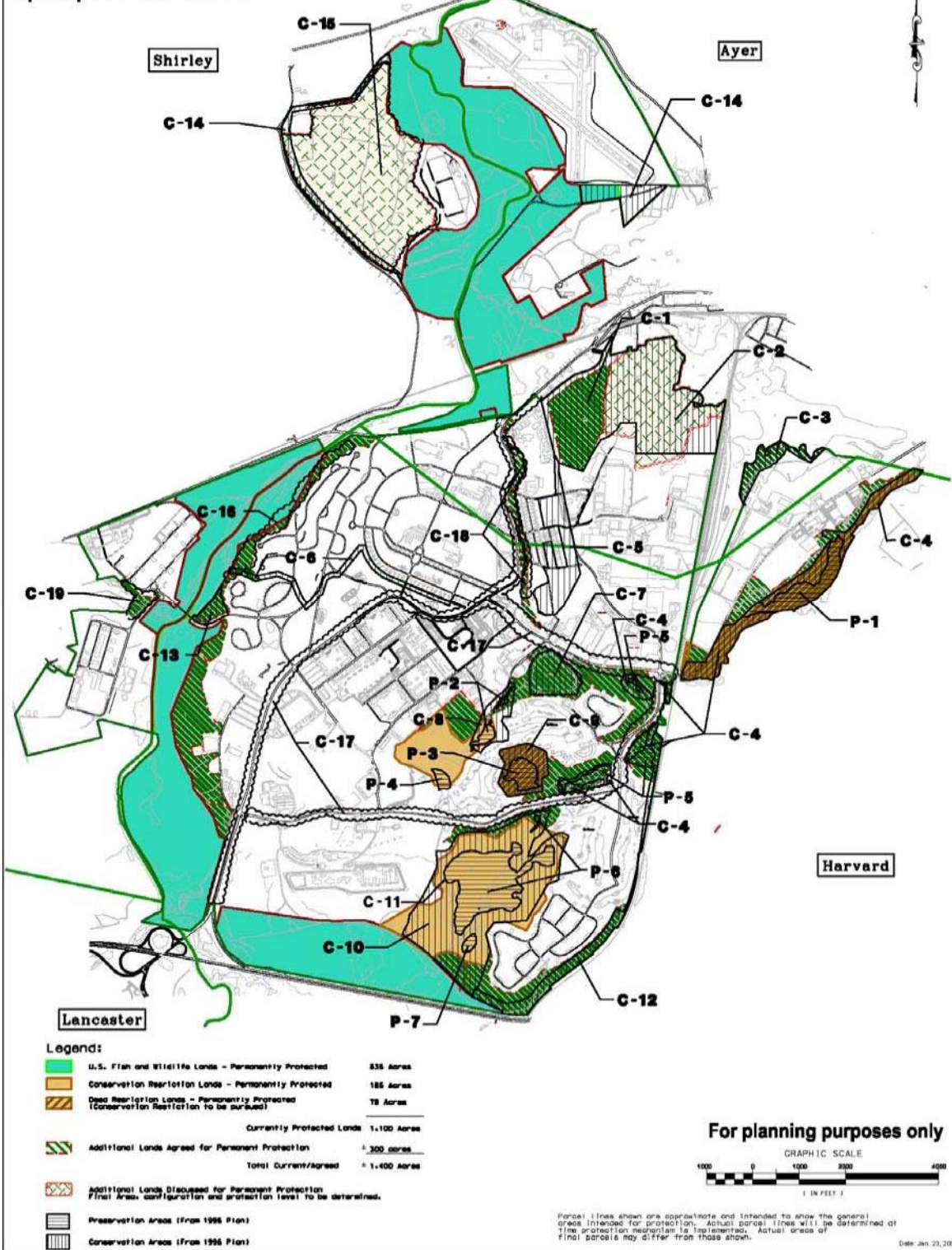


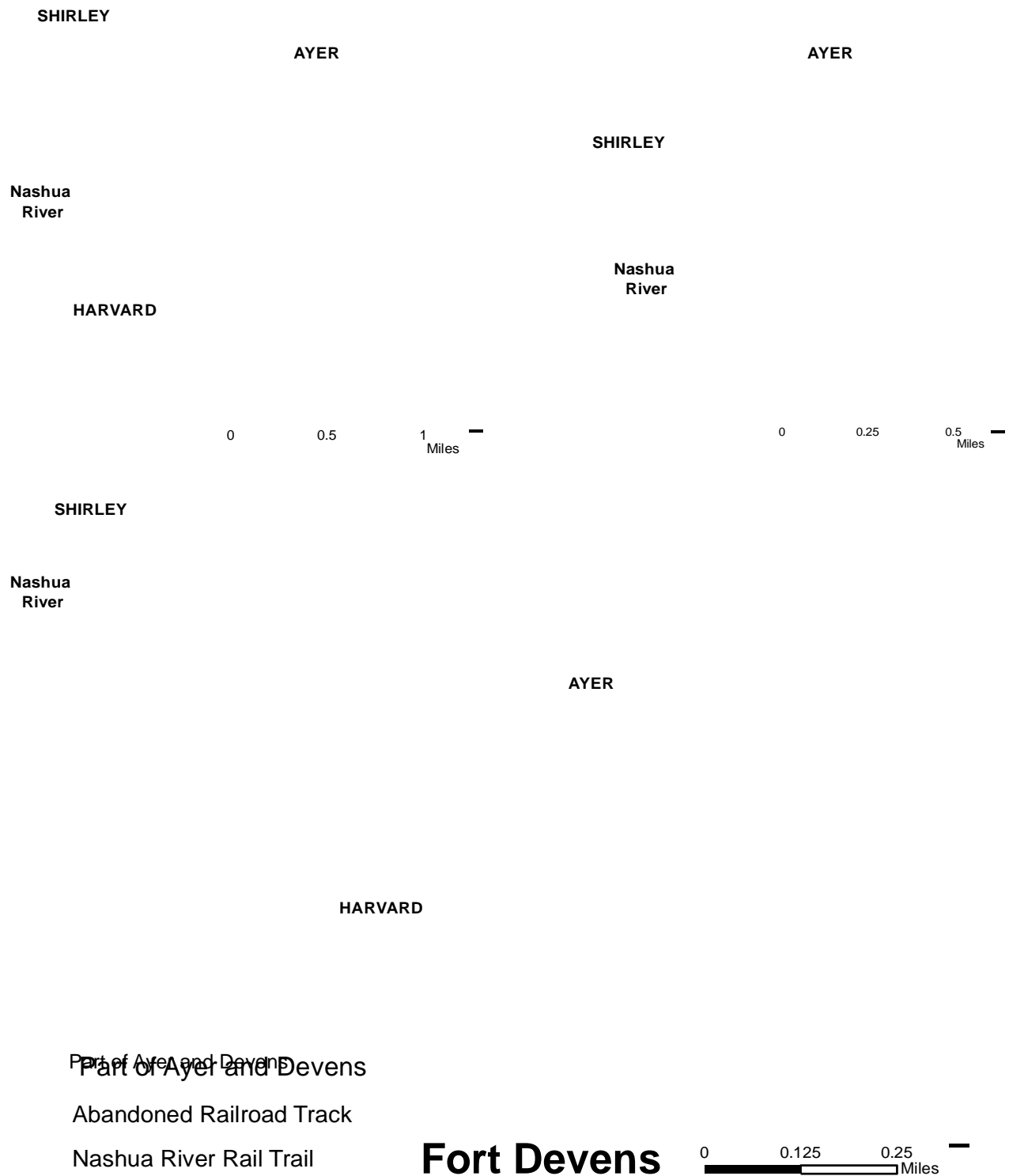
A ground view of the buildings at Vicksburg Square on Devens





**Devens Open Space and Recreation Plan (2008 - 2013)**  
**Open Space Protection Plan**



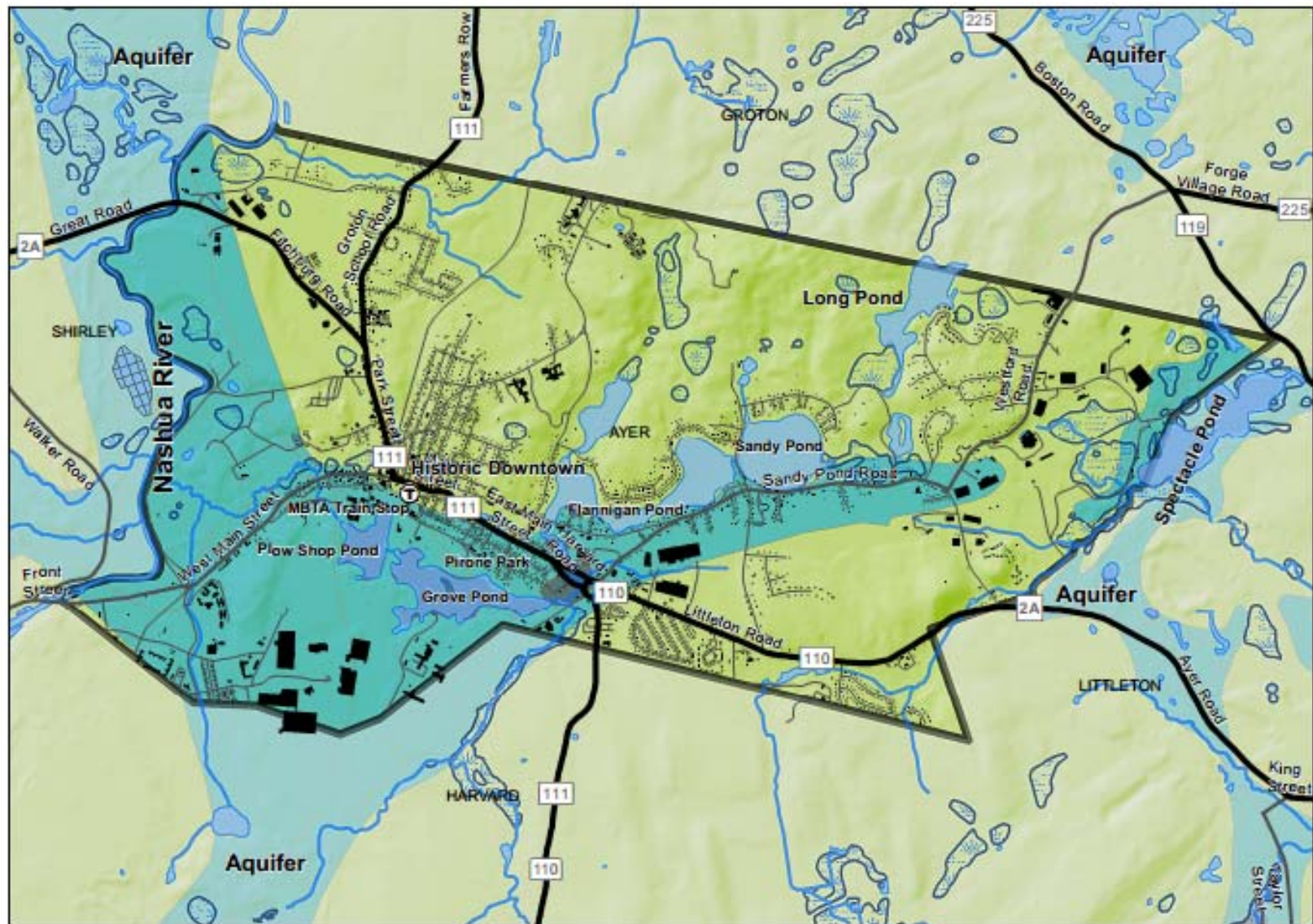


### **Map 3A.1: Ayer Context**

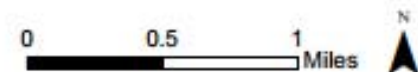
The town of Ayer, Massachusetts, covers about ten square miles, with a population of approximately 7,500. Located in Middlesex County, approximately two miles north of Route 2, Ayer is bordered by Groton to the north, Littleton to the east, Harvard to the south, and Shirley to the west. Two major corridors—Routes 110 and 111—converge along the densely settled and historic downtown in the western half of town. New residential developments have attracted residents to the eastern part of Ayer.

A network of ponds and wetlands, including the great ponds, Sandy Pond and Long Pond, bisects the Town and feeds the Nashua River, which forms the western boundary of Ayer. The ponds were historically used for ice production in winter time. Sandy Pond is the only pond in town with a public beach and defined swimming access.

Two large aquifers, one under Spectacle Pond in the east, and one under Grove Pond in the south, provide all drinking water for Ayer as well as neighboring towns. The network of large ponds and wetlands expands from east to west, and flows into the Nashua River in Ayer's western border. People live most densely in the central, historic downtown, following the water bodies to the east, and along the major roads to the north.



**Map 3A.1 Ayer Context**

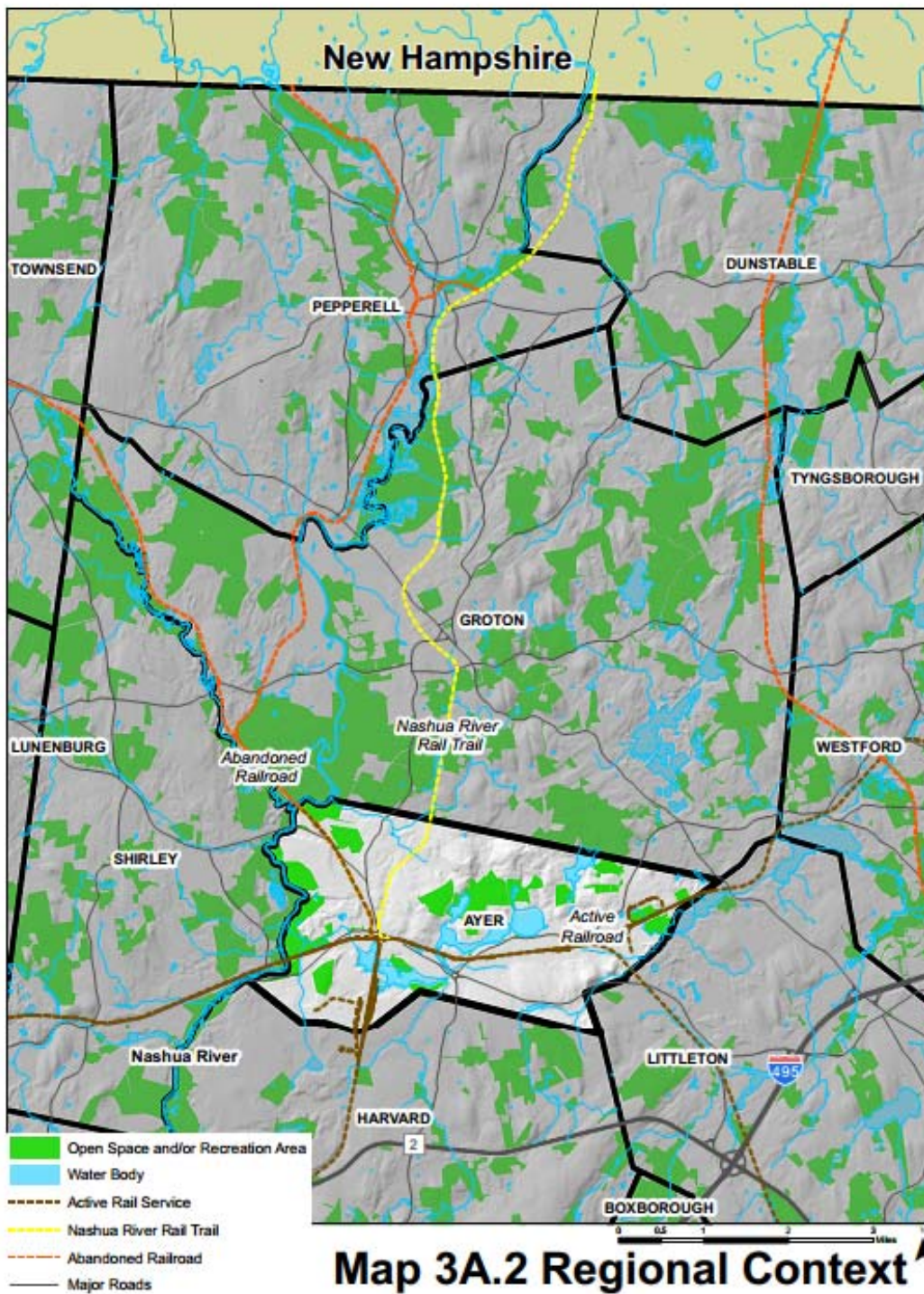


## Map 3A.2: Regional Context

Ayer is a suburban/rural town, located approximately thirty-five miles northwest of Boston and ten miles south of the New Hampshire border. Interstate Route 495, Route 2, and regional railroads are easily accessed from Ayer.

A regional corridor of open space land follows the Nashua River as it flows along Ayer's western border. The largest open space area within the immediate region is located in Groton, bordering Ayer's northwestern corner. Ayer's largest open spaces are found along its western border and its central area, north of the ponds. The 12.5-mile Nashua River Rail Trail runs north from downtown Ayer to the New Hampshire border. An abandoned railroad runs northwest from Ayer into Groton, along the Nashua River. It then forks with one track going north into Pepperell and the other continuing to the northwest, following the Nashua River.

Understanding Ayer's regional context is a vital part of the OSRP process. Ayer is on the outer edge of a rapidly developing suburban to rural landscape. Creating regional connections between open spaces has many ecological and social benefits. There is potential for Ayer to expand its open space network to connect with two large open spaces just across its northern border, in Groton. Additionally, Ayer's abandoned railroad track runs along an open space corridor and offers significant potential for repurposing into a recreational trail.



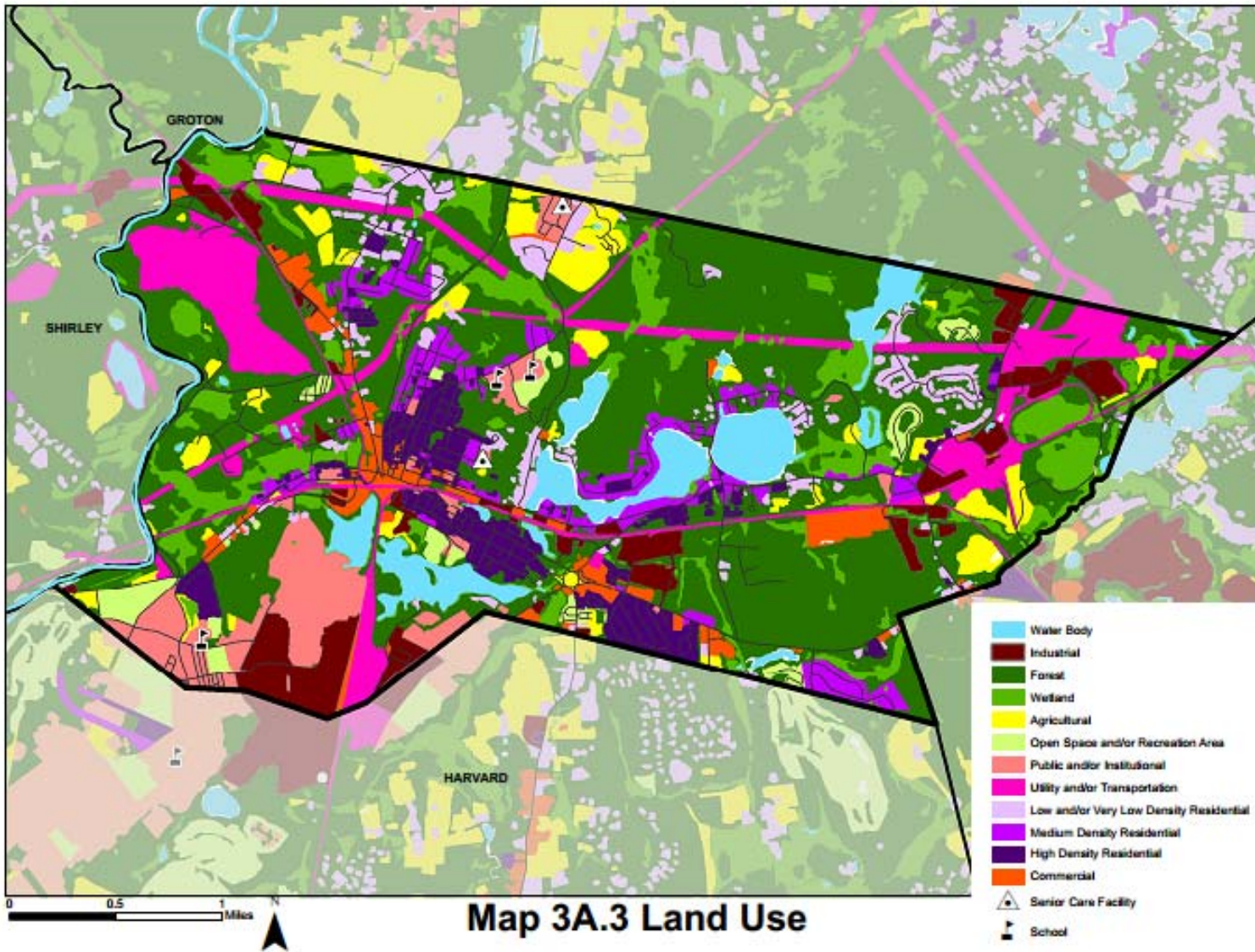
### **Map 3A.3 Land Use**

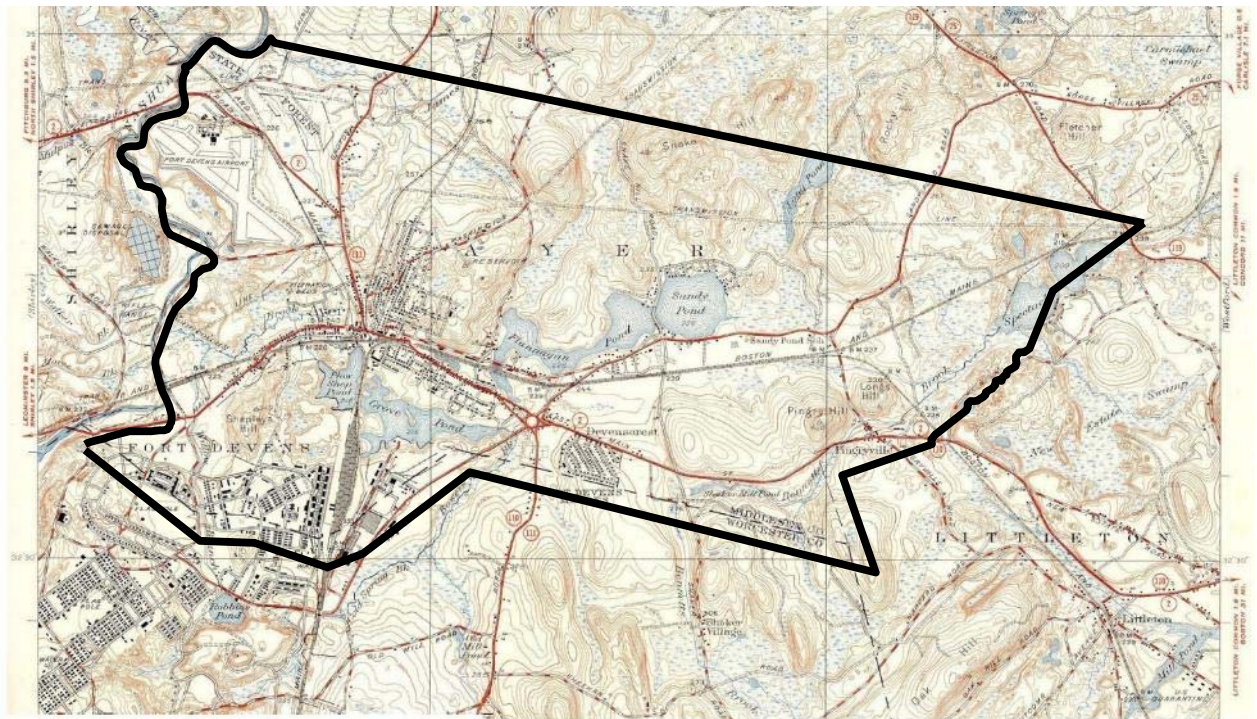
There is a diverse array of land uses found across Ayer. Most of Ayer is forested, and there are numerous wetlands, ponds, streams and rivers scattered across the town's landscape. A network of ponds following an east-west orientation bisects the landscape, creating a north-south divide. The largest contiguous forested area is found in the north central part of Ayer.

Residential areas are primarily located close to either the downtown area or a major water body. The northern and western areas of town have a lower residential density. A large business area is found in the center of Ayer's downtown and there are significant industrial areas along the town's southern border and in its northeastern corner. There is a limited amount of agricultural land in Ayer, although a large agricultural area is found directly north of Ayer in Groton.

Ayer is currently experiencing rapid residential and industrial development and the town's current land uses influence how future development is likely to unfold. Specific land use practices in one area may impact conditions, both positively and negatively, in neighboring areas. When planning for OSR areas it is important to consider the specific relationships between the different land use types in the surrounding properties. Creating ecological connections between natural areas is a significant aspect of successful OSR planning.

The specific relationships between an area's existing ecosystems and the proposed land uses will influence how the area evolves over time. Understanding these landscape dynamics will help in the design of sustainable use of these areas, so that they are able to satisfy the needs of Ayer's community while simultaneously strengthening the integrity of the ecosystems. To increase ecological connectivity, lands that are undeveloped, unprotected, and have the potential to connect larger blocks of natural areas should be given a higher conservation priority than isolated areas that are surrounded by development. Opportunities exist for linking forested areas north of the downtown, and for connecting Ayer's forested areas with larger land blocks across the Town's northern border.





In this 1939 topographical map much of Flanagan Pond is undeveloped.

**1939 USGS Topographical Map**

0 0.5 1 Miles

This illustration depicts Ayer 40 years after the arrival of the railroads.

**Ayer 1886 - L.P. Burleigh**

### 3B. HISTORY OF COMMUNITY

Ayer, like many New England towns, is rich with Native American history. As documented in Ayer's cultural and historic resources, including the 2006 Reconnaissance Report, Native American history of the area has been dated to the early woodland period (3,000-2,000 BCE). The Nashua River has had a long, interwoven history with Native peoples of the region, providing abundant hunting, fishing, and shelter.

Contact-period Nipmuck peoples have also been documented as living along the Nashua River, Nonacoicus Brook, and Long and Sandy Ponds. Trails used by Native peoples include Sandy Pond and Main Street along Nonacoicus Brook and could be identified as such in open space and recreation programs and/or facilities.

Nonacoicus was a Native American word meaning, "river with a pebbled bottom." In 1659, the Massachusetts Bay Colony granted Major Simon Willard 500 acres and he named his holdings Nonacoicus Farm. This area encompassed portions of present-day Ayer and Groton and formed the Groton Plantation. Although water power was potentially plentiful, the population of European settlers was low due to Ayer's remote location. Land use and the economy of Ayer were driven by a few small farms. The Pierce grist and saw mill was built in 1770.

With the arrival of the Fitchburg railroad in 1844, the population began to grow. A high percentage of immigrants, mostly Irish, moved to the areas of Main and Park Streets, which are part of the historic district. Now a booming railroad town known as Groton Junction, its industrial base attracted new residents who sought work in the railroad switching yards, mills, and tanneries. In 1871, Groton Junction was incorporated and renamed Ayer after Dr. James Cook Ayer, physician from Lowell who funded the construction of the Town Hall.

In 1917, in the midst of World War I, the United States federal government opened Camp Devens as an Army training facility. In 1931, the camp was re-named Fort Devens, and the base expanded into three neighboring communities: Shirley, Harvard, and Lancaster. In response, Ayer's economy shifted largely away from manufacturing to supporting Fort Devens and its military personnel. For over seventy-five years, Fort Devens supported local businesses. Housing such as the Devenscrest neighborhood was built in Ayer to provide off-post housing alternatives. When Fort Devens closed in 1996, Ayer was left with considerable uncertainty about its economic and demographic future.

### 3C. HISTORY OF FARMING

In 1676, Major Simon Willard owned the Nonacoicus farm, some 1,000 acres which encompassed most of the town of Ayer. It also included the southeast corner of the town of Groton east of the Nashua River. When Major Willard died, this large farm became the property of Hezekiah Usher due to a debt owed him by Major Willard. Major Willard's mansion was near the Harvard boundary, probably near Robbins Pond on that part of Harvard that became Ft. Devens.

Hezekiah Usher and his wife, Bridget, had marital problems, the result of which was court litigation. This prevented the subdivision and development of Nonacoicus farm during the 1600's. This kept the land undivided until 1719.

In mid 1700's the land was divided into parcels of 300, 200 and 100 acre farms. One family had a mill for smelting bog ore on the brook near the corner of what is now Park and Main Streets.

These farms were unique in that there was no main road that linked them to any of the other farming communities. Much of the activity on these farms was the cutting of pine trees and the running of saw mills to provide lumber.

The propensity of the Nashua River to overflow made the attempt to build a road linking these farms to the Groton Plantation farms a failure. It remained just a cart path for many years. The first homes for the owners of the land when it had been broken up were along this cart path. This is in the vicinity of Fitchburg Rd.

Several of the families....the Stones, Davis, and Holden families...who purchased portions of the Nonacoicus farm during the late 1700's were names that were familiar to many living here in town even during the 1960's as being names of well-known farmers in the present towns of Ayer, Shirley, and Harvard.

During the early 1800's the Davis family became owners of the Nashua River Farm, Their farmhouse was a very spacious building near what became the Fort Devens Army Airfield. This farm produced the usual crops, but they also cultivated cranberries, walnuts and hops. The brewing of beer was an important industry in Shirley, and people would row across the Nashua River to collect the hops from the farm. This beautiful home burned down in 1911 and the outbuildings were used by the Army for training of mules and horses.

Notable names are the Longley and Holden names.

Adolphus Longley Holden owned the Nashua River Farm

OPEN SPACE AND RECREATION PLAN, AYER, MA 2017

and was a wonderful dairy farmer, producing milk for the residents of Groton and Groton Junction, which became Ayer.

Especially notable is the Stone family name. This family farmed land that was in both Ayer and Harvard. They were dairy people had a wonderful dairy stand and made ice cream and other treats which they sold from their dairy bar well until the 1960's on what is now Rt. 110 in Harvard.

During the late 1700's, much of the land on which the Ayer Sportsman's Club sits was one of the larger farms in the area. The first owner in 1715, John Frost, had his farmhouse approximately where the parking lot is for the club.

After several divisions of the land, Mr. John Bagin in 1871 had a contract for wood, and he purchased much of the land to reunite this large farm. Unfortunately when the wood was used up, Mr. Bagin was heavily in debt, and the land was divided up again. Some was purchased by families with names that are still notable in Ayer, (Phelps, Dwinell, Moore) but the land was not farmed as such, but again used for lumber. The present Sportsman's Club clubhouse is built on the burned foundation of the Bagin barn.

As early as 1829, a farm that was established along the eastern edge of what had been the Frost Farm. This later became the McNiff farm. This farm had many products, but mostly was for the raising of pigs. Ralph McNiff was known in the farming community for raising the finest pigs in the state. This farm continued for 3 generations until 2016.

In 1844, the Fitchburg Railroad came through Ayer, linking from Boston to Fitchburg, and later points west. The north/south Worcester and Nashua Railroad linked to the east/west line in 1848, bringing service as far north as Greenville, NH. This line was also extended to Worcester. These railroad lines started Ayer on its way to being a hub of commercial activity. There were several livery stables in the town. One located at the corner of Pleasant and Groton streets and another at Cambridge and Washington Streets.

So the lack of settlers due to a court litigation, a river with a propensity to overflow, no main thoroughfare to make the land attractive to new settlers, and the establishment of the railroad, made the land of the Nonacoicus Farm attractive to the War Department in 1917, Camp Devens took much of the farm land in the southern part of Ayer.

Downtown Ayer became a bustling commercial hub. Some of the farms that supplied this community were along the land of Upper Washington St. Important farms in the 1940's to the 1980's were the Smith, Eliades and Wilder

farms. The Wilder farm on the west side of the road, where the present hospital now sits, was not just a very large dairy farm, but it also processed milk from many of the other local farms.

The Eliades and Smith farms on the east side of the road had cows, sheep, chickens, and gardens. Mr. Eliades won many awards for his superbly bred cows and for the quality of their milk. Most of the animals were sold in 1980's, but farming has continued on much of the land in the form of haying. In 2005, the Smith farm was divided up for some development, but the family has put much of the land into conservation restriction.

In 2017, one animal farm remains in the town. It is on the Maxant property off Taft St. This land, as well as the Moore land behind it, used to be farmed for hay by the Eliades and Smith families. This farm has horses for pleasure, but the main products of the farm are eggs, poultry and goats used for milk, meat and for goatscaping projects. These goats help maintain the growth of weeds and invasive plants in the town's environmentally sensitive areas. They are also taken to other private and publicly owned land to clear them of similar plants and poison ivy.

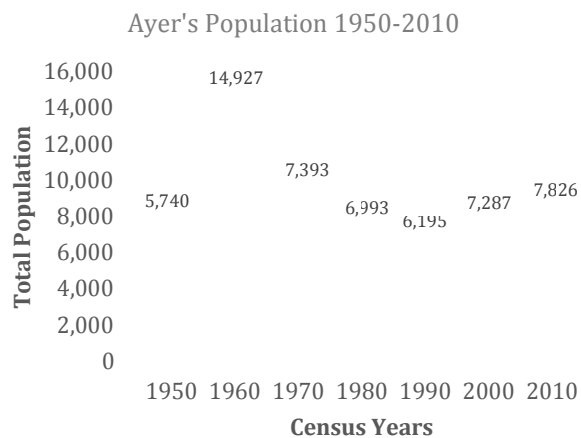
During the years of agriculture in Ayer, it was considered the norm for most people to have their own chickens, perhaps also a cow for milk, and a horse for transportation. Until the 1940's this was all considered normal for most families. When one drives the streets in town, with an eye open to see what has been, it becomes obvious that some of the garages of our older homes must have been small stables. During the 1950 - 1960's, several of the young people were able to keep their own horse in their back yards with their converted garage converted back to partial stable.

From the 1950's until just recently, it has not been acceptable to have animals that are considered farm animals on residential properties. With the advent of the push for locally grown, humanely raised food, this is beginning to change and people are seeing the value of having micro-farms on their properties. This is just not for the quality of food, but also the pleasure and comfort derived from having "farm" animals as pets.

### 3D. POPULATION CHARACTERISTICS

#### Patterns and Trends

Ayer's population has seen dramatic fluctuations over the last century. During the first half of the twentieth century the town's population slowly increased from 2,446 in 1900 to 5,740 in 1950. By 1960, the rapid expansion of Fort Devens resulted in Ayer's population growing by over 160 percent, ultimately peaking at 14,927. Throughout the 1970s and 1980s Ayer's population steadily decreased, to 6,871 in 1990. Despite the closure of Fort Devens in 1996, Ayer's population grew to 7,287 by 2000. By the 2010 Census, Ayer's population growth had slowed, increasing modestly to 7,427. Compared to neighboring towns, Ayer's population falls near the regional median.

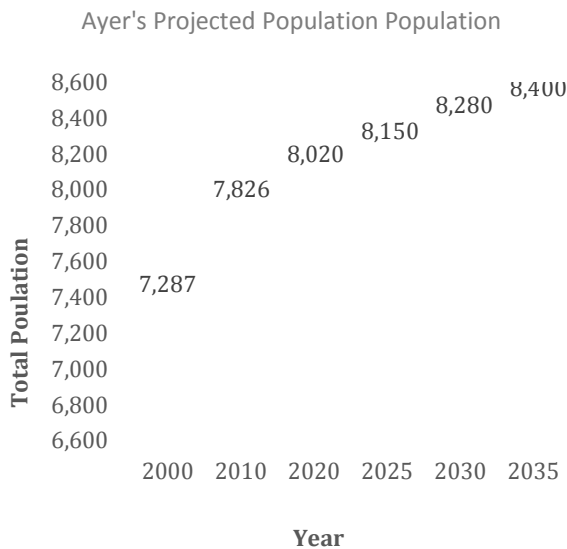


Ayer's population has rebounded to over 7,427 since 1990 (census.gov).

The town's median age has risen from 34.8 years old in 2000 to about 38.2 years old in 2010. As of 2010, approximately 37 percent of Ayer's population was between the ages 25 and 45. The percent of people over 65 years old fell slightly from 12 percent in 2000 to 11.5 percent in 2010. According to the town's Council on Aging, there are approximately 1,200 town residents over 60 years old. The total percentage of children under the age of 15 also fell, from 19.5 percent in 2000 to 18.1 percent in 2010. Ayer has a substantial aging population; from 2000 to 2010, the percent of Ayer's population between the ages of 45 and 65 increased from 18.8 percent to 28.1 percent. These age demographics indicate that Ayer will continue to need a variety of open space and recreation opportunities for people of all ages. However, since the number of people between the ages of 45 and 65 is growing the fastest, there should be a special focus on developing open space and recreation opportunities tailored to this specific age demographic.

The Montachusett Regional Planning Commission predicts steady regional population growth for the next twenty years (Montachusett Regional Strategic Framework Plan, 29).

It is likely that regional population growth will continue for the foreseeable future, as the region's proximity to Boston makes it attractive for suburban development. From 2000 to 2010, the Montachusett regional population grew by over 15,000 people, and by 2035, the regional population is expected to reach at least 260,000 (Montachusett Regional Strategic Framework Plan, 25). Ayer's population is projected to grow to at least 8,400 by the year 2035 (Montachusett Regional Strategic Framework Plan, 26). The projected local and regional population growth will likely increase the demand for, and use of, Ayer's open space and recreation areas. Tailoring Ayer's future development around its growing and aging population will help the town create a more integrated, accessible, and used network of open space and recreational opportunities



Ayer's population is projected to increase to 8,400 by the year 2035 (Montachusett Regional Strategic Framework Plan, 26).

## Income

Between 1999 and 2013, Ayer's median family income rose by nearly \$14,000 to \$76,782, which is \$24,843 above the US national average of \$51,939 (census.gov). Per-capita income rose by nearly \$7,000, from \$26,400 to \$33,092 in 2013, which ranks Ayer as 224 out of 351 in per capita income in Massachusetts (census.gov). The town-wide economic and social restructuring brought about by the closing of Fort Devens opened Ayer up to increased residential and industrial development. This increase in both the median family and per-capita income is likely a result of the restructuring, along with the sustained growth of the Montachusett regional economy (Montachusett Regional Strategic Framework Plan, 29). While this rise in median family income is encouraging, the statistics alone do not necessarily guarantee sustained and/or increased funding for Ayer's open space and recreation opportunities. Supporting the recent rise in family income with strategic investments in programs, policies, or land would likely help to increase the community's awareness, pride, and use of Ayer's OSR resources.

### **Map 3C.1 Population Distribution**

The population of Ayer is densely settled along the town's water bodies, major roads, and railroads.

The Census Block Groups with the highest populations are located throughout Ayer's downtown area, along its south-central border with Harvard, in the community known as Devenscrest, and in the newly developed residential areas east of Sandy Pond. Ayer has two lightly populated, largely undeveloped areas along its western border and within the town's northern uplands region. Much of Ayer's recent residential development has followed a spread-out, low-density pattern that has inadvertently fragmented and weakened Ayer's ecosystems and landscape. These low-density residential housing units are developing large sections of Ayer's remaining open space into medium (yellow) to low density (light green) residential areas.

From 1990 to 2010, Ayer's population underwent a significant change in its composition and geographical distribution. Devens population dramatically declined after the closing of the military base in 1995. Subsequently Ayer has experienced a significant increase of the low-medium density residential development (light green). Between 1990 and 2010 large sections of Ayer's north-central, northwestern, and southeastern regions have seen increased development rates.

Increasing Ayer's equality of access to its OSR areas should become a priority. Increasing OSR opportunities near areas of higher population density may have the greatest net positive effect on Ayer's community by impacting a greater percentage of Ayer's total population.

# 1990 Population



# 2010 Population

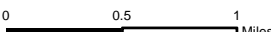


- Census Block Population Range**
- 0-20 People
  - 21-60 People
  - 61-100 People
  - 101-250 People
  - 250+ People
  - Water Body
  - Railroads - Active Service



School

## Map 3C.1 Population Distribution



## Education



Ayer-Shirley Regional High School is situated at a crossroads of existing and potential OSR lands (photo by John Phelan).

Ayer regionalized its school system with Shirley in 2010. There are currently three public schools in Ayer: Page-Hilltop Elementary, Ayer High School which is shared with Shirley and the Francis W. Parker Charter Essential School on Devens which serves students in grades 7-12 as chosen by lottery. Ayer is one of the seven district towns supporting Nashoba Valley Technical High School, a public four-year career-focused high school located in Westford.

The school system has seen a steady increase in enrollment since the late 1990s. Ayer's school system was significantly impacted by the closing of Fort Devens in 1996, as enrollment dropped. But, between the 2000 and 2010 censuses, enrollment at Ayer's elementary and high schools grew by 32.8 percent and 21.7 percent respectively. Most recent figures show that Ayer's high school graduation rate has increased to 93.8 percent, and approximately 36.1 percent of the town's residents have a Bachelor's degree or higher.

Schools typically perform many valuable services for the community. Increasing the direct, walkable connectivity between Ayer's educational system and its residential, open space, and recreation areas may have a significant beneficial impact on Ayer's community. Directly integrating Ayer's educational system into the town's OSR network will likely strengthen the community identity by expanding its sense of place

within the larger landscape. Ayer's educational system will continue to have a major influence on Ayer's open space network because of its central location between existing and potential open spaces.

## Employment

The leading employment sectors for Ayer's residents are educational services (24.8 percent), professional scientific, management and/or administrative (15.9 percent), manufacturing (11 percent), and retail (9.8 percent)(census.gov). Since the closing of Fort Devens, Ayer has successfully attracted a number of large corporations to the town. This increased industrial presence may have mixed effects on the future of Ayer's open space and recreation areas. On one hand these businesses' presence may contribute to an increase in Ayer's OSR funding, strengthening its local economy and increasing property values. However, these industrial businesses are dependent upon the rapidly changing global economy. New technology, cultural change, or economic disruption can quickly impact the viability of such businesses. The steady growth of Ayer's industrial economy over the last two decades has contributed to Ayer seeing "more development per square mile than any other municipality in Massachusetts" (Abel, 1). Ayer is at a historical crossroads and how the town chooses to develop its economy will have major ramifications on the lives of its future residents, the health of its ecosystems, and the community's resiliency to unforeseen global economic changes.



Ayer's economy is growing.

## Environmental Justice Populations

Maps 3C.2 and 3C.3 illustrate the distribution and composition of Ayer's Environmental Justice population (EJP). The Massachusetts Executive Office of Energy and Environmental Affairs has designated the southwestern one-third of Ayer as an Environmental Justice Population area. This designation is applied to Census Block Groups with one of the following demographics: a population of  $\geq 25$  percent minority population, a yearly median household income of  $\leq \$40,673$ , or  $\geq 25$  percent of all households identifying as English-isolated (mass.gov). To maximize the impact of future open space and recreation areas, the Town must ensure that its environmental justice communities receive equal access to open space and recreational opportunities.

Map 3C.2 illustrates the geographic distribution of Ayer's Environmental Justice and elderly populations. A walkability buffer was added to show the areas of town that are within a quarter-mile of an open space or recreational area. While much of Ayer's Environmental Justice Population is within a walkable distance, there are EJ populations in Ayer's southern and central sections that fall outside the buffer. Devenscrest and the northern part of the downtown area fall outside of the walkability buffer and are two of Ayer's most densely populated EJ communities. In order to increase the equality of Ayer's OSR network, increasing opportunities for these areas should be a top priority.

Map 3C.3 shows the regional distribution of Environmental Justice populations in relation to open space and recreation areas, as well the different designation categories that are used to identify EJ populations. Ayer's Environmental Justice Population consists of an income-based population in the downtown and the residential areas north of Plow Shop Pond, and a minority-based population in the residential areas south and east of downtown (mass.gov). The region's largest and most diverse EJP is located along the Nashua River, approximately eight miles upstream from Ayer, in the city of Fitchburg. This map illustrates the challenges many EJ districts have in gaining access to open space and recreation areas.

## Senior Populations

As Ayer's population has aged over the last twenty years, the community's desire and need for easily accessible, walkable OSR areas has also increased. To ensure equality of OSR access for the entire community, it is important to prioritize elderly OSR access. There are approximately 1,200 people over the age of 60 living in Ayer. There are four main senior care or housing centers in Ayer: Nashoba Park Assisted Living Community located in the eastern part of the downtown; Apple Valley Nursing Home in the north-central region of town; Pond Street Senior Housing bordering Pirone Park, and The Pleasant Street School Apartments near the town center. Also across from the hospital are the Autumn Ridge Farm homes, whose population is restricted to those 55 or older. Seniors living in Apple Valley, Pleasant Street School, and Autumn Ridge Farm have easy access to the Nashua River Rail Trail, while seniors living in the Nashoba Park Assisted Living Community have somewhat less convenient access to Pirone Park and Pine Meadow Conservation Area.

The Town should ensure that both their Environmental Justice and elderly communities receive equal and increased access to open space and recreational opportunities.



Future OSR developments should account for Ayer's aging population (vomass.org).

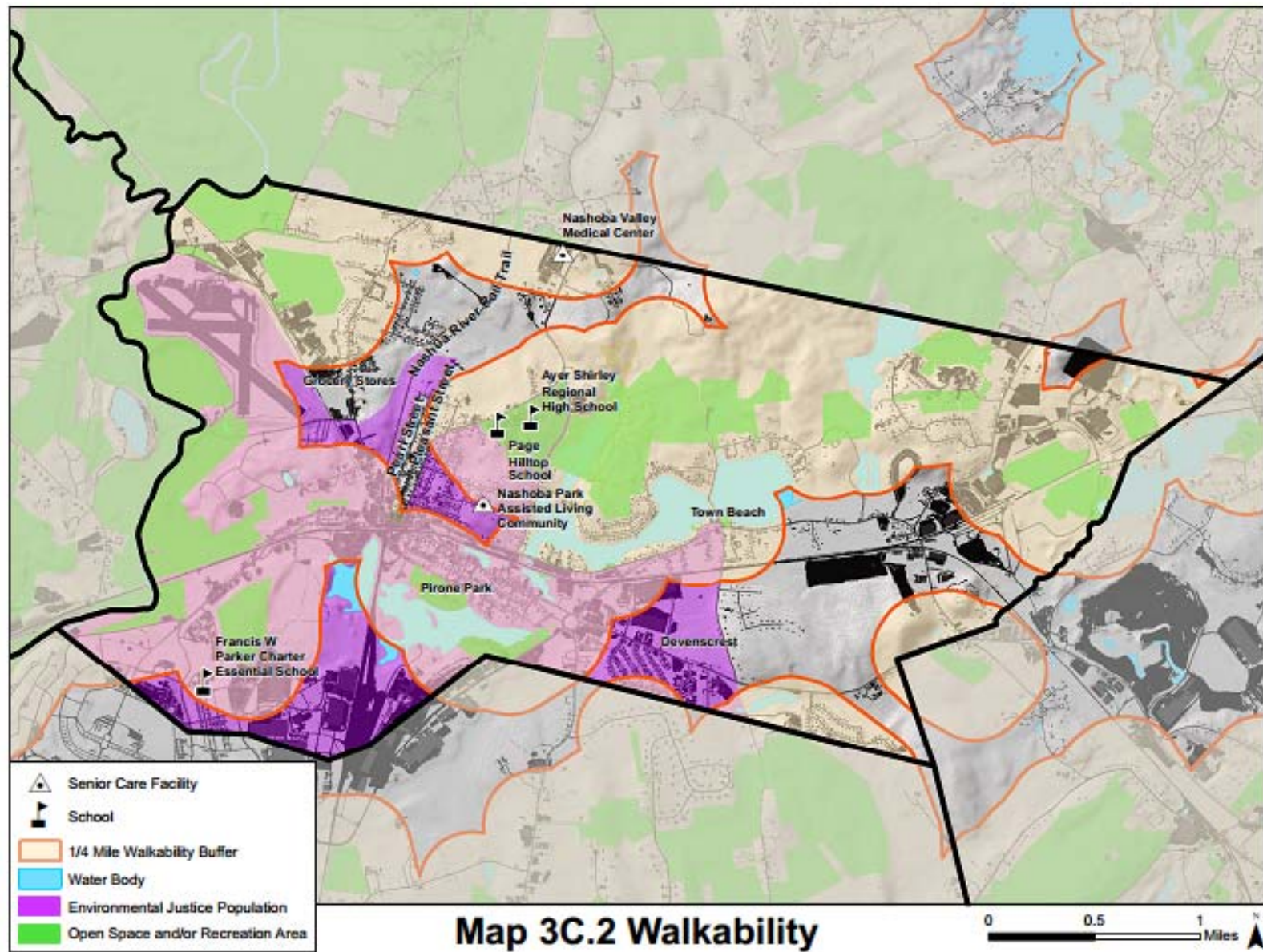
### **Map 3C.2 Walkability**

To improve the lives of its citizens, Ayer should prioritize providing its Environmental Justice and elderly populations with equal access to open space and recreation areas. Although most of Ayer's Environmental Justice Population is within a walkable distance of an OSR area, there are EJ populations in the town's southern and central sections that are further than a quarter-mile from an OSR area. Both of Ayer's main senior care centers (the Nashoba Park Assisted Living Community and Apple Valley) are located within a quarter-mile of an OSR area.

The two areas with the town's highest population densities (Devenscrest and Pearl Street), have Environmental Justice Populations that fall outside of the quarter-mile OSR walkability buffer.

Decreasing the size of the gaps in the quarter-mile walkability buffer should be a goal consideration when planning for Ayer's future OSR areas.

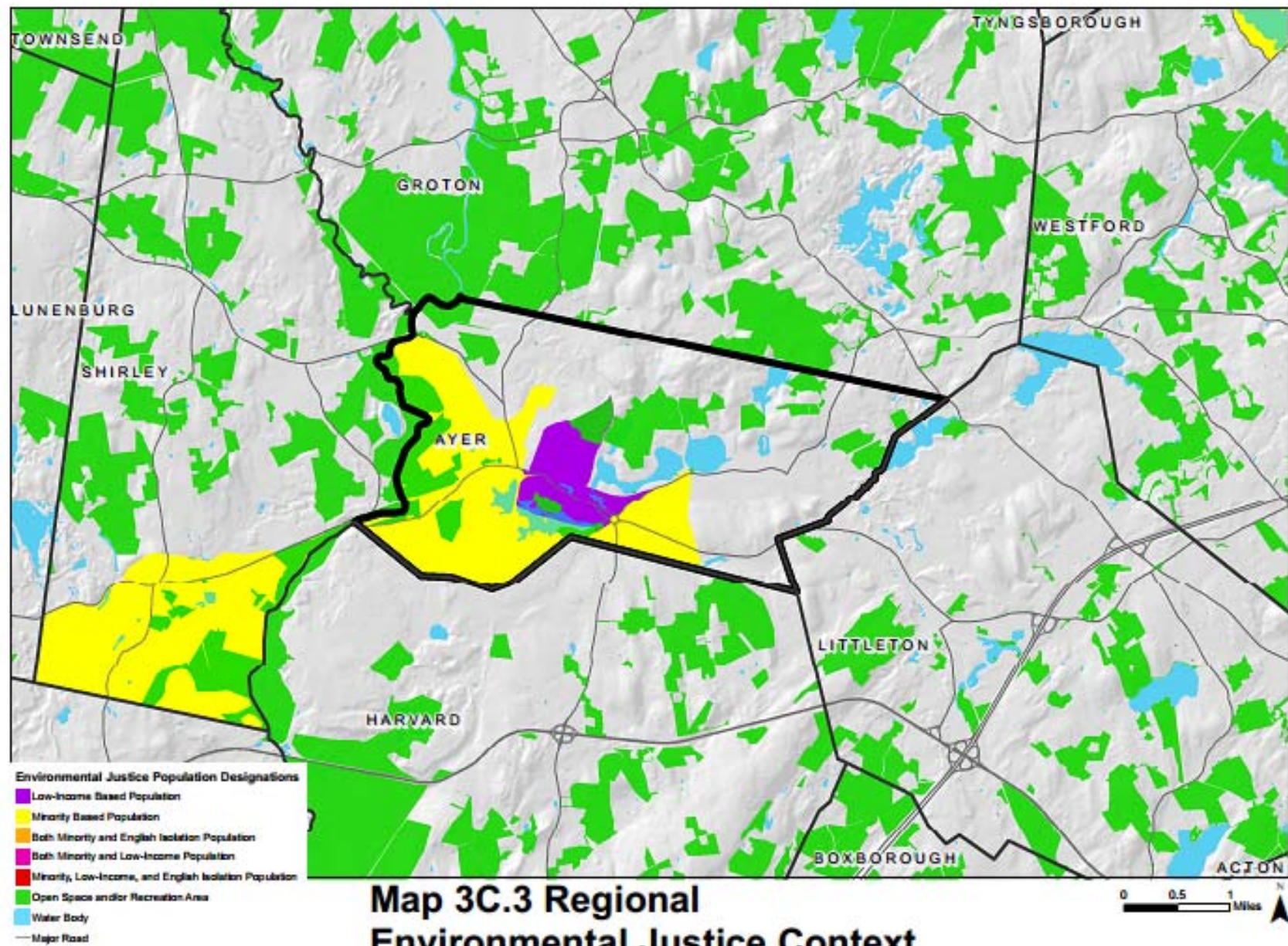
Providing increased opportunities for easily accessible open space (playgrounds, pocket parks, and trails, e.g.) to Ayer's high density Environmental Justice Populations should be given high priority.



### **Map 3C.3 Regional Environmental Justice Context**

Ayer's Environmental Justice Population consists of low- income block groups in the center of town and minority block groups just south and west of downtown. There is a strong continuous band of EJ populations running north-south from Fitchburg through Leominster. Unlike Ayer, some of these Environmental Justice Populations are of English Language Isolation groups. Generally, Ayer's EJ populations are similar to the populations found in the surrounding towns.

When planning the future of OSR areas it is important to consider how issues such as affordability, accessibility, and cultural preference may affect access and use of OSR areas by Ayer's EJP. Increasing access to OSR opportunities provides EJ communities with greater exposure to broader educational and social experiences that can help Ayer to break out of damaging generational patterns.



### Map 3D.I Zoning

Ayer is currently divided into nine primary zoning districts and three overlay districts. The business areas are primarily clustered within and adjacent to Ayer's downtown area. Industrially zoned areas are predominantly found in Ayer's southwest and northeastern corners, and within an east-west band adjacent to the train tracks.

Most of Ayer is currently zoned for residential use. Low-density (A-1) residential zoning is primarily located in Ayer's largely undeveloped north-central area. The minimum lot size within this zone is just over one acre. The development use and building restrictions in this area are not as strict as in the more densely populated central areas near downtown. The medium-density residential district (A-2) allows a greater variety of larger, multi-family housing types, and additional public/semi-public facilities. The minimum lot area for a single family home in this area is 12,000 square

feet. The A-2 zoning district extends from Ayer's northwestern corner to central neighborhoods around Sandy Pond. The general residence (high density) and general business districts are primarily found in the areas adjacent to downtown.

General residence zoning allows development of up to twelve residential units per acre and is the smallest of Ayer's residential zoning districts. This area is close to downtown and includes a trailer park property and Environmental Justice population.

Large parts of Ayer's remaining undeveloped lands are currently zoned for medium- and low-density residential development. As Ayer is currently in the process of updating its zoning bylaws, it would be prudent for the Town to consider directing future residential development into higher density forms, such as cluster development, where undeveloped land is preserved.



### 3D. GROWTH AND DEVELOPMENT PATTERNS

Ayer's development patterns are influenced by the town's geographic location, its history, rail access and the development of the regional economy. Ayer's proximity to water resources and its rich ecological context within the Massachusetts Central Uplands has helped to catalyze the town's growth and development. Ayer has direct access to significant regional railroads, highways, and trail networks. The primary business and dense residential zones form a branching network of development extending out from the downtown. The growth of Fort Devens in the 1960s brought with it a transformative influx of residential and commercial development. Unlike Ayer's previous development, this new development wave was primarily focused on the Town's northern and eastern areas. Much of the residential development during the 1960s occurred around the Town's ponds, which has greatly contributed to Ayer's current land use patterns.

Today, most of Ayer's ponds are surrounded by residential or industrial development. Light industry is largely concentrated along the Town's primary roads, on the periphery of the downtown area. Although heavy industry is now largely clustered on the east side of Ayer near the Littleton border, there are places closer to the old core, including Grove and Plow Shop Pond and Pirone Park, which are still recovering from historical industrial pollution.

Recent development has taken place throughout the town. In the eastern part, three new streets off Sandy Pond Road (Easy Street, Patriot Way, and Mountain Laurel Road) have provided about 50 single-family homes. The subdivision known as The Willows, which includes a portions of 40B housing, consists of nearly 100 single family and attached units, and was developed just off Willow Road. Twenty-five of the units were sold at "affordable" prices. The 10 homes included in Elizabeth Estates near the schools, combined with the 10 home on Amandrey Way off the Groton School Road have added to Ayer's inventory of single family dwellings.

The biggest development by far is Pingry Hill, a 123 single-family housing community set on one-acre lots spread over 235 acres between Route 2A and the railroad tracks and east of Snake Hill Road.

The Mass Audubon 2014 "Losing Ground" report cites Ayer as one of the top ten towns in Massachusetts with the highest rate of development and greatest rate of deforestation.



Upper Flannagan Pond remains largely undeveloped.



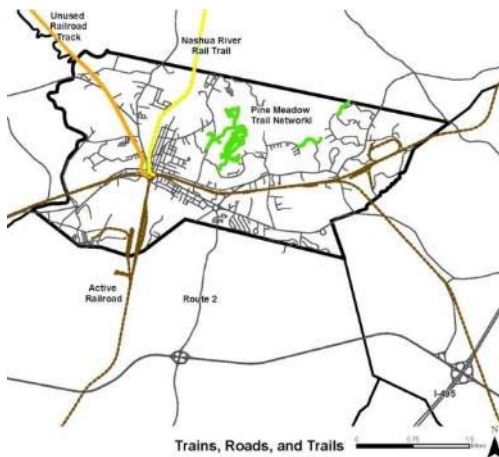
The Nashua River Rail Trail is a significant regional resource

## Access and Circulation

Route 2, a major regional road connecting Boston to western Massachusetts, is just south of Ayer's border, in Harvard. Route 2A connects Ayer to Littleton and Shirley, while Route 111 runs north into Groton and south to Harvard. These major roads generally follow the Town's railroads and water bodies, and bisect the Town into a northern and southern section. A regional network of industrial and commuter railroads runs east to west across the Town and connects Ayer to Boston and Fitchburg. A regional industrial intermodal facility consisting of rail and truck terminals that serve areas throughout central and eastern Massachusetts is located on the southern side of Plow Shop Pond in the DREZ. The Moore Army Airfield, which is part of the Devens Regional Enterprise Zone, is not presently in use for air travel.



Ayer Station is the southern terminus of the Nashua River Rail Trail.



The extent of Ayer's transportation network is shown in this image

The MTBA Commuter Rail connects Ayer to Boston and Fitchburg.

### **Long Term Development Patterns**

Ayer is currently undergoing a critical period of restructuring and re-visioning, including exploring the range of options available for the future of the Town's open space and recreational accommodations. If Ayer does not seize this opportune time to preserve and expand its open space and recreation areas, future development may dramatically limit the town's options.

Judging by the region's projected economic and population growth, recent residential, commercial, and industrial development patterns are likely to persist (Montachusett Regional Strategic Framework Plan, 26-29). Surrounded by relatively affluent towns, Ayer is an attractive place for people to relocate to, as the Town's residents are able to take advantage of the region's large networks of open space and recreation areas. Direct access to commuter rail and proximity to Route 2, I-495 and I-290 make Ayer desirable for workers commuting to employment in eastern Massachusetts. The Town's proximity to regional cities and easy access to its railroad network also makes Ayer an inviting place for business. Ayer is an attractive, conveniently located town in a region that is undergoing social and economic transformation.

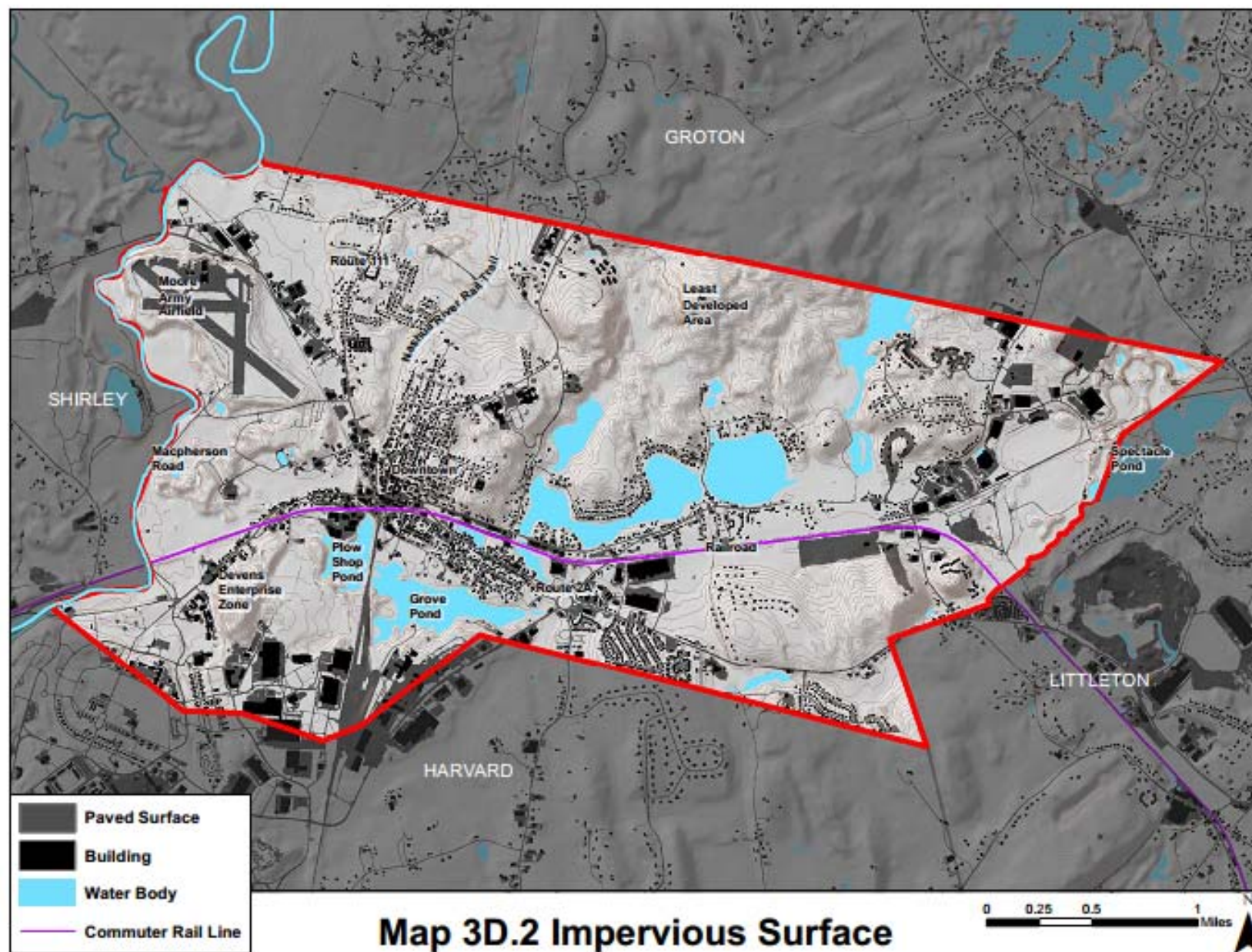
### Map 3D.2 Existing Infrastructure

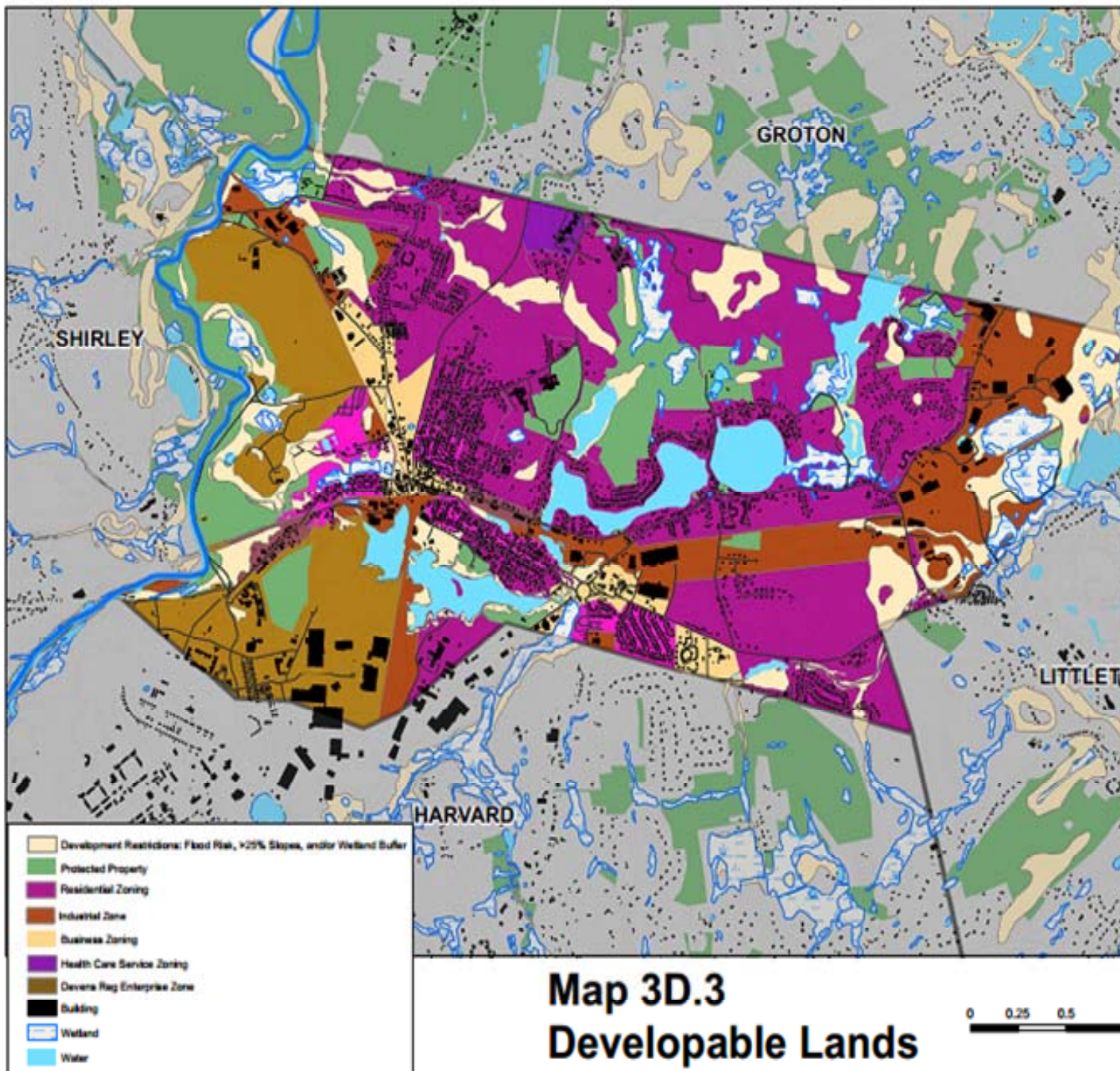
Ayer covers only about 9.6 square miles, of which nearly 19%, the Devens Regional Enterprise Zone, is governed by Mass Development. The densest areas of residential and industrial development follow Ayer's water bodies, major regional roads, and railroads. The most densely developed areas are the downtown, and the eastern industrial areas. The least developed lands are found along Ayer's western border and in its north-central region.

As can be seen in the northwestern and northeastern areas of town, much of the recent residential development has followed the spread-out, low-density, sprawl pattern. This pattern is impacting large sections of Ayer's remaining open space, including the 235 acres of Pingry Hill, limiting the town's options for expanding its open space and recreation areas.

Nighttime satellite imagery over Ayer







### **Map 3D.3 Developable Lands**

Residential zoning (A1, A2, and General Business) together constitute the largest zoning district group, covering large portions of Ayer's central, southern, and northeastern regions. Smaller portions of commercially/industrially zoned areas line the town's major roads, forming an east-west corridor that bisects the town. Large sections of Ayer's western border, north-central forest, and eastern wetlands are not developable because they are either legally protected or within a developmental restriction zone (>25 percent slopes, wetland buffer, flood risk). While development is currently restricted within the Devens Regional Enterprise Zone, future open space and recreation areas could be created within this area. Devens has its own 2008-2013 Open Space and Recreation Plan prepared by Nashua River Watershed Association, Montachusett Regional Planning Commission, and The Massachusetts Development Finance Agency.

Areas that are not protected or within a developmental restriction zone are more likely to be developed the closer they are to existing developmental infrastructure. Proximity to existing infrastructure (roads, buildings, parking, utilities etc.) makes new development more likely. Rather than building new, it is cheaper to use existing infrastructure. In order to maintain the integrity of Ayer's ecosystems, future development should be concentrated in already developed areas or in places surrounded by high amounts of nearby development. Adopting this development strategy would preserve the ecosystems within Ayer's remaining large blocks of forest. Additionally, developable lands that have the potential to connect separate OSR areas should be given conservation priority, due to the ecological and social benefits of increasing connectivity between OSR areas.

# 4: Environmental Inventory and Analysis

## 4A. GEOLOGY, SOILS, AND TOPOGRAPHY

### Geology

The geologic landscape of Ayer is diverse. Ayer's surficial geology, or landscape features, are a result of glacial drift during Wisconsin glaciation, approximately 85,000 to 11,000 years ago. As the glacier began to retreat approximately 18,000 years ago, it created distinctive landscape features as its large edges of ice and debris began to melt, including drumlin and kames at Pingry and Long Hills, kame terraces and flats of outwash in swamp and marsh areas, distinctive conical hills in the northwest, and long ridged eskers at Shaker Mill Pond.

The Wisconsin glacier lodged boulders of ice and debris into the soil that eventually melted and filled with water. This formed perhaps the most noteworthy surficial features in Ayer, two kettle ponds and a pond network. Sandy and Long Ponds are designated great ponds, greater than ten acres. Flannagan (also referred to locally as Fletcher's Pond), Spectacle, Grove and Plow Shop Ponds complete Ayer's pond network. This hydrologic system greatly influences Ayer's wildlife habitats, recreation, and trail connectivity opportunities, and also influences the health of drinking water aquifers. These features create a landscape that is both visually pleasing in its diversity, but also highly erodible with poor nutrient- holding capacity.

### Soils and Slopes

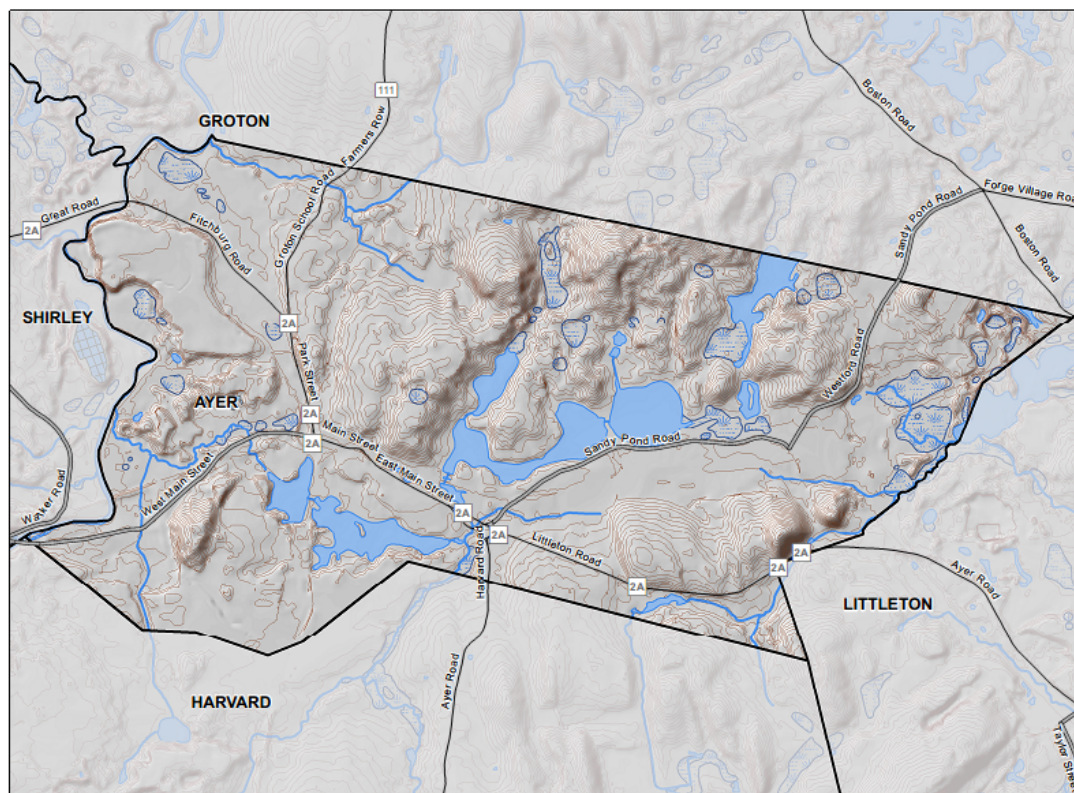
Soils and geology are important factors to understand any type of land use. As the Wisconsin glacier began to recede it deposited alluvium and glacial till, which in turn formed a diverse soil palette. Poorly drained soils have limited percolation capacity, host rich wetland communities, and are not well-suited for development or the installation of septic systems. Soils prone to excessive drainage have limited filtration and often have high erosion rates due to coarse sediments. Steep slopes often have shallow depth to bedrock. They

contribute to landscape character and eco-diversity. These features make up less than a third of Ayer, but make development difficult. According to Communities Connected by Water (March, 2001), most of the town of Ayer is unsuitable for subsurface sewage disposal systems.

Ayer's soils contain clays, sands, silts and gravel, over pre- glacial, Paleozoic Era bedrock. Ayer is a granite-rich town. Granite erodes to a coarse sand, resulting in landscape features like Sandy Pond and the many coarse- sand areas of town. Windsor-Hinckley-Deerfield soils are moderately well drained, sandy-gravelly soils. Windsor-Hinckley-Deerfield comprises approximately 20 percent of Ayer, and is the only soil series well suited for development because of its percolation and filtration capacity. This soil series is mainly located in central Ayer, where dense residential development already exists.



Full-extent of Wisconsin Glacial coverage  
([www.cosmographicresearch.org](http://www.cosmographicresearch.org)).

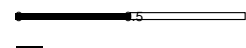


**Map 4A.1 Topography**

## Legend

- Calcpelite
- Granite
- Mafic
- Metamorphic

**Map 4A.2 Bedrock Geology**



Miles

Merrimack (a prime agricultural soil) and Canton-Charlton soils are excessively drained and are located in central Ayer, where much of the residential development exists.

The lesser developed but changing areas around Sandy and Flannagan Ponds are mainly Charlton-Hollis soils that are excessively drained and have shallow depth to bedrock on steeper slopes. Hollis-Canton and Paxton-Woodbridge are well to excessively drained, stony soils with outcrops of ledge, kettle holes and drumlins.

Additional examples of this are present at Snake and Pingry Hills. These soils covering 28 percent of Ayer, are located primarily in a long diagonal band from southwest Ayer to the northeast corner, extending south of Central Avenue. These steeply sloped areas present moderate constraints to high-density residential, commercial and industrial uses, but may be well suited for recreational activities. Poorly drained soils, such as mucks or other hydric soils, put severe constraints on many uses such as residential, industrial and septic development, but may be well suited for seasonal and light recreational use when dry, and may be important to wildlife habitat.

Ayer was historically a farming community before the train and industrial development arrived. The United States Department of Agriculture (USDA) defines three types of important agricultural soils: prime farmland, farmland of statewide importance, and farmland of unique importance. All three kinds of USDA-recognized soil are found in Ayer and make up approximately 20 percent of town soils. All USDA recognized soil types seem to have a correlation with existing surficial water bodies. Thus, Ayer has a statewide importance, although prime farmland makes up the smallest portion in Ayer.

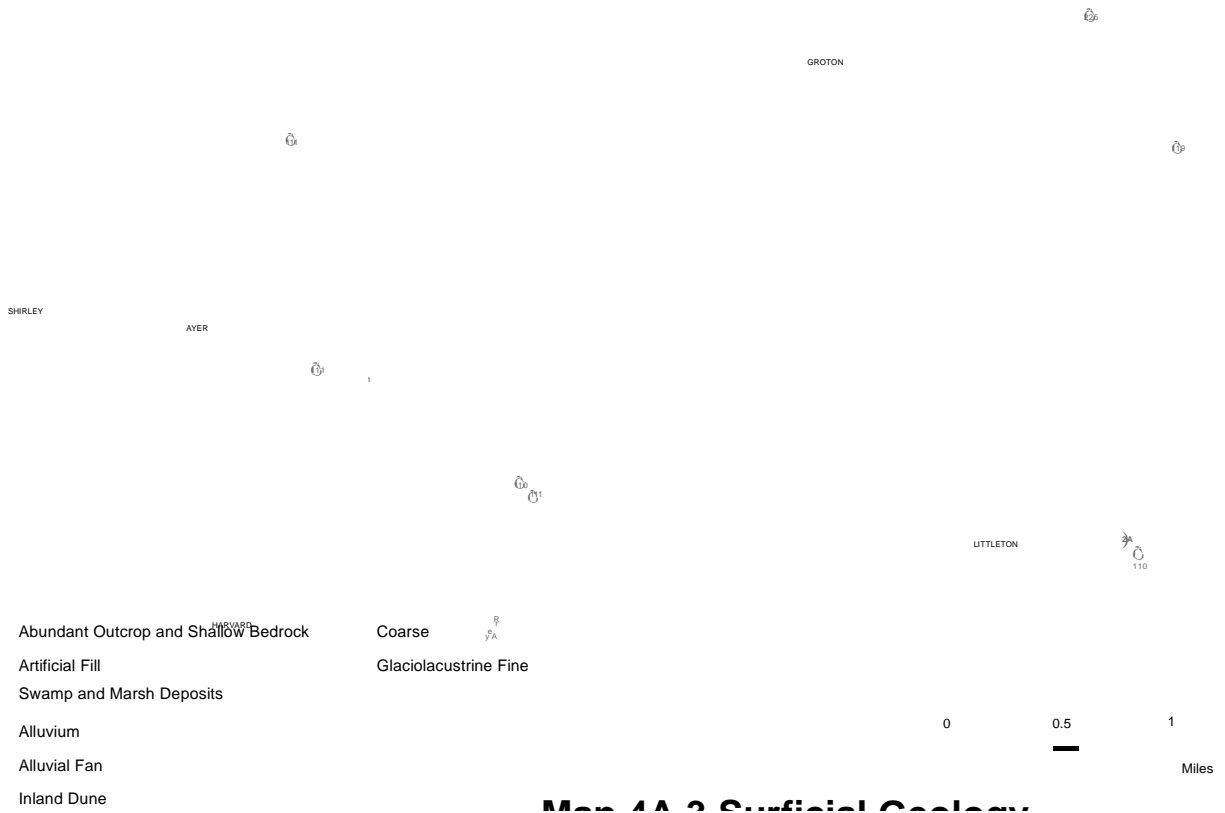
**Prime Farmland** is defined by USDA as “those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for those uses.” Only small patches of prime farmland exist in the northern, western and southern portions of Ayer. Based on the premise that prime soils can only be such if they are available for such uses, Ayer may have once had more agricultural soils contiguous with the large swath of prime agricultural soil directly to the south in Harvard, where there is less industrial development.

Over time, prime soils may have been covered up or destroyed as Ayer’s industry and Fort Devens grew. Of the three state-recognized agricultural soils types, prime, unique and statewide importance, prime farmland makes up the smallest portion in Ayer.

**Farmland of Statewide Importance** is defined by the USDA as “nearly prime farmland that economically produces high yields of crops when treated and managed according to acceptable farming methods.” This soil type is dappled throughout Ayer’s landscape and is most concentrated in the northwestern, eastern and central parts of Ayer, near Sandy and Flannagan Ponds.

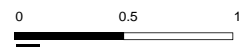
**Farmland of Unique Importance** is defined as land that could be used to produce specific high-value crops like fruits, tree nuts and specifically vegetables. This soil type seems to have the closest relationship to water in Ayer, existing directly along the banks of water bodies and wetlands. It is scattered in small patches throughout Ayer, but is not common in the southern portion of town.

Unique and statewide important soil types may be particularly important to identify and responsibly use when Ayer creates its desired community gardens (see community goals list, Section 6). It is important for Ayer to clearly map all farmland soil locations and see what can be done to protect the small amount of USDA identified soils.



Prime Farmland  
 Farmland of Unique Importance  
 Farmland of Statewide Importance  
 Wetland

**Map 4A.4 Agricultural Soils**



## Map 4A.5 Soils and Geologic Features

Highly erodible soils, wetlands, and hydric soils are physical limitations to future residential and industrial development in Ayer. These limiting factors make up approximately 75 percent of Ayer's landscape, thus limiting development opportunity. Permanently protected land limits development, although there is little protected land in Ayer. Agriculturally important soils are also largely unprotected at this time, but are not physical barriers to development. Land without physical limitations is the most likely to be developed, including agricultural soils, and can be considered the most developable. Protecting the most vulnerable areas at risk of development will increase open space and recreation opportunities.

Permanently protected land, including town conservation land, is not at risk for development in the future. Development is not allowed in wetlands or waterbodies unless permitted under the Wetlands and Rivers Protection Acts.

A variety of soil types and geologic features constrain residential and industrial development in Ayer. Physical limitations to development include highly erodible slopes, areas of predicted floodplains, wetlands, waterbodies, and muck soils. Muck soils are hydric or wet soils that are not suitable for septic systems. Areas of steep slopes have shallow soils in proximity to bedrock, and are not suitable for the building of structure foundations and/or septic systems. Additionally, prime agricultural soils should be preserved, due to the small percentage found in Ayer, and their relative importance in Massachusetts.

Predicted flood zones are dangerous to develop in due to the risk to human life, property damage, and insurance costs. It is inappropriate to develop in, or in close proximity to, wetlands and water bodies as they are critical environments for a variety of wildlife and endangered species. Development in these areas damages and destroys wildlife habitat. Surficial water bodies have a relationship to underground aquifer systems that supply Ayer's drinking water. All areas without physical landscape barriers, including farmland, well drained and low-erosion soils, are the most vulnerable to future development based on soil and geologic factors only. Focused protection in these areas vulnerable to development may need priority, in combination with other environmental and social factors that must be considered.





## 4B. LANDSCAPE CHARACTER

The landscape character of Ayer is water-rich. The land-use of Ayer is shaped by its surficial water bodies and waterways. The large Nashua River marks the western border of Ayer with the town of Shirley. Kettle and man-made ponds invite people to swim, fish, and build houses near the picturesque water. This water-resource-based town was historically considered a prime location for hydro-powered industry, but was deemed too rural for the effort. That opinion changed when the train came to town (see Section 3B).

Ayer's hills also shape the town's scenic and ecological character. A highland area of conical drumlin hills in the northwestern and central part of Ayer is an attractive place to hike in a largely forested wildlife habitat, across town borders to Groton, and into Ayer's conservation property, Pine Meadow Conservation Area. (See Section 4F.1)

The Massachusetts Scenic Inventory Index lists these northerly, view-rich areas of town as scenically valuable and aesthetically pleasing. Driving through Ayer from Main Street to the north, one moves from lowlands to highlands. Hilly areas in the northwestern and central parts of town provide perhaps the only remaining scenes of Ayer's agricultural past through wide open field- farmscapes and dense forest views towards Groton.

These features are part of a larger glacial heritage that provides Ayer with a unique character of ponds, kames, eskers, moraines, and drumlins. Opportunities exist to develop recreational-educational trails and lookout points that tie together some of these glacial features. If these unique and open areas of Ayer continue to be developed, however, Ayer will lose its visual link to its pre-industrial history.



## 4C. WATER RESOURCES

### Watersheds

Ayer is within the Nashua River and the Merrimack River watersheds. Watersheds are naturally delineated land areas that are the basic units of hydrologic systems. A watershed basin is a large area of land (hundreds of square miles) that drains water, sediment, dissolved materials, heat and biota to a single stream channel. (For more information see The Center for Watershed Protection at: ([www.cwp.org/whats\\_a\\_watershed.htm](http://www.cwp.org/whats_a_watershed.htm).)

The Nashua River watershed is 538 square miles and includes twenty-four communities in Massachusetts, and seven in southern New Hampshire. The even larger Merrimack River watershed is 5,010 square miles, and includes over 200 cities and towns. Thus the water in Ayer connects the town with an even larger community of water system tributaries.

Ayer's municipal and watershed boundaries are not the same, and Ayer town boards and commissions make decisions that have ramifications throughout the Nashua and Merrimack River watersheds. Federal and state agencies with jurisdiction over water resources frequently use watersheds and basins as planning units. However, communities do not have the legal authority or tools to regulate activities outside their municipal jurisdiction. As a result, local decisions affect other communities. Ayer is, in turn, vulnerable to decisions made in other municipalities throughout the region and watersheds.

### Nashua River Watershed Association

The Nashua River Watershed Association (NRWA), in Groton, MA, completed a comprehensive watershed plan in 1995, to span a quarter-century timeline from 1995 to 2020. It includes Ayer and the other thirty towns within the Nashua River watershed. It includes an action plan for water bodies, open space and recreation areas in Ayer.

That action plan was brought to the attention of the town at two OSRP community meetings in winter 2015. Ayer would like to consider the adoption of the NRWA's action plan to work in conjunction with this OSRP update and the soon to come Comprehensive Plan Update.

## Surficial Water: Rivers, Brooks and

**Streams** The Nashua River is another important part of Ayer's landscape character and runs 3.5 miles along Ayer's western border. (See 3B History of Community, Priority Heritage Landscapes.) This large waterway was once a home-base to many groups of Native peoples, for it provided fish, hunting opportunities, areas of shelter, safe transportation, and protection as a physical barrier.

Two main tributaries, one originating in West Fitchburg and one at the Wachusett Reservoir, form the Nashua River. It cuts through Ayer and surrounding towns for 38 miles total and ends in Nashua, New Hampshire, at the Merrimack River. The Nashua River provides drinking water to more than one million people. At up to 100 feet wide, the Nashua is the largest waterway in Ayer, flowing from south to north through Ayer's western border. This system has a direct relationship with Nonacoicus Brook and James Brooks in Ayer. The Nonacoicus flows from heavily polluted Grove and Plow Shop Ponds into the Nashua.

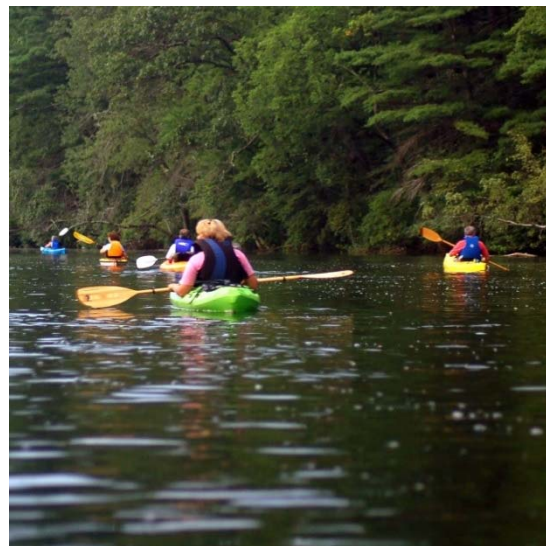
The Nashua River had nationally recognized pollution issues throughout the 1900s, beginning with the industrial revolution in the late 1800s. Tremendous amounts of industrial pollution were dumped daily into the Nashua from the early 1900s through the 1960s. Marion Stoddart, a woman from Groton, was instrumental in the cleanup efforts and the beginnings of the Clean Water Act, enacted in 1972. Today, the Nashua River is still listed as an impaired waterway, as are Plow Shop and Grove Ponds in Ayer.

The Nashua River and surrounding land has long been a publicly-accessed and enjoyed river by boaters, wildlife observers, and fisherman. Although the Nashua is technically a publicly accessible waterway and land area according to parcel data, physical access to the Nashua River in Ayer is not well. In Ayer, the Nashua River is managed federally as part of the Oxbow National Wildlife Refuge to the south, and is also zoned within the Devens Regional Enterprise Zone. Ayer's community wants greater public access to the Nashua River for boating, hiking, and fishing interests, though water quality concerns are regularly raised by community members.

Ayer's water-filled landscape is lined with many brook and stream tributaries. Five small brooks feed the Nashua River and local ponds. The most prominent three are Bowers, Nonacoicus, and James brooks.

Bowers Brook runs north from Harvard's prime agricultural land into Ayer's Grove Pond, which hydraulically connects to Plow Shop Pond to its west, from which runs the west-flowing Nonacoicus Brook to the Nashua River. James Brook flows into Ayer from the north by way of Groton, and continues west into the Nashua. Cold Spring Brook runs through Ayer and the town of Harvard into Grove Pond. Willow Brook flows through the Devens Enterprise Zone to the Nonacoicus Brook. Bennett's Brook forms the town's eastern boundary and flows from Shaker Mill Pond to Spectacle Pond, in the Merrimack River watershed. These small brooks are low-flow waters and are important for wildlife and passive recreational use.

Groton State Forest, off Shirley Road in Groton, provides access to the Nashua River and James Brook. Ayer does not own land or hold easements on private property or the State Game Farm to access other brooks in this area. Gaining conservation easements in the northwestern parts of Ayer may lead to better connectivity in this important wildlife and waterway zone.



Kayakers on the Nashua River just a few miles north of Ayer  
(photo by Denise Hurt [amc-nh.org](http://amc-nh.org))

## Ponds

In addition to the Nashua River and five small brooks, Ayer's topography is dominated by a network of large and small ponds. Several of the ponds form a chained water system channel running from northeastern to southwestern Ayer. Long Pond, which Ayer shares with Groton, flows into Sandy Pond. From there the waters flow through Flannagan Pond, Balch Pond, Grove Pond, and Plow Shop Pond before entering Nonacoicus Brook and, eventually, the Nashua River.

Both Long Pond and Sandy Pond are regarded as "Great Ponds" owned by the Commonwealth of Massachusetts. Their use is under the jurisdiction of Chapter 91, formally established under State law in 1866 but with its roots dating back to the Colonial Ordinances of 1641-1647. Chapter 91 protects and promotes the public use of ponds or lakes containing more than 10 acres in their natural state. Spectacle Pond, only a small portion of which is in Ayer while the rest is in Littleton, is also a Great Pond. Grove, Pine Meadow, Flannagan and Pine Meadow ponds were created by man-made damming.

Because the ponds are so central to Ayer's topography, the issue of their water quality and usability have become of increasing concern to residents. The "Massachusetts Year 2014 Integrated List of Waters" records Grove, Plow Shop, and Spectacle ponds as Category 5 impaired waters. The U.S. Clean Water Act §303 (d) requires environmental remediation and pollution control plans for impaired waters by setting an enforceable maximum quantity of a particular pollutant (Total Maximum Daily Load or TMDL) that a waterbody can receive and still meet basic water quality standards. The plans must also identify pollutant reduction goals and strategies. Grove and Plow Shop ponds not only contain invasive (non-native) aquatic plants but also suffer from heavy-metal contamination, in particular arsenic. The presence of mercury in fish tissue

has also been detected by State testing. Flannagan Pond is also listed as impaired, but under Category 4, due to invasive species growth rather than pollutants. While it is therefore not required to have a pollution control plan, the control of invasives has been a significant concern for many residents.

In 2014, the Ayer Conservation Commission engaged the services of Geosyntec Consultants to prepare a report entitled "Biological Survey, Assessment and Management Recommendations for Ayer's Ponds." This report was completed in May 2016. Six ponds were assessed: Long, Sandy, Flannagan, Pine Meadow (also known as Upper Flannagan or Erskin's Pond), Balch, and Grove. The goal of the study was to update information on the status of the ponds and provide a scientific basis for creating a longterm management plan for these important ecological and recreational resources. The study performed water quality as well as aquatic vegetation sampling, for both native species and non-native invasives, to provide a baseline reference point going forward.

Phosphorous levels in particular were measured because 'phosphorous loading' provides a key nutrient that typically has the greatest influence on aquatic and algal growth in ponds. Each pond was then evaluated for its trophic state. Eutrophication is the process by which a body of water becomes enriched in dissolved nutrients, such as phosphates from stormwater runoff and fertilizer use. The greater this enrichment, the greater the growth of aquatic plants, including invasives, to nuisance levels. Too much enrichment also promotes the growth of algae and algal blooms. Ayer's ponds ranged from mesotrophic (moderate productivity) to eutrophic (high productivity). Flannagan Pond was the most highly eutrophic of all the ponds, not surprising since it is essentially a flooded wet meadow created by the East Main Street (or Balch) dam around 1900. The report included

suggestions for BMPs (Best Management Practices) for stormwater control at various locations, including the construction of rain gardens, to assist in phosphorous load reduction to the ponds.

At public meetings and in the on-line questionnaire, residents were most apt to cite recreational use as a key value for the ponds. They also expressed the strong desire for more public water access, especially boat access, at Long and Flannagan ponds, along with greater boat access to Sandy Pond. Residents included the desire for more public water access to the Nashua River as well.

Highlighting the importance of Ayer's ponds, Geosyntec identified Long Pond, the headwater of Ayer's major pond system, as an unusually pristine and regionally significant example of a healthy pond in terms of water quality, aquatic plant growth, and wildlife habitat. While no management recommendations were deemed necessary for Long Pond, the report advocated that the pond be carefully monitored so that a rapid response could be made if conditions were to change.

Sandy Pond is the main public swimming area for Ayer, with the Town Beach located on its southwestern shore. It is also extensively used for boating and fishing, including ice fishing in the winter. The pond was found to be in good shape although anecdotal reports since the testing have indicated increased aquatic plant growth. Invasive plant species that affect this pond include fanwort, variable milfoil, and common reed. Regular maintenance to control nuisance plant growth will be necessary to protect this Great Pond.

Flannagan and Pine Meadow ponds are also used for boating, fishing and other recreational values, including scenic outlook. Flannagan Pond is heavily developed with private residences along

most of its shoreline. A community group, the Friends of Flannagan Pond, successfully lobbied the Town for funding support in 2011 to control weed growth in this shallow, man-made pond. Pine Meadow pond lies almost completely within the Pine Meadow Conservation Land, and is primarily used for recreation. The maintenance of boating channels is a key objective for this pond. Invasives commonly found in these ponds include variable milfoil, fanwort, purple loosestrife, and curly-leaf pondweed.

The public use of Plow Shop Pond is prohibited due to heavy metal toxicity in its sediment, and is discouraged on Grove Pond for anything other than boating for the same reason. In 2013, the U.S. Army engaged in a clean-up effort on a portion of Plow Shop Pond, removing several thousand cubic feet of heavy-metal impacted sediment from Red Cove and the Railroad Roundhouse shoreline. While Plow Shop remains an impaired waterbody, the U.S. Army has no further clean-up actions planned at this time.

Public use of Grove Pond for anything other than boating is also discouraged for the same reason as at Plow Shop Pond. Pirone Park, however, is located on the northern shoreline of Grove Pond. Geosyntec included a "Health Recreational Risk Assessment" for this pond as part of its report.

The Conservation Commission is working with the Pond & Dam Management Committee to make recommendations to the Board of Selectmen for longterm management of the key ponds in town. Non-native, or invasive, aquatic plants are found in several of Ayer's water bodies, especially its ponds. With the exception of Long Pond, invasives found have included variable milfoil, fanwort, phragmites (or common reed), purple loosestrife, curly-leaf pondweed, water chestnut, and freshwater algae. These are of particular concern in the three ponds most affected by invasives and with the greatest recreational use: Sandy, Flannagan, and Pine

Meadow ponds. Long Pond currently does not have a problem with invasives, although it needs to be monitored in order to preserve this more pristine state. Grove Pond, which has both variable milfoil and fanwort, was also observed to have a beginning infestation of water chestnut in the eastern portion of the pond, the only pond in Ayer to have this non-native species so far. Water chestnut spreads aggressively once introduced to a water body, but has little risk of spreading to the ponds further upstream.

POND	INVASIVE PLANTS
<b>Balch Pond:</b>	<b>Fanwort</b>
<b>Grove Pond:</b>	<b>fanwort</b>
	<b>variable milfoil</b>
	<b>water chestnut</b>
<b>Long Pond:</b>	<b>None.</b>
<b>Pine Meadow:</b>	<b><i>Phragmites</i></b>
	<b>variable milfoil</b>
<b>Sandy Pond</b>	<b>phragmites</b>
	<b>Japanese knotweed</b>
	<b>variable milfoil</b>
	<b>fanwort</b>
<b>Flannagan Pond</b>	<b>Fanwort</b>
	<b>variable milfoil</b>

## Wetlands and Vernal Pools

Wetlands and vernal pools are also widely dispersed in Ayer. A diverse array of wetlands exist in Ayer, including five bog habitats in the central-east, five shallow marsh meadow/fens in the west and east, approximately fourteen deep marsh areas scattered throughout, and mixed wooded swamps in the east and west of town. This array of wetland types makes Ayer a unique destination for wildlife study and viewing and provides a wonderful opportunity for open space, education, and recreation.

Two certified vernal pools exist in Ayer, and there are over twenty potential vernal pools that have not been officially recognized. Vernal pools are important because they provide a unique niche habitat for wetland species, much in the same way the small floodplain forest does. The Natural Heritage and Endangered Species Program lists the presence of rare and endangered species, including certain salamanders and insects currently present in Ayer's wetland areas. It is also important to note that wetland areas are not static, but change over time from one formation to another: a river to a cutbank and oxbow, or a pond to a wet meadow. The cycle of wetlands and water is one that we can witness and study in our lifetime, much faster than geologic time. Educating the community about changing water bodies as a healthy process may be critical to engage the public in their protection.



Wetlands and vernal pools are essential habitat for many amphibians.

## Flood Hazard Zones

As global climate changes continue to increase the frequency and severity of storms, flooding becomes a more serious risk in the water-rich town of Ayer. Five- hundred-year flood zones are becoming the new one- hundred-year range with increased storm intensity. The Nashua River is the largest contributing factor to surficial flooding in Ayer. Due to the Devens Regional Enterprise Zone and the Oxbow National Wildlife Refuge along the Nashua River, little to no infrastructure has been built in the 100- and 500-year flood zones along the river in the western part of town.

Ayer has a Flood Plain Zoning Overlay District that was adopted in 1999. The boundaries of this overlay district are defined by the 100-year surface water elevation shown on the Flood Insurance Rate Map (FIRM) dated July 19, 1982, and by the Flood Profiles contained on the Flood Insurance Study also dated July 19, 1982. The bylaw allows uses with low flood-damage potential and requires a special permit for all others allowed in the underlying zoning district. The bylaw and flood insurance ratings may be out of date, as our climate has drastically changed over the past two decades. A FEMA re-evaluation is recommended to better determine current flood-prone areas and properties in Ayer.

## Subterranean Water Resources

Ayer's drinking water is supplied by two high-yield aquifers. In the northeast section of Town, the existing Spectacle Pond wells are located within the high yielding formation surrounding Spectacle Pond. This aquifer extends into Littleton, which also has water supply wells adjacent to the pond.

The Grove Pond wells are located in the southern portion of Town in a high yielding aquifer surrounding Grove Pond. This large aquifer extends from the Nashua River east past Sandy Pond. Most of the high yield part of the aquifer is located in the DREZ, which has three wells in the Aquifer.

The Town also evaluated potential water supply aquifers near James Brook and Long Pond, but did not have favorable results. The Town has an Aquifer Protection Bylaw that controls the type of development in the water supply aquifers.

## **Water Supply**

The Town of Ayer has two groundwater supply sources - the Spectacle Pond wellfield and Grove Pond wellfield. The Spectacle Pond supply source consists of two wells located in the Merrimack River Basin with a permitted pumping capacity of 1.16 million gallons per day (MGD). In 1985, Ayer constructed a groundwater filtration plant to remove iron and manganese from the water.

The Grove Pond wells consists of three wells and are treated for iron, manganese and arsenic removal before being pumped into the system. These wells are in the Nashua River Basin and have a permitted pumping capacity of 1.32 mgd

The Town's average daily demand is approximately 2.4 MGD with a maximum daily demand of 2.5 MGD. Approximately 55% of the Town's water usage is from commercial and industrial customers, including 4 large food and beverage processors.

## **Water Distribution System**

The Town of Ayer began its water distribution system construction in 1896. The system has continued to expand and now serves approximately 95% of the Town. The system consists of pipes ranging in size from 4 inch to 16-inch and serves 3100 customers. It also has two water storage tanks, one on Washington Street (1.5 million gallons) and another on Pingry Hill (1.0 million gallons).

The distribution system provides adequate pressure and fire protection throughout Town

## **Wastewater Collection and Treatment System**

Ayer's sewer system was constructed in the mid-1940's to serve the neighborhoods and businesses located in the East Main Street, Main Street, Washington Street and West Main Street areas. The system has expanded to now serve approximately 85% of the Town. Currently the areas not served by sewer include Fitchburg Road, Groton Shirley Road, the southernmost section of Willow Road, and the eastern section of Littleton Road.

Due to the hilly topography in Ayer, there are 18 wastewater "lift" stations that pump the wastewater to the treatment plant. The stations are of various types

and sizes. Some serve some small cul-de-sac roads and others serve major portions of the Town.

In 2001, the Town was approaching the design capacity of the treatment plant, the Town entered into an agreement with the Massachusetts Development Finance Agency to transmit up to 800,000 gallons per day to the Devens Wastewater Treatment Plant.

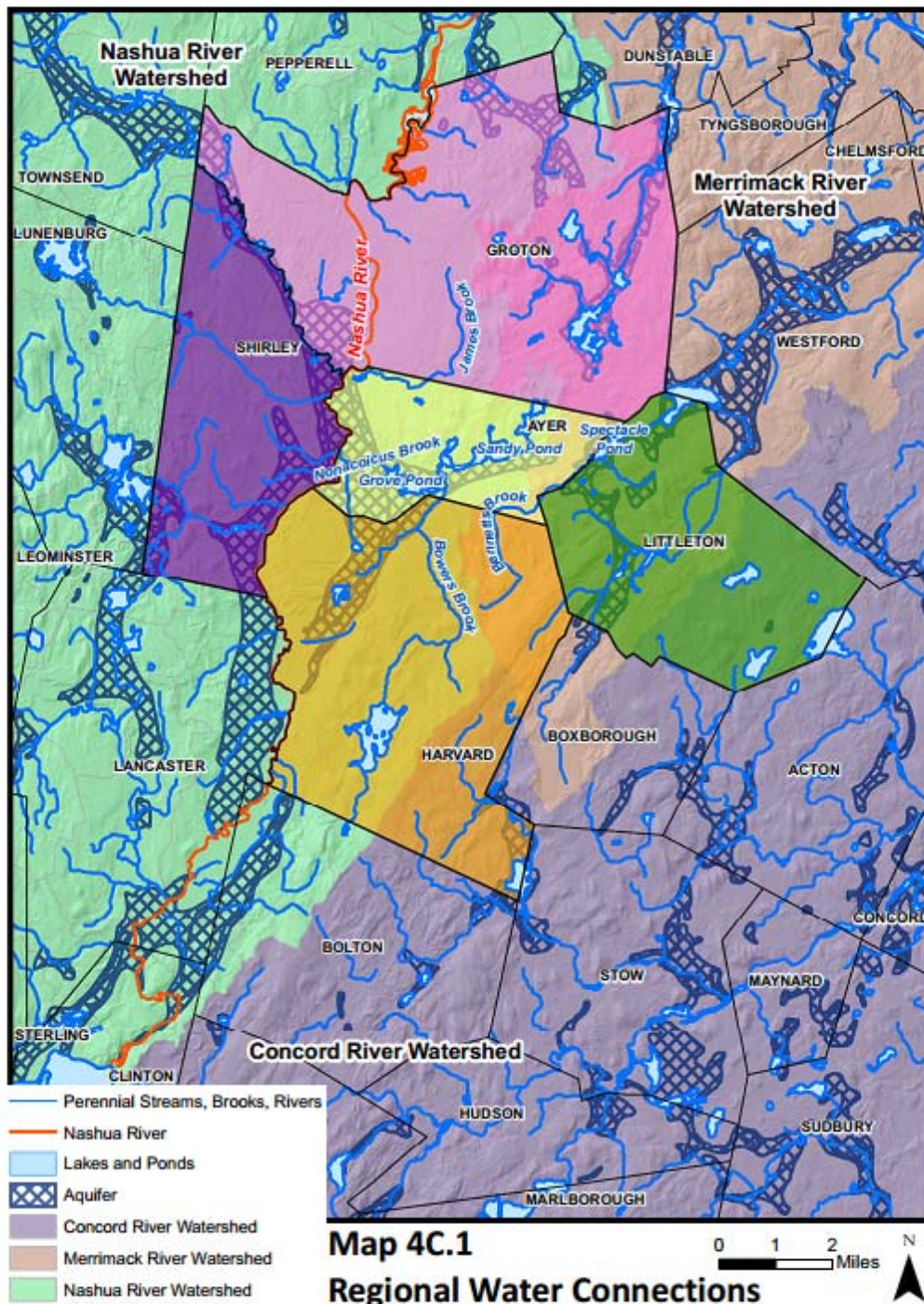
The original wastewater treatment plant consisted of open filter beds, located at the end of Brook Street on a large parcel of land (approximately 130 acres) abutting the Nashua River and Devens. Construction of a secondary treatment facility was completed in late 1982. The first upgrades to biological treatment were completed in 1996, during which the facility upgraded from mechanical to fine bubble aeration. The largest set of upgrades, completed in 2007, included further modifications to the secondary treatment in addition to tertiary filters for phosphorus removal and ultraviolet disinfection. The treatment plant has a design capacity of 1.79 million gallons per day (MGD) and currently treats an average daily flow of 1.4 MGD of wastewater from domestic, commercial, and industrial sources from within the Town.

The treatment plant's discharge to the Nashua River is regulated by a National Pollutant Discharge Elimination System (NPDES) permit that was issued in 2006 and modified in December 2014 (Permit #MA0100013). This permit is enforced jointly by the US Environmental Protection Agency (US EPA) and the Massachusetts Department of Environmental Protection (MassDEP). The new permit includes more stringent regulation of phosphorus as well as interim limits for copper, aluminum and lead.

## Map 4C.1: Regional Water

**Connections** A vast web of surface and groundwater systems connect Ayer to a complex regional ecosystem. Ayer sits within the eastern reach of the Nashua River watershed to the northwest, and the western reach of the Merrimack River watershed to the northeast. The Concord River watershed is close to Ayer, and is not technically part of Ayer's watershed area, but may be connected by water bodies.

Three brooks, including Bennetts Brook, Bowers Brook, and Nonacoicus Brook, flow northward from Harvard into Ayer. James Brook runs southward into Ayer from Groton. The Nashua River is a large, contiguous waterway, carrying water through the region to Nashua, New Hampshire. Tributaries flow into the Nashua River as it travels north along Ayer's western border. The Nashua River has a long history of pollution issues, beginning with the industrial revolution in the late 1800s. The Nashua has been a large-scale model for river clean-up since the 1960s. The health of this regional water-web is intimately connected from one water body to the next.



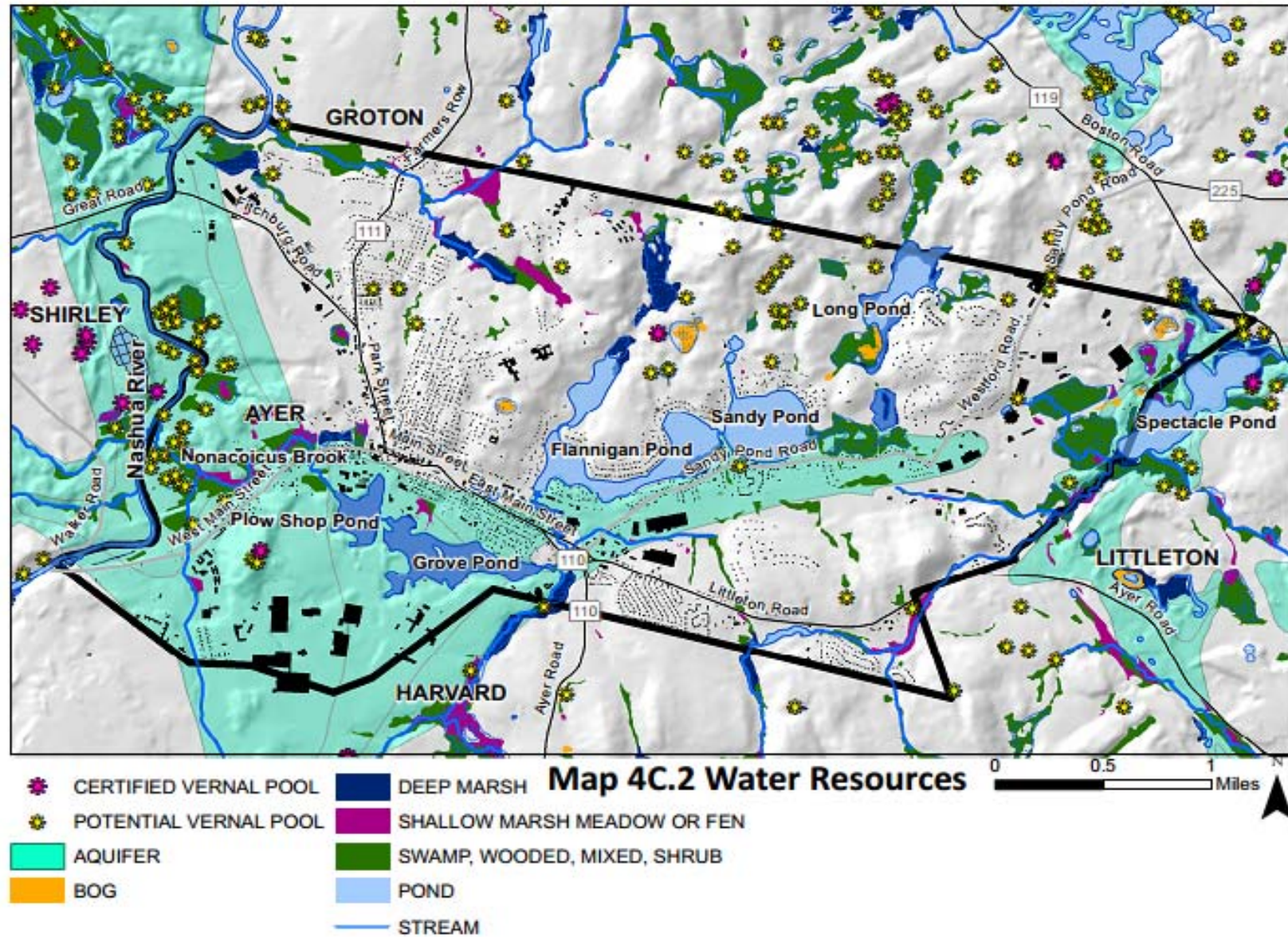
## **Map 4C.2: Water Resources**

Ayer's landscape is dominated by a network of wetlands and water bodies, including a series of open ponds/great ponds, bogs, deep marshes, shallow marshes/fens, vernal pools, rivers and streams. A constellation of certified and potential vernal pools are most densely located in the northwestern quadrant of town. Wetlands sprinkled throughout town provide green buffers between developed areas, and form a necklace that bisects water flow toward the Nashua River.

Historic pollutants from industry have been found in Plow Shop, Grove, and Spectacle Ponds. Sandy, Long, and Flannagan Ponds provide relatively clean recreation water potential. A primary aquifer underlies Ayer's southwestern quadrant, paralleling the Nashua River. A second, small aquifer follows Ayer's eastern border and Spectacle Pond.

The Nonacoicus, James and Bowers brooks flow directly into the Nashua River, which flows north through the western border of Ayer to Nashua, New Hampshire, and from there into the Merrimack River. Nonacoicus Brook and James Brook interact with other water bodies in Ayer, including Grove, Plow Shop, Sandy, Flannagan, Shaker Mill, and Spectacle Ponds before they travel east and combine with the Nashua River. A close-knit network of wetlands, including wet meadows, bogs, marshes, and vernal pools, have low flow and/or seasonal connections with brooks and streams in town and regionally. Water quality and pollution in one waterbody affects those it is hydrolytically connected to. Pollution and heavy metals in Grove and Plow Shop Ponds likely move through water channels and contribute to water quality degradation of the Nashua River.

Ayer has two aquifer areas directly beneath its west and eastern borders that supply Ayer and other towns with drinking water. The relationship between Ayer's surficial water bodies and underground aquifers is not well defined, and should be studied to better understand water health.



#### 4D. DAMS IN AYER

Plow Shop Pond Dam	Significant Hazard
Plow Shop Pond Dike	Unknown hazard level
Balch Pond Dike	Significant Hazard
Upper Flannagan Pond Dam	Significant Hazard
Long Pond Dam	Low Hazard
Lower Long Pond Dam	Low Hazard

Only 2 of the ponds in Ayer are natural: Sandy Pond covering 80 acres and Long Pond, covering 45 acres. All the other ponds were formed by flooding the meadows to obtain water power for the mills. Flannagan Pond, Balch Pond, Grove Pond, and Plow Shop Pond were formed by a series of dams installed in the 19th century. During that time the ponds were periodically “flowed” or flooded during the winter months to provide a source of ice and were drained during the spring and summer for grazing of livestock. Prior to the existence of the ponds, the area that is now submerged was occupied by meadows underlain by peat bogs.

#### Plow Shop Pond Dam

Plow Shop Pond water level is controlled by a dam located at the northwest corner of the pond where it enters Nonacoicus Brook and its associated wetlands. These in turn flow approximately 1.5 miles northwest into the Nashua River.

#### Upper Flannagan Pond Dam

The Upper Flannagan Pond Dam, dams what was once known as “Pine Meadows” to create Pine Meadow Pond. This provides an inflow to Flannagan Pond second to that from Sandy Pond. The source of Pine Meadow Pond is in the swamps north of Snake Hill. It crosses Snake Hill and empties into Flannagan's Pond's northwest corner. In 2011, when a beaver-dam break upstream from the dam unleashed approximately 19 million gallons of swamp water that overwhelmed Upper Flannigan Pond Dam downstream and ripped apart

Oakridge Drive. The DPW replaced the culvert that goes from the dam, under Oak Ridge Drive and into Flannagan pond. The beavers have rebuilt their dam with the prospect of another breach.

#### Long Pond Dam

Long Pond Brook, flows from Long Pond to Sandy Pond. A great part of the brook is flooded by two dams of the Town Water Department- the upper part, in former Long Pond Meadow, by Long Pond dam and the lower part in former Sandy Pond Meadow, just east of Sandy Pond,. The original Long Pond dam, an earth dam with stone facings and spillway controlled by gates was built by the Town in 1887 to provide a reserve water power for the pumping station, to be used during the dry season after the Sandy Pond supply had been depleted. The latest structure was built in the early 2000's and was capped by a pedestrian bridge as an Eagle Scout project.

#### Lower Long Pond Dam

Another structure on Long Pond Brook is a dike, a short distance from its mouth or entry into Sandy Pond. Calvin Fletcher, while owning the mill on the site of the pumping station, raised the height of his dam and found that the water was flowing off over the summit of the divide between the Merrimack and Nashua River systems, down through the meadow near Sandy Pond Schoolhouse and into Spectacle Pond and Stony Brook. As a result, in 1851 he was compelled to erect a dam or dike at the place described. The Water Department raised the pumping station dam even higher and therefore lengthened and heightened the dikes in 1887.

#### Balch Pond Dike

In 1843 Calvin Fletcher conveyed to the Fitchburg Railroad Company a strip of land across Balch pond on the condition that the company would provide a passage sufficient in the pond to let the water pass freely to the mill.

## 4E. VEGETATION

According to National Land Cover Data (NLCD), 32.8 percent of Ayer is forested. A portion of this is defined as prime forest by the Commonwealth of Massachusetts. Ayer's vegetation and forest cover are typical of the Nashua River watershed and the Appalachian Oak Forest community. Upland forests are predominantly hardwoods. Tree types include northern red oak, shagbark hickory, beech, red maple and birch, with small stands of softwood hemlock and white pine. Wetland and swamp areas are home to red and silver maple, speckled alder, white oaks, pin oaks, hemlock, sweet pepperbush and highbush blueberry. Forest cover is important for the filtration of water and stability of soils. Much of the remaining forest cover in Ayer is located in areas of shallow depth to bedrock, where it holds soils in place. Tree cover is important because it cools the land underneath and creates microclimates and habitats for wildlife.

The largest contiguous block of forest in Ayer is located in the north-central area on Snake Hill and down to Pine Meadow Conservation Area, 130 forested acres used for hiking, horseback riding, group educational camping and picnicking. It is currently the only forested conservation area open for public use in Ayer. The nearby area is also used by Ayer's Sportsman's Club for hunting by members. This privately owned hunting land is part of the north-central forest core. Additional areas of forest exist in the southeastern portion of town, with small prime forest patches located in the west, east, and a small patch near Pine Meadow Conservation area. (See section 4F, Scenic Resources, for details about Snake Hill.)

Ayer was once a small farming community. Today, the only remaining agriculture in town is hay production in the highland areas of town. There is currently no local food production in town. There was once a farmers' market in Ayer, and community members would like one again. Townspeople would like to have more agriculture in town, and would like to create community gardens and pocket parks that could also contribute to food production.

Plants are always fighting for space, light and food, and trying to find the best strategy to survive. Some non-native species are particularly aggressive and can

dominate an area to the detriment of native species. The highly prolific purple loosestrife, with all its thousands of seeds, is found in some of the Ayer's wetlands, specifically Flannagan Pond. In the absence of natural predators, aggressive and often non-native plants can degrade or destroy the habitat of local species who have not yet had the time to adapt to new pressures. Some ponds in Ayer are filling with invasive aquatics. An appropriate plan to deal with such plants in a sustainable way and to protect Ayer's natural resources is essential.

Ayer's freshwater meadows have reeds, cattail, blue-joint grass, and sedges, all of which are important to wildlife that rely on freshwater and field habitats for survival. Open fields, wet meadows and fens, and low shrubs provide important edge habitat for local wildlife. The Massachusetts Natural Heritage and Endangered Species Program has documented locations in Ayer where four species of vascular plants that are endangered, threatened or of special concern have been found. Most if not all of the NHESP-documented areas are related to wetlands and plants that need wet conditions to thrive. Houghton's flatsedge and wild senna are state-endangered species. New England blazing star and climbing fern are species of special concern in Massachusetts. These species were most recently observed in Snake Hill, and other areas in the early 1990s. Additional research to document the current viability of these species in Ayer would help to verify where these unique populations are most concentrated. Further protection of forested and vegetated wetland areas, like vernal pools, bogs and wet meadows, could support the long term continuance of rare species in Ayer.

#### 4F. WILDLIFE AND ENDANGERED SPECIES

Common and uncommon wildlife species of all sizes rely on Ayer's landscape for survival and movement. Ayer's rivers, ponds, brooks, streams, vernal pools, swamps, and marshes provide aquatic and semi-aquatic habitat for water-specific species. Many people in Ayer enjoy fishing in the Town's brooks, streams and ponds, but feel there is not enough access to do so in residentially dense areas, and due to private ownership within access areas.

Ayer's forests are home to common eastern woodland animals such as bear, chipmunk, mice, vole, mole, fisher cat, skunk, mink, muskrat, raccoon, porcupine, gray squirrel, white weasel, woodchuck, fox, white-tailed deer, and an influx of coyote in recent years. Common birds include black-capped chickadees, blue jays, orioles, owls, robins, hawk species, bald eagles, turkeys, turkey vultures, sparrows and woodpeckers. Ayer's diverse freshwater areas provide habitat for fish, amphibians and some birds. The Nashua River and local brooks contain bass, perch, pike, sunfish and trout. Amphibious species found in Ayer include frogs, snakes, and turtles. Wetland-based birds in Ayer include cranes, ducks, geese, herons and ospreys. A thirty-acre beaver dam at the power line cut on Snake Hill is mentioned as an important habitat in the Natural Communities and Wildlife Habitat Inventory of Snake Hill in Ayer, Massachusetts, (NRWA 2002).

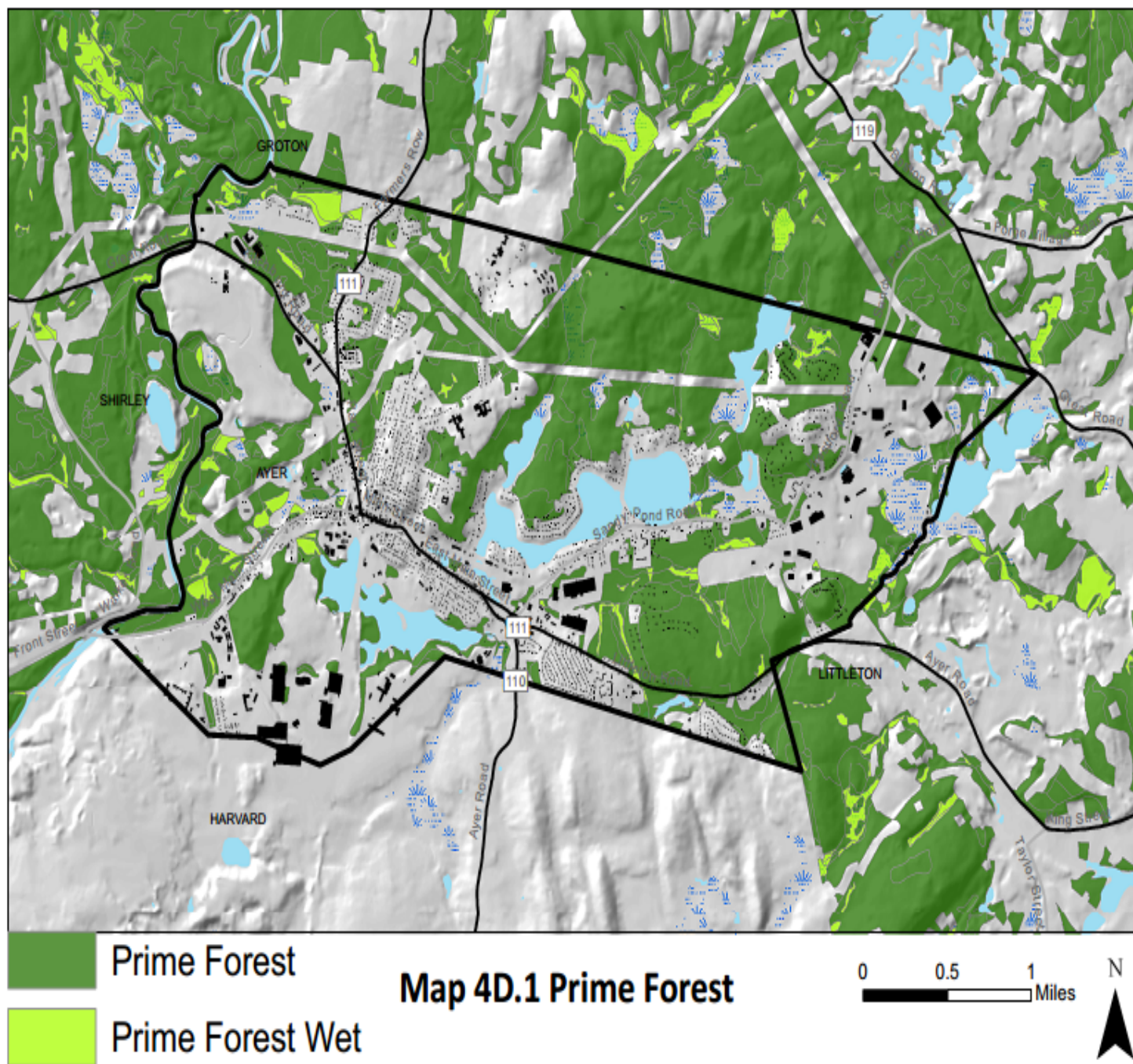
In the same way outdoor space is important to human health, movement corridors are important to the health of certain wildlife species. Larger mammals like coyote, deer and bear cover large ranges, whereas some amphibian and aquatic species, salamanders and brook trout for example, do not migrate or go far from their wetland/riparian home. The Nashua River in western Ayer is a large riparian corridor and movement gateway from north to south. Animals from the Oxbow National Wildlife Refuge connect through Ayer on this long pathway.

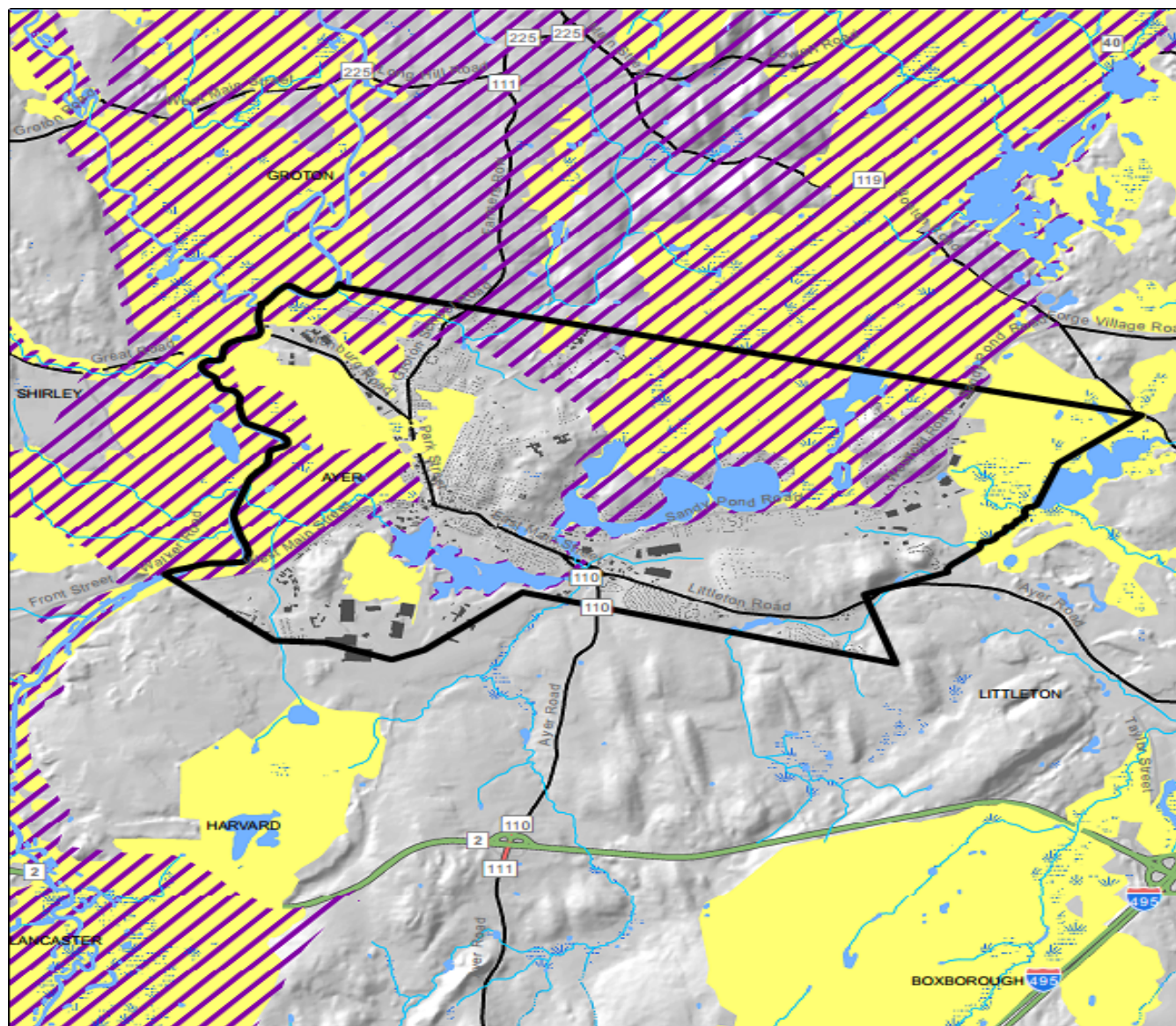
Undeveloped forest areas also provide species refuge and protection while they move from one place to another.

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) exists to document, support, and protect important wildlife species and habitats. NHESP has documented four species of vertebrates that are endangered, threatened or of special concern in Ayer. Three state-endangered

species include the least bittern, upland sandpiper, and wood turtle. The Eastern box turtle is a species of special concern. In addition, Massachusetts has identified twelve rare, endangered, or species of special concern in the Petapawag and Squannassit Areas of Critical Environmental Concern in northwestern Ayer.



NHESP has documented 2,597 acres of core wildlife habitat in Ayer with bioMAP2. Only twenty-three percent of this habitat is permanently protected at this time. Core habitat is considered a critical long-term area for species health. The core habitat in Ayer is part of a large regional matrix of Massachusetts listed Areas of Critical Environmental Concern. Areas of Critical Environmental Concern (ACECs) are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. With almost half of Ayer's 6,083-acre landscape documented as core habitat, the Town may want to consider the large impact its open space and recreation, as well as development choices, have on critical habitat areas. This is a Town-wide, as well as a regional responsibility for Ayer. The Town needs to evaluate the appropriateness of open space and recreation areas via trails, fishing, and swimming access, etc., within documented core habitats. Appropriateness completely depends on the species involved and their habitat needs, and should be studied when planning for development of recreational facilities.





NHESP

**Map 4E.1 Priority Habitat**

 ACECs  
 BM2\_CORE\_HABITAT

0 0.5 1 Miles



#### 4G. SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

Two landscape features are particularly important in Ayer, and are not commonly known. The first is an ancient basalt rock outcropping in the north-central portion of town, a relatively uncommon geologic feature in this part of the state. The basalt outcroppings in Ayer are mafic, or high in magnesium and iron. It is unclear if this area is high in calcium, but the distinctive change in vegetation signals its existence. This distinctive rock chemistry supports specific bacterial, floral and faunal life that may not exist in non-basalt areas.

As discussed in section 4D, Snake Hill is an important habitat for a variety of flora and fauna. The basalt ridge is located in the north-central part of the Snake Hill area. In 2001, NHESP documented 132 species of wildflowers, 25 species of dragonflies, 18 butterflies, 22 bees and wasps, 10 flies, 15 lichen, 20 moss, 49 fungi, 98 tree and shrub species, 47 grass, sedge and rush species, 57 bird species and many others. A total of 199 animals/insects and 384 plants were recorded by NHESP's 2001 Snake Hill Wildlife and Habitat Inventory report for Ayer. Further understanding of these species, their relationship to basalt rock chemistry and habitat niches, would provide more conclusive evidence about the habitat at Snake Hill.

NHESP concludes that the Snake Hill area is a very important habitat due to its diversity of natural communities, its forest contiguity, size, and relative location to a contiguous core habitat to the north. NHESP notes that the endangered species of this area require habitat isolation for success, underscoring the importance of protecting this environment and raising the question of how much recreation is appropriate here.

The rock outcropping provides a scenic vista. An unofficial trail network mostly used for hiking is near and possibly goes through this area. It connects Ayer to a large Massachusetts Audubon conservation area to the north in Groton. In addition to habitat concerns, soil instability, and steep slopes, it is not advisable to build structures or develop in this area. This area currently has no permanent land protection.

The second important landscape less known by the community is a small floodplain forest community located in the southwest, directly east of the Nashua River. This area of town is within the Devens Regional

Enterprise Zone and the Oxbow National Wildlife Refuge, and is permanently protected. Floodplain forests are important areas to protect because of species composition and limited distribution across Massachusetts. There are twelve small floodplain forest sites listed in Massachusetts.

According to NHESP, undisturbed floodplain forests support a diversity of plants and animals (many of which are only found in floodplain habitats), serve as wildlife corridors, protect the quality of water in adjacent streams by buffering them from upland uses, and serve as important floodwater storage areas and filters. Only highly intact examples of floodplain forest communities are tracked by NHESP, marking the high quality community composition of Ayer's small floodplain forest. Species distinctive to Massachusetts small floodplain forests include silver maple, green ash, false nettle, and sensitive fern.

The Massachusetts Scenic Landscape Inventory has designated the area between the former state game farm and Snake Hill along the Groton border as a "distinctive landscape" with the highest visual and aesthetic quality that regional ACEC standards consider worthy of protection. Aesthetic landscape significance is important to Ayer's cultural and historic New England identity. Landscape features, like the conical drumlin hills, remaining farmscapes, and great ponds, evoke emotions, images, and memories essential to a sense of place.



A floodplain forest in the Oxbow National Wildlife Refuge. (photo courtesy of [fws.gov/refuge/oxbow](https://www.fws.gov/refuge/oxbow))

In the 2004 OSRP, Ayer residents identified a number of scenic structures and scenic areas, including some not mentioned at the 2015 public meetings, or in the survey: Columbia Hill, Fletcher's Field, Frederick C. Carlton Circle, Groton Shirley Road, Grove Pond, Peterborough & Shirley railroad bed and bridge trestle, Pingry Hill, Sandy Pond, Sandy Pond Schoolhouse, and Shaker Mill Pond. Residents also identified the Victorian homes on upper Washington and Pleasant Streets, Willow Road crossing railroad bed and trestle, the wooded hillside on Route 2A between Littleton and Snake Hill Road, and woodlands off Sandy Pond Road between Westford and Sandy Pond Road.

There is one National Register Historic District in Ayer: the Ayer Main Street Historic District between Park and Columbia Streets. The Main Street District includes 22 two- and three-story Victorian structures. A listing with the National Register does not automatically protect structures from inappropriate alteration or demolition. However, it creates the potential for property owners to qualify for historic preservation tax credits and prevents public agencies from using federal funds to demolish a historic structure, except to address an imminent health or safety hazard.

Listed on the National Register of Historic Places are Ayer Town Hall, the Pleasant Street School and the Sandy Pond School. Ayer Town Hall was constructed in 1876. The town recently completed a significant rehabilitation and restoration of the Town Hall, including the addition of an elevator, an egress stair, access accommodations, complete interior renovations, preservation of the historic interiors, and restoration of the brick, tile, and stone exterior. In addition, the Town used a Historic Landscape Preservation Grant to develop a small pocket park on the East side of Town Hall.

The Pleasant Street School, a three-story, wood frame Colonial Revival building constructed in 1894, was converted to senior housing and is maintained by the Ayer Housing Authority. In addition, a pocket park was constructed on the school property. Both the housing and park received Community Preservation Act (CPA) funding.

The Sandy Pond School, District School #11, is a one-room wooden schoolhouse that was built in 1792. Located at the junction of Sandy Pond,

Westford and Willow Roads, the School is owned and managed by the Sandy Pond School Association.

The town has additional historic buildings and landmarks not currently listed on the national or state registers or protected by a local historic district bylaw, and Ayer may want to consider their registration and recreation/educational potential.

There were two historic ice houses located in Ayer. One was Horgan Icehouse located near the dam on the Nashua River north of West Main Street. It has been identified by the Town as an ideal site for a canoe launch and park. Camp Stevens, on the Nashua River, was used as a training ground for the Union Army during the Civil War. The site is marked with a stone monument. Finally, Ayer has 922 houses that were built before 1939. Throughout the Town, there are many well-preserved structures and ongoing restoration projects.

### **Priority Heritage Landscapes:**

The following landscapes were identified in Ayer's 2006 Reconnaissance Report. These landscapes, which are listed alphabetically, represent a range of scales and types of resources from individual sites such as Carlton Circle to entire neighborhoods. Several of the priority heritage landscapes include features that are also individually recognized as heritage landscapes, revealing the complexity and interdependence that are characteristic of many heritage landscapes.

#### *Frederick Carlton Circle*

The main point of entry into Ayer from the south is via Harvard Road (Route 110/111) and from the east is via Littleton Road (Route 110/2A). These two roads converge at Frederick Carlton Circle, a five-way junction that also includes Barnum Road, Sandy Pond Road and East Main Street (Route 111/2A). All three numbered routes are designated as minor arterial/major collectors. The large vegetated circle, located just east of the downtown area, is a main gateway to the town. There is also a secondary triangular green space at the northwestern edge of the circle between the eastbound and westbound travel lanes of East Main Street, which makes that area feel somewhat like a parkway.

#### *MacPherson Road*

MacPherson Road extends along the east side of the Nashua River between Bishop Road on the north and West Main Street on the south. It is presently a two-lane paved road that is valued by community residents for its rural and scenic qualities. Land along the Nashua River and MacPherson Road is controlled by U.S. Fish & Wildlife as part of the Oxbow National Wildlife Refuge. This area is also in the Squannassit Area of Critical Environmental Concern (ACEC) and has been identified by the Massachusetts Natural Heritage and Endangered Species Program as a priority habitat. MacPherson Road connects Devens and Shirley to Ayer's downtown via the western part of town, alleviating traffic congestion at the Park Street/Main Street intersection and connecting with the Verbeck Gate, the main entry into Devens from Ayer. Part of the road corridor is subject to periodic flooding. There have been talks about a possible upgrade of MacPherson Road to accommodate additional traffic in the western part of town, especially increased traffic

associated with future development in Devens. At a community meeting, residents expressed concern that excessive traffic at the Nashua River/MacPherson Road area could adversely affect wildlife and environmental quality in this ecologically sensitive area. The area also has documented archaeological resources associated with Native American use of the river corridor, which are important to consider.

#### *North Washington Street Agricultural Area*

Between 1971 and 1999, Ayer lost more than half of its agricultural land to development, leaving only 125 acres, most of which is hayed. The two remaining farms, on the eastern side of Ayer/Groton Road (also known as North Washington Street), are evocative of this aspect of the community's past. While neither farm is intensively farmed, there are expansive hayfields, two large barns, and some other farm buildings. The Eliades Barn, a long red New England barn with rooftop clerestory, sits back from the road in a rolling hayfield. The Smith Farm includes a house and barn complex closer to the road. Some cluster development, known now as Autumn Ridge) has already occurred on former Smith Farm land but the remainder of the land is under a Conservation Restriction so no further development will occur. Proposed hospital expansion on the west side of the road opposite the Smith Farm could impact the rural agricultural character of the neighborhood.

#### *Other*

Additional areas of priority heritage landscape value to Ayer residents include Pleasant Street and Washington Street Neighborhoods, Railroad Station, and Related Artifacts, West Main Street Neighborhood, and Main Street Commercial District.

#### **Map 4F.1 Scenic Resources and Unique Environments**

A mafic basalt outcropping extends southward from Groton into the north-central portion of Ayer, at Snake Hill. The steeply sloped area of basalt is an important part of the Snake Hill habitat and part of the NHESP core habitat. A small Floodplain Forest is located east of the Nashua River along Nonacoicus Brook. It is a unique environment for specific species such as silver maple, green ash, false nettle, and sensitive fern. Prime forest, farmland and core habitat combine to cover most of Ayer with unique and scenic environments with open space and recreation value.

Areas in the northern uplands of Ayer are included as part of a regional scenic inventory as aesthetically distinctive and noteworthy landscapes.



#### **4H. ENVIRONMENTAL CHALLENGES**

##### **Ground and Surface Water Concerns**

There are several areas of water pollution concern in Ayer. Point source and non-point source pollution threaten public health, habitat and natural resources. Point source pollution stems from a stationary location or fixed facility, such as a pipe or smokestack that discharges pollutants. Non-point source pollution originates from diffuse areas without well-defined source areas, such as road salt, fertilizers, pesticides, and leaking septic systems. Ayer has seven Tier Classified 21E brownfield sites, as defined by G.L. c. 21E, the Massachusetts Superfund Law, which is comparable to the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). There are six brownfield sites in Ayer, and one in the Devens Regional Enterprise Zone. The Bureau of Waste Prevention at DEP monitors six “major facilities” in Ayer that they consider high risk to cause environmental harm should there be a malfunction or spill. The federal Environmental Protection Agency (EPA) regulates and monitors 67 sites in Ayer, including the seven brownfields. Of 64 reports by the EPA, there have been ten reported toxic releases and 23 reported toxic air releases. These areas need to be closely monitored moving forward to protect community health, and precautions should be taken to prevent toxic release.

A tannery fire in 1961 at Plow Shop Pond created toxic mercury levels in the water, affecting both Plow Shop Pond and adjacent Grove Pond. This is but one reason for the high levels of heavy metals in these ponds. Arsenic and other toxins have leached from the Shepley’s landfill depression directly into Plow Shop and Grove Ponds, making these ponds unsafe for people to use recreationally today. Cancer risks from levels of arsenic exposure and other health concerns from heavy metal pollution have been well documented at Plow Shop Pond through various studies.

Pollution levels in the Nashua River are also of concern to the health of Ayer’s water bodies, although most of Ayer’s waterways drain into the Nashua River. Grove and Plow Shop Ponds send toxins through the Nonacoicus Brook to the Nashua River. Ayer’s water may play a larger role in the pollution of the Nashua

River than the Nashua does in Ayer.

Invasive aquatic plants are found in some of Ayer’s water bodies, especially ponds. Purple loosestrife and a type of freshwater algae are the two most common invasive plants the town is trying to deal with. They are located in Long Pond and Sandy Pond.

## **Landfills**

The Ayer municipal landfill on Groton Harvard Road was closed and capped in 2002. Leachate from the landfill to adjacent conservation land and into Pine Meadow Pond required a cleanup of the land and water. A solid waste transfer station located at this site handled 1,500 tons of solid waste annually and processed the town's recyclables. Shepley's Hill Landfill is located within the Devens Regional Enterprise Zone in historic Ayer and is owned and managed by the military. Leachate from Shepley's Hill Landfill contaminated the adjacent Plow Shop Pond, one of the most studied ponds for toxicity in the U.S. The landfill is a Superfund site that has been closed and capped with a liner and grasses. There are questions about the impermeability of the clay layer that should be researched. Local sources and past reports indicate the landfill may continue to leach arsenic under West Main Street at a rate of approximately 1,000 parts per billion (Shepley's Hill Landfill Annual Report, 2012). Possible pollution from surface waters into underground aquifers is a separate issue than the landfill-arsenic pollution, and should be studied.

Toxic levels in the area may pose a threat to present and future drinking water supplies because both the landfill and ponds are directly over a high-yield aquifer. They are not far from the Grove Pond area well heads for Town drinking water.

Spectacle Pond is the second high-yield Aquifer zone for the Town, and the Littleton Municipal Landfill is located less than 2,000 feet south of Spectacle Pond drinking water wells. The landfill as well as the large impervious surface of Pan Am Railway's auto-unloading facility may also pose a threat to Ayer's water supply. Observation wells were installed during the 1980s to monitor contamination issues from the landfill. In 2009, monitor wells were installed to check the run-off from the auto unloading facility.

## **Flooding and Erosion**

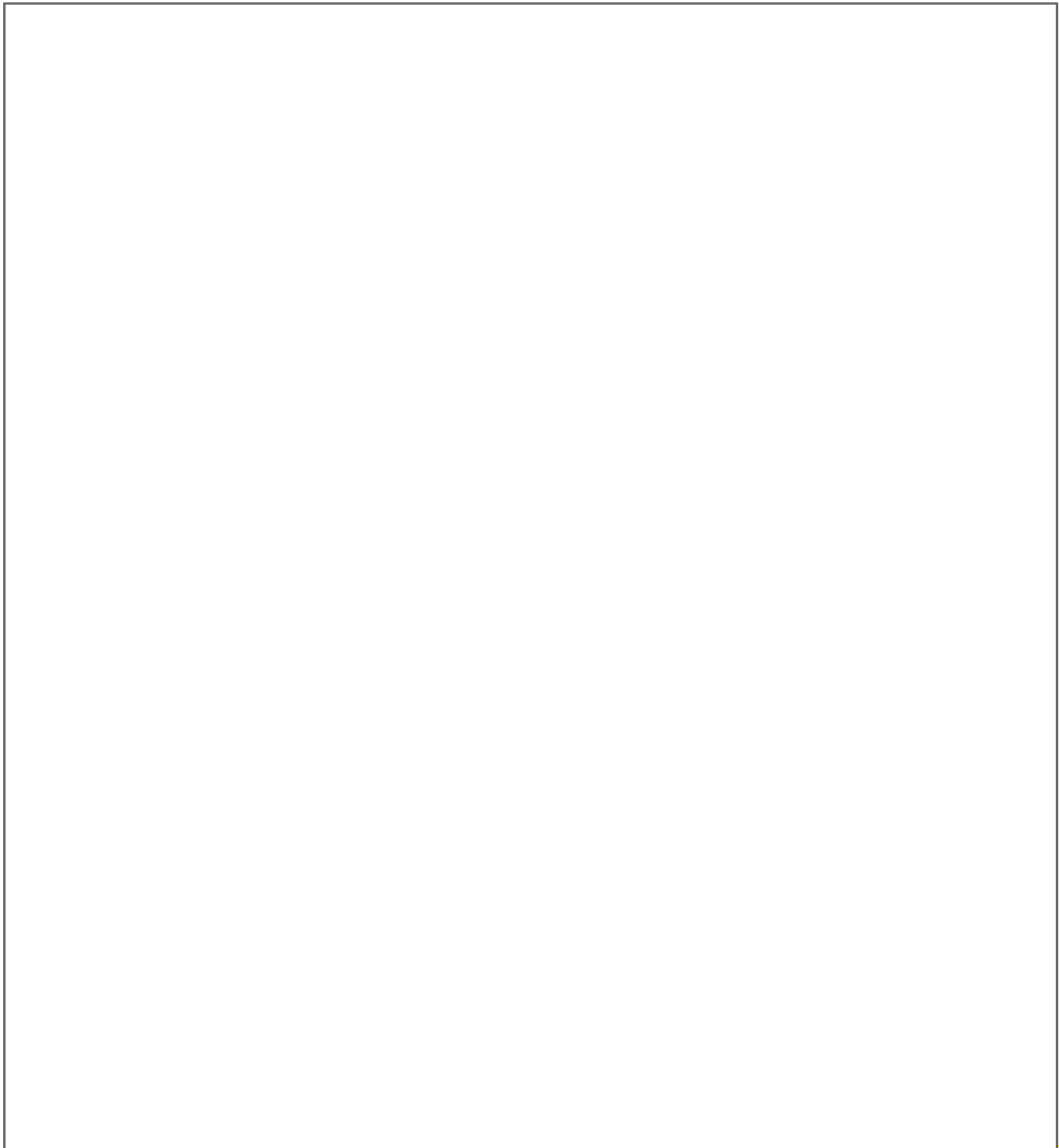
We live in a time of rapidly changing weather patterns, and increasing storm events lead to increased flooding. What was once the 500-year flood zone, is now becoming the new 100-, and sometimes 50-year flood zone. The 100-year floodplain extends the distance of the Nashua River riparian corridor and turns eastward along Nonacoicus Brook to Flannagan Pond and Sandy Pond, then north to Long Pond. Other large flood-

hazard areas include the former state game farm in the west, along Bennett's Brook, and the shores of Spectacle Pond in eastern Ayer. There is historic evidence of flooding in 1936 and 1938, when the Nashua River and Nonacoicus Brook rose 15 feet. Ayer can regulate the water levels of Flannagan, Long, and Sandy Ponds to control flooding. Based on the most current FEMA data, built structures surrounding, Sandy, Flannagan, and Long Ponds are most at risk for damage.

## **Wildlife Fragmentation**

As discussed in section 4E, fragmentation of core wildlife habitat has major impacts on wildlife. Almost half of Ayer is core habitat according to NHESP, and most of this land is not permanently protected. New residential subdivision developments in the north and eastern parts of town fragment wildlife habitat with structures. Earthmoving and grading with heavy equipment disturb soil structure and biota, making it difficult for certain native herbaceous species and trees to propagate. Soil erosion, as previously discussed, is a more significant issue in large-grained sandy soils that are moved and re-dispersed on the surface.

Many of the endangered and threatened species mentioned above need very specific conditions to live, and even slight disruption of their habitat can be devastating to a population. More common species can be just as easily displaced and encroached upon where there is high development activity. Protecting core wildlife areas of Town as open space and limiting impact by human recreation use may be necessary.









## Map 4G.1 Environmental Challenges


0 0.5 1 Miles

### Legend

#### Impaired Water





-  Attaining some uses; other uses not assessed
-  3 No uses assessed
-  4A Impaired - TMDL is completed
-  4C Impairment not caused by a pollutant
-  5 Impaired - TMDL required
-  Hazardous Material Site

 Certified Vernal Pools 2

 Potential Vernal Pools

#### FEMA National Flood Hazard Layer

##### Flood Zone Designations

-  100-year Flood Zone
-  Regulatory Floodway-Flowing
-  500-Year Flood Zone
-  Annifer

# 5. Inventory of Lands of Conservation and Recreation Interest

Open space can be defined in many ways. For the purposes of this plan, open space includes undeveloped land and waters such as farm fields, forests, meadows, lakes, streams, ponds, as well as developed recreational facilities such as playgrounds, parks, and athletic fields. Public accessibility of open space areas depends upon the properties' ownership and its intended conservation purpose. Undeveloped open spaces provide critical wildlife habitat and migration corridors, and offer essential environmental services, such as improving air quality, filtering water and protecting against flood damages. Additionally, some types of open space such as forests and farms are working landscapes that also contribute to the local economy.

In light of the strong economy and regional increase in residential and industrial development, it is an opportune time for Ayer to expand its network of open space and recreation areas. Pine Meadow Conservation Area is one of Ayer's most significant Town-owned, publicly accessible and permanently protected open spaces. However, despite the community's desire to expand its open space network, many of the undeveloped open spaces lack protection. Increasing the amount of permanently protected lands in Ayer will ensure that open space continues to be an important part of the landscape. In addition to Town ownership of land for conservation purposes, conservation restrictions (also called conservation easements) offer a way for private property to be permanently protected.



A Canada goose and a group of mallard ducks on Flannagan Pond.

## 5A. PRIVATE PARCELS

Ayer's privately owned parcels greatly contribute to the integrity of its ecosystems by providing the Town with critical habitat, forests, wetlands, and other natural areas. It is important to understand the geographic distribution and ecological significance of Ayer's privately owned properties to evaluate and prioritize potential open space and recreation areas.

### Chapter 61, 61A, and 61B

Chapter 61, 61A, and 61B are tax abatement programs for working forest lands (61), agricultural lands (61A), and outdoor recreation lands (61B). If a property meets the Massachusetts state criteria and the owner successfully applies to the program, they receive a tax abatement in exchange for temporarily limiting future development on the land. Chapter lands remain privately owned, and when/if an owner decides to sell the land, the town in which it resides is offered the right of first refusal. This option gives a town, or a conservation organization of its choice, the ability to purchase the lands, at market value, before anyone else. Throughout the rest of the document the term "Chapter" is used to describe properties that are temporarily protected under either Chapter 61, 61A, or 61B. The Town should remain aware of the status of its Chapter parcels, and consider exercising its right of first refusal to acquire parcels that are within areas identified for priority land protection in the Seven-Year Action Plan.

While these properties may not be currently at risk of further development, their long term conservation remains uncertain, as they have the potential to be sold in the future. If owners of a few different ecologically important Chapter properties decide to sell their lands at the same time, it is possible that Ayer, and its allied conservation organizations, may not have the necessary financial resources to protect the Chapter properties they are offered. Understanding the distribution and ecological significance of Ayer's private parcels, including any conservation easements and Chapter properties, will help the town to prioritize future conservation efforts and proactively plan for future property acquisition and/or protection.



The Ayer Gun & Sportsman's Club's Chapter 61B lands are an important component of ecosystem health in Ayer.

### Conservation Restrictions

Conservation restrictions are the fastest growing method of land protection in Massachusetts. When a conservation restriction is placed on a private property, the landowner (fee owner) receives a tax abatement in exchange for transferring future development rights to a nonprofit organization or governmental entity (restriction holder) for conservation purposes. Conservation restrictions are becoming increasingly popular because they can allow the protected land to remain in private ownership. Depending on the desires of the property owner and their conservation goals, public access may or may not be allowed on property with a conservation restriction. Ayer should work with non-profit land trusts and other conservation entities to educate property owners about how conservation restrictions work and options for establishing them.

Individual landowners account for 63% of the privately owned open space in Ayer. The 99.73 acres owned by Ayer's Sportsman's Club are Ayer's largest, and most contiguous privately owned open space.

## 5B. PUBLIC AND NON-PROFIT PARCELS

There are a variety of public and non-profit parcels in Ayer with conservation potential. Ownership of these lands is divided between the Federal Government, the Commonwealth of Massachusetts, the Town of Ayer, and non-profits. The largest permanently protected, publically accessible open space areas are the Oxbow National Wildlife Refuge along the eastern bank of the Nashua River and the Pine Meadow Conservation Area, along the eastern side of Upper Flannagan Pond. Other large open space areas include the Ayer State Game Farm and the municipally owned areas around the Mini-French Conservation Area. Together these areas provide valuable wildlife habitat, and are part of a regional wildlife corridor. Ayer's most popular recreation areas include Sandy Pond Town Beach, the Nashua River Rail Trail, Pirone Park, and the athletic fields

The most recent open space and recreation acquisition by the Town of Ayer was the purchase of the 5.5-acre Tooker property, which is nestled between Pine Meadow Conservation Area and Oak Ridge Drive. This property extends the Pine Meadow Conservation Area and increases its public accessibility by providing easy access from the residential areas along Oak Ridge Drive.

### Public Recreation Facilities

Ayer has four Town-owned recreation areas: Pirone Park, Sandy Pond Beach, Ayer Middle School/Ayer-Shirley Regional High School, and Page-Hilltop Elementary School. Table 2 summarizes the amenities available at each site.

Nonaicoicus Park, a seven-acre site off West Main Street, was donated to the Town. The Parks Department manages Pirone Park and Sandy Pond Beach and the Ayer School Department manages recreation facilities on school grounds. The Town employs one full-time park employee and about a dozen seasonal employee. Public and private sports leagues use the Town's recreation facilities and they assist with upgrades, cleaning and general upkeep.

The Massachusetts Department of Conservation and Recreation (DCR) manages the eleven-mile Nashua River Rail Trail, which is an important, popular regional recreation amenity.

Pirone Park	Sandy Pond Beach	High School	Page-Hilltop School
Playground	Playground	1Basketball Court (indoor)	Playground
2 Basketball courts	Basketball Court	1 Soccer field	
2 soccer fields	Picnic Areas	1Baseball Field	
4 Baseball fields	Volleyball Court	3 Tennis Courts	
Picnic Area		1 Track	

## 5C. PROCESS TO IDENTIFY PRIORITIES FOR LANDS OF CONSERVATION INTEREST

This update is written as a Town guide for evaluating and planning for future open space and recreation areas. A systematic review of the Town's environmental and social context, including existing land protections and current land uses, informed the identification of criteria to be used in the evaluation, prioritization, and planning of potential open space and recreation areas. These criteria were shaped by a combination of the analyses done in the previous chapters and the input of Ayer's community. Given that there is more land of conservation value than is realistic to acquire or protect, the aim of these criteria is to create a balanced framework for understanding the underlying context and effects influencing future decisions involving open space and recreational lands.

These criteria take into account the need for economic, residential, and recreational development, alongside Ayer's desire to enhance the integrity of its ecosystems. The actions that are later discussed in Section 9 were determined by using the following set of criteria to evaluate the opportunities currently available to the Town.



Lands that meet both recreational and conservation criteria support both Ayer's community and ecosystem needs.

### Conservation Value Criteria

- The location and surrounding environment of a potential OSR property has a significant influence on its conservation value. Connecting protected lands creates wildlife corridors, which build complex, resilient ecosystems by providing wildlife with an increased range of habitat options. Higher conservation priority should be given to properties with the potential to increase the complexity and contiguity of Ayer's largest existing protected areas.
- The potential OSR properties' relationship to water significantly impacts the properties' conservation value. Higher values should be assigned to properties bordering waterbodies and wetlands, as their conservation would also help to protect Ayer's drinking water resources.
- Greater consideration should be given to OSR properties that support the habitat of rare or endangered wildlife. Therefore, higher conservation value should be given to properties within the BioMap 2 Core Habitat or the Critical Natural Landscape classifications.

### **Recreation Value Criteria**

- The ease of accessibility and proximity to residential and downtown areas of Ayer should be a main consideration when assessing potential OSR properties. Increasing the region's walkability has been identified as one of the community's top priorities.
- The relationship between potential OSR properties and the surrounding Environmental Justice, senior, youth, and growing middle-aged populations should be a strong consideration. It is important that everyone in the community receives equal access to OSR areas. Higher value should be assigned to potential OSR properties that increase the equal access to open spaces and/or recreational areas.
- Higher values should be given to potential OSR properties that increase the community's recreational opportunities for, and access to, Ayer's water resources.
- The diversity of activities supported by a potential OSR property should be considered. A greater diversity of activities will increase recreational opportunities for a greater percentage of Ayer's community, and therefore should be valued higher.

Section 3 gave an overview of Ayer's community context, highlighting aspects of Ayer's history, demographics, and infrastructure that impact the Town's open space and recreation areas. Section 4 identified and analyzed areas in town that have high ecological and aesthetic (e.g. scenic landscapes) values. The criteria outlined in this section coupled with the previous analyses should be used to evaluate future potential OSR properties within the focus areas of Town conservation priority, which are discussed in greater detail in Section 7. Additionally, as parcels become available (for sale), the Town could utilize the criteria outlined above to determine if funding and/or conservation partners should be sought to permanently protect available parcels. The contextual analyses in Sections 3 and 4 and the community's OSR goals should be referenced when making specific value judgments and comparisons between potential OSR properties. Generally, parcels that can satisfactorily fulfill more than one of these criteria should be considered a higher conservation priority.

**Nashua  
River**

**Nonaicoicus  
Brook**

**Downtown**

**Plow  
Shop  
Pond**

The Nonaicoicus Brook and surrounding wetlands  
are an important part of Ayer's ecosystem.

**Nonacoicus Brook**

0 0.125 0.25  
Miles

**Ayer's  
Industrial  
Zone**

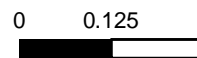
**Spectacle  
Pond**

**Mini-French  
Conservation Area**

**Littleton**

## **Mini-French Conservation Area**

Mini-French Conservation Area provides eastern Ayer with valuable habitat structure.



## Map 5A.1 Open Space Inventory

The Open Space Inventory Map displays the geographic distribution and relationships between Ayer's Town-owned lands, temporarily protected Chapter properties, its permanently protected OSR areas, and currently vacant parcels. Due to the map's complexity, a series of reference numbers were added to aid in the following discussion. The numbers on the map do not symbolize any conservation hierarchy or ranking; they are only used as references. The criteria outlined in Section 5C were used in this evaluation of Ayer's landscape.

Most of the existing open space and recreation lands are owned by either the federal government, Commonwealth of Massachusetts, Town of Ayer, or non-profits. The Oxbow National Wildlife Refuge in Area 1 follows the eastern bank of the Nashua River, and is the largest block of protected open space within Ayer. Other significant protected open spaces include the Mini-French Conservation Area in the southern portion of Area 7, the Pine Meadow Conservation Area along in the eastern edge of Upper Flannagan Pond in Area 5, the Ayer State Game Lands in Area 2, and the Town-owned properties in Area 1 around Nonacoicus Brook west of the downtown.

### Chapter Lands

Almost all properties that are temporarily protected under Chapter 61, 61A, or 61B are found within Ayer's north-central region, in the lands around Areas 3 and 5. Chapter lands in Area 3 form a connection between the schools in Area 4 and the Nashua River Rail Trail in Area 3. The permanent protection of this land offers the potential of increasing Ayer's walkability network by linking two of the Town's most important open space and recreation areas. This is a significant opportunity for Ayer and properties in this area should be given a high conservation priority.

Chapter lands in Area 5 offer potential connections between Pine Meadow Conservation Area, the vacant properties in Area 6, and the permanently protected properties owned by the Massachusetts Audubon society to the north, in Groton. The permanent protection of properties in Area 5 should become a Town conservation priority due to the ecological significance and the potential increased connectivity they offer to Ayer's trail network.

The Ayer Gun and Sportsman's Club owns one-hundred acres on Snake Hill Road. Its mission in part is to "to aid and encourage all movements tending to preserve, the natural resources of the locality, its game and its forests and streams".

The 421 acre Rocky Hill Wildlife Sanctuary is Audubon protected land, located on the Groton-Ayer town line. It is a land of impressive ledges, large boulders, beaver ponds, vernal pools, and extensive uninterrupted woodlands. The

sanctuary lies within a state-designated Area of Critical Environmental Concern and supports moose, beavers, and porcupines, as well as nearly 100 species of birds and more than 240 plant species.

### Vacant Parcels

Following the Massachusetts State Property Type Classifications, Ayer's vacant parcels are not currently utilized for any economic or residential purpose. Vacant properties may be relevant to Ayer's open space and recreation if they have significant conservation value. Some lack existing infrastructure and therefore may offer Ayer opportunities for expanding open space and recreation areas at a lower financial burden. The most significant blocks of vacant land are located in Areas 3 and 6. Area 8 was recently developed as a subdivision for the 123 homes of Pingry Hill.

Vacant land extends out from Area 3 in a branching pattern. This pattern creates an almost uninterrupted corridor of vacant properties that extend from the municipally owned school grounds across the Nashua River Rail Trail. This continues north to the Ayer State Game Lands in Area 2 and to the southwest, along the Nashua River Rail Trail, towards downtown. These vacant parcels are of high conservation value due to the potential they offer for increasing the connectivity of Ayer's trail system and ecological network.

A large group of vacant properties are found along the western side of Long Pond in Area 6. This is Ayer's largest remaining undeveloped lakefront forest. A residential subdivision was planned for this area and some of the land was cleared for the building of a low-density residential neighborhood. The construction on these properties has recently been stopped, and the project is no longer active. The potential ecological benefits and recreational opportunities these lands offer the town and its proximity to Rocky Hill warrant a high conservation value for the properties in Area 6



### Government Owned Parcels

Parcel ID	Location	Property Owner	Management Agency	Code	Zonning	Total Acre	Current Use
019/014.0-0000-0003.0	Groton harvard road	Town of Ayer	Conservation commission	903 - Municipality	A1	121.60	
019/027.0-0000-0137.0	Groton harvard road	Town of Ayer		903 - Municipality	IL	0.61	
019/027.0-00004)163.0	Groton harvard road	Town of Ayer		903 - Municipality	A2	0.69	
019/003.0-0000-0027.0	Groton school road	Town of Ayer	Sewer Deptarment	903 - Municipality	A2	0.60	
019/034.0-0000-0076.0	Harvard rd/e main st	Town of Ayer	Water Department	903 - Municipality	GB	1.30	Pumping Staion site
019/036.0-0000-0020.0	Harvard road	Woodlawn Cemetery	Vault	903 - Municipality	GR	6.60	Cometary
019/036.0-0000-0061.0	Harvard road	Woodlawn Cemetery	C/o shirley horton	903 - Municipality	GR	6.00	Cemetary
019/020.0-0000-0022.0	Highland avenue	Town of Ayer	Standpipes	903 - Municipality	A1	1.00	Standpipes
019/008.0-0000-0016.0	Littleton road	Town of Ayer	Water Department	903 - Municipality	IH	16.22	
019/036.0-0000-0189.0	Littleton road	Town of Ayer	Part of copeland dr	903 - Municipality	GB	0.02	Copeland Dr.
019/026.0-0000-0023.0	Macpherson road	Town of Ayer	Sewer System	903 - Municipality	A1	76.60	Sewer System
019/026.0-0000-0231.0	Main street	Town of Ayer		903 - Municipality	DB	0.76	
019/026.0-0000-0286.0	Main street	Town of Ayer		903 - Municipality	GR	0.44	
019/017.0-0000-0017.0	Nemco way	Town of Ayer		903 - Municipality	IH	2.43	
019/017.0-0000-0006.0	Nemco way (off)	Town of Ayer		903 - Municipality	A1	28.60	
019/017.0-0000-0006.0	Nemco way (off)	Town of Ayer	Water Department	903 - Municipality	A1	0.96	
019/017.0-0000-0007.0	Nemco way (off)	Town of Ayer	Water Department / DPW	903 - Municipality	A1	12.60	
019/017.0-0000-0011.0	Nemco way (off)	Town of Ayer		903 - Municipality	IH	3.37	
019/017.0-0000-0013.0	Nemco way (off)	Town of Ayer		903 - Municipality	IH	30.60	

Continued

Parcel ID	Property Name and Location	Property Owner	Management Agency	Code	Zoning.	Total Acres	Current Use
019/021.0-0000-004S.O	Oak ridge drive	Town of Ayer	Conservation Commission	903 - Municipality	A2	6.63	
019/021.0-0000-0016.0	Old sandy pond road	Town of Ayer		903 - Municipality	A2	0.16	
019/019.0-0000-0017.0	Park street	Town of Ayer	Police station	903 - Municipality	GB	1.20	Police station
019/037.0-0000-0026.0	Pingry way	Town of Ayer		903 - Municipality	A2	1.47	
019/022.0-0000-0020.0	Sandy pond road	Town of Ayer	Town Beach	903 - Municipality	A2	1.00	Town Beach
019/023.0-0000-0016.0	Sandy pond road	Town of Ayer		903 - Municipality	A2	0.23	
019/028.0-0000-0136.0	Sandy pond road	Town of Ayer		903 - Municipality	A2	0.40	
019/021.0-0000-0001.0	Snake hill road	Town of Ayer		903 - Municipality	A2	0.07	
019/022.0-0000-0016.0	Snake hill road	Town of Ayer		903 - Municipality	A2	0.01	
019/036.0-0000-0218.0	Snake hill road	Town of Ayer		903 - Municipality	A1	7.62	
019/016.0-0000-0020.0	Stony brook road	Town of Ayer	Stony brook rd	903 - Municipality		0.76	Stony brook rd
019/017.0-0000-0023.0	Stony brook road	Town of Ayer	Stony brook rd	903 - Municipality	IH	1.16	
019/012.0-0000-0069.0	Victor drive	Town of Ayer		903 - Municipality	A2	3.61	
019/020.0-0000-0001.0	Washington street	Town of Ayer	Schools	903 - Municipality	A1	66.00	Schools
019/020.0-0000-0060.0	Washington street	Town of Ayer		903 - Municipality	A1	2.43	
019/026.0-0000-0184.0	Washington street	Town of Ayer		903 - Municipality	DB	0.23	
019/026.0-0000-0027.0	West main street	Town of Ayer	Fire Department	903 - Municipality	DB	1.26	Fire Department
019/026.0-0000-0031.0	West main street	Town of Ayer		903 - Municipality	GR	3.60	
019/032.0-0000-0001.0	West main street	Town of Ayer		903 - Municipality	GR	3.76	
019/032.0-0000-0026.0	West main street	Town of Ayer		903 - Municipality	GB	0.20	
019/032.0-0000-0042.0	West main street	Town of Ayer		903 - Municipality	IL	1.10	
019/026.0-0000-0366.0	West street	Town of Ayer		903 - Municipality	A1	0.03	
019/016.0-0000-0068.0	Westford road wsly	Town of Ayer		903 - Municipality	A1	1.16	
019/016.0-0000-0069.0	Westford road wsly	Town of Ayer		903 - Municipality	A1	0.43	
019/016.0-0000-0002.0	Wright road	Town of Ayer	Long pond dam	903 - Municipality	A1	30.22	Long pond dam

Chapter and Vacant Properties				
Location:	Owner:	Parcel I.D.	Use Code	Property Status
Snake Hill Road	Ayer Gun and Sportsmans Club	019/015.0-0000-0004.0	81	
Snake Hill Road	Ayer Gun and Sportsmans Club	019/014.0-0000-0004.0	807: Chapter 61B	Recreational - Hunting
Snake Hill Road	Ayer Gun and Sportsmans Club	019/014.0-0000-0001.0	807: Chapter 61B	Recreational - Hunting
Snake Hill Road	Ayer Gun and Sportsmans Club	019/014.0-0000-0002.0	807: Chapter 61B	Recreational - Hunting
Snake Hill Road	Ayer Gun and Sportsmans Club	019/014.0-0000-0007.0	807: Chapter 61B	Recreational - Hunting
WRIGHT ROAD	Ayer Gun and Sportsmans Club	019/015.0-0000-0001.0	807: Chapter 61B	Recreational - Hunting
Jackson Street ext	Cowfield Trust	019/012.0-0000-0001.0	16	
Nashua Street rear	Cowfield Trust	019/013.0-0000-0010.0	601 - Chapter 61	Working Forest Land
Pierce avenue	Cowfield Trust	019/003.0-0000-0002.0	16	
Snake Hill Road	Cowfield Trust	019/005.0-0000-0005.0	601 - Chapter 61	Working Forest Land
Snake Hill Road	Cowfield Trust	019/006.0-0000-0010.0	601 - Chapter 61	Working Forest Land
Willard Street	Cowfield Trust	019/004.0-0000-0039.0	16	
Sandy pond Road	Cowley Thomas H - Trustee	019/015.0-0000-0003.0	17	
Shaker Road	Cowley Thomas H - Trustee	019/022.0-0000-0006.0	717: Chapter 61A	Agricultural Land - Productive Woodland
Old groton Road	Eliades, David J	019/004.0-0000-0009.0	713: Chapter 61A	Agricultural Land - Field Crops
Old groton Road	Eliades, David J	019/004.0-0000-0007.0	713: Chapter 61A	Agricultural Land - Field Crops
Old groton Road	Eliades, David J	019/004.0-0000-0006.0	718: Chapter 61A	Agricultural Land - Pasture
Old harbor Road	Maple Sugar, LLC	019/004.0-0000-0015.0	713: Chapter 61A	Agricultural Land - Field Crops
Littleton Road	Matheson, Euncie P & Frank W	019/037.0-0000-0010.0	713: Chapter 61A	Agricultural Land - Field Crops
Snake Hill Road	Matheson, Euncie P & Frank W	019/005.0-0000-0006.0	16	
Snake Hill Road	Moore Todd d	019/029.0-0000-0012.0	713: Chapter 61A	Agricultural Land - Field Crops
Snake Hill Road	Moore, Calvin E	019/005.0-0000-0002.0	16	
Pleasant Street ext	Pleasant Street Realty Trust	019/012.0-0000-0106.0	16	
Washington Street	Pleasant Street Realty Trust	019/005.0-0000-0001.0	16	
Sandy pond Road	Rogers, Alan E	019/013.0-0000-0009.0	601 - Chapter 61	Working Forest Land
Pleasant Street ext	Theodore Maxant & Valerie De	019/021.0-0000-0006.0	16	
Wright Road	Tracey, Daniel E	019/042.0-0000-0001.0	713: Chapter 61A	Agricultural Land - Field Crops
Snake Hill Road	Tracey, Daniel E	019/043.0-0000-0001.0	601 - Chapter 61	Working Forest Land

# 6. Community Vision

This section presents an overview of the strategies that were used to engage with Ayer's community, and concludes with the OSR goals that were generated from the community's comments and feedback. The people of Ayer have clearly articulated their desire for the Town's open space and recreational areas to be preserved and enhanced.

## 6A. DESCRIPTION OF PROCESS

This update is intended to provide a set of analyses, criteria, and recommendations to be used by the Ayer community. The criteria and recommendations are based on the ecological and social contextual analysis, and the community's input. They are intended to guide Ayer in prioritizing, planning, managing, and expanding its OSR network. This update draws upon a variety of additional sources including Ayer's 2004 Open Space and Recreation Plan, Ayer's 2010-2014 Community Preservation Plan, Ayer's 2005 Comprehensive Plan Update, and the 2006 Ayer Reconnaissance Report developed by the MA Department of Conservation and Recreation.

Efforts were made to engage the community throughout the update process. The primary methods of public engagement included two community meetings and an online open space and recreation questionnaire. The first community meeting was held at 7pm, on February 16, 2015, in Ayer's Town Hall. In this visioning session, written comments, map identification, and group discussions contributed information on the community's views and opinions of Ayer's open space and recreation network. This meeting was filmed for Ayer's public television channel and Town website. The meeting was attended by twelve Town members, and provided extremely valuable information about Ayer's current ecological and social context and the community's desires for the Town's future. The link to the questionnaire was shared in a variety of ways including the first community meeting, on Ayer's social media, through the Town's email listserv, and on flyers posted at the Town Hall.



A participant in the first community meeting marks a special place in Ayer.

The online questionnaire ran from February 16, 2015 to March 16, 2015. The survey consisted of sixteen multiple-choice and four open-ended questions. There were a total of 85 responses to the survey. A summary of responses to this can be found in Appendix 1.



The link to the questionnaire as it appeared on the Town's social media.



Draft goals and recommendations were discussed during the second community meeting.



Essential feedback on the projects analyses and community goals was provided during the public meetings.

The second community meeting was held at 7pm on March 5, 2015, again at the Town Hall. The meeting was attended by nine participants; a slide show was used to present the draft project goals, analyses, and a summary of the process being developed to generate the specific recommendations in the Five-Year Action Plan. A group discussion about specific areas of concern followed the presentation. Preliminary results from the online questionnaire were shared and discussed. Valuable feedback on potential opportunities for developing Ayer's open space and recreation network were identified and discussed by the participants.

## 6B. THE COMMUNITY PRESERVATION ACT

Ayer voters adopted the Community Preservation Act (CPA), as enabled through Massachusetts General Laws Chapter 44B, in April 2001. Ayer currently receives CPA funds through a local property tax surcharge of 1% and a variable state match of up to 100% of the local receipts. In the first two years of the program, Ayer's local property tax surcharge was 3%. It was reduced to 1% by ballot vote in Fiscal Year 2003. Ayer adopted the CPA surcharge with exemptions for low-income households and low-to-moderate senior households. Since adoption, the Ayer CPA has raised over \$1.6M in CPA funds.

The law limits CPA spending to four general types of projects: community housing, historic preservation, open space, and recreation, with 10% minimum allocation for each of these categories.

In order to appropriate CPA funds, Town Meetings must act on a recommendation of the Community Preservation Committee, a seven-member committee with representatives appointed by various boards and committees.

CPA funds can serve as matching funds for grants and other funding opportunities for open space conservation, historic preservation, recreation projects, and affordable housing, recommendations for some of which are included in the action plan of this OSRP.

## **6C. STATEMENT OF COMMUNITY OPEN SPACE AND RECREATION GOALS**

**The following set of goals has been generated from an assessment of Ayer's natural and cultural resources, regional context, stated community priorities, current status of the town's protected and vacant property, and the set of conservation criteria outlined in Section 5C.**

1. Insure that water resources are well protected, and provide an adequate supply for future water needs.
2. Wildlife habitats, forests and farmland need to be well protected and resilient.
3. Develop ample multi-use paths to create numerous connections between open space and recreation facilities.
4. Provide opportunities for recreation growth, and continue to meet the community's changing needs.

# 7. Analysis of Needs

## 7A: SUMMARY OF RESOURCE PROTECTION NEED

**Ayer is a town of many natural resources: a diverse array of wildlife habitats, natural features, and drinking water sources.**

*“Grove Pond - highly polluted and even if it wasn't, there is no public access that I am aware of.”*

*- Ayer resident comment at a community meeting, February 2015*

Ayer has a diverse system of wetlands and waterbodies, the majority of which are not permanently protected and are being encircled by residential development. Two geologic kettle ponds, Sandy and Long Pond, are viable wildlife core habitat areas. Other man-made large water bodies include Flannagan, Grove, and Plow Shop Ponds. The Nashua River extends along the entire western border of Ayer and creates a critical riparian corridor of wildlife habitat and movement. Wetlands and waterbodies provide habitat, slow and filter water flow, concentrate nutrients and create recreational opportunity for people. A substantial part of Ayer's open space and recreation goals relate to wetlands and waterbodies.

According to GIS analysis, housing development has occurred within important prime wildlife core habitat, prime forest, farmland of statewide importance, and aquifer pump zones.

Most land in Ayer is zoned for residential housing, with a small amount of business zoning in the downtown area. There are two main housing development patterns in town: one that follows the main road from the town center to the north, and one that follows the great ponds and water bodies from the town center to the east. Ayer has had a sharp increase in residential housing development over the past decade. Subdivisions have been built along the northwestern border of town on prime farmland and at Long Pond in the east.

In the OSRP survey, 84 percent of the 85 respondents think Ayer should permanently protect more land. Sixty five percent of respondents feel there is not enough open space in Ayer; and 63 percent feel there

are not enough recreation facilities. There is ample concern among citizens that Ayer may be approaching build-out status, where no more building development or land conservation could be possible based on available Town resources.

Environmental health, however, may suffer well before Ayer reaches technical built-out status. Ayer has the opportunity to create smart growth and clustered housing policies that can protect sensitive natural resource areas from habitat fragmentation and loss.

Ayer has a regional and statewide responsibility to protect wildlife habitat. Protection of sensitive wildlife areas will benefit wildlife and humans. There are a variety of methods available to protect land. Permanent methods of land protection include Conservation Restrictions. The Wetlands Protection Act protects water resources and water supply from contamination. Watershed protection was ranked as the second most important resource critically important to protect by survey participants.

*“Private and public conservation of open land. A private land trust and an active Conservation Commission land acquisition program”*

*- Ayer resident comment at a community meeting, February 2015*

*“Pine Meadow Conservation is a beautiful network of trails that shows the diverse habitats in Ayer.”*

*-Ayer resident's comment in a community meeting, February 2015*



Beaver habitat is supported in the Pine Meadow Conservation Area.

### **Priority Land to Protect**

Priority land to protect include areas of natural resources, such as drinking water aquifers and wells, surficial water bodies, prime forest and farmland, and wildlife habitat identified by NHESP BioMAP2, CAPS and ACECs.

Permanently protecting these natural resource areas would support Ayer's community goals to conserve more land for open space and recreation and to protect wildlife habitat and water resources.

Specific areas to protect include the lands around Snake Hill, the northwestern portion of Ayer documented for scenic importance, at and around Town water bodies, such as Sandy Pond, Long Pond, Flannagan Pond, Nashua River, Grove Pond, Pine Meadow Pond and Shaker Mill Pond.

Protection of these areas would support healthy wildlife habitat and increase accessibility to water. The area of the former Shepley's landfill and the airfield are core habitats of importance for the uncommon upland sandpiper. It needs open space to thrive, and this area should be managed with the species needs in mind. The small floodplain forest, prime agricultural soils, and forest patches throughout town are important areas to protect from development.

*"Ayer is on the right track."*

*- Ayer resident comment at a community meeting, February 2015*

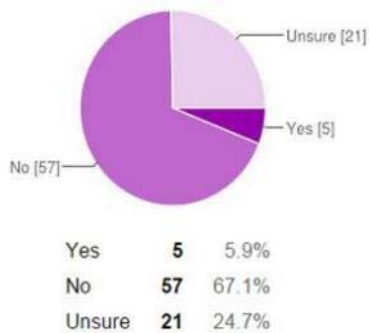
## 7B. SUMMARY OF COMMUNITY NEEDS

**Regional economic and population growth is rapidly changing Ayer's landscape. The town needs to quickly implement a comprehensive strategy to ensure that its ecosystems, open spaces, and recreation areas can continue to provide for the long-term health and well-being of Ayer's community.**

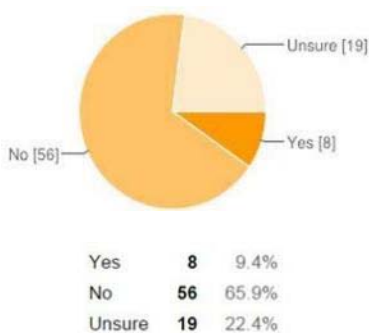
### Expanded Open Spaces and Recreation Areas

The responses received from the online questionnaire communicated the community's views and opinions on Ayer's current and future open space lands and recreational opportunities.

*Do you think that there is enough recreation space in Ayer?*



*Do you think that there is enough open space in Ayer?*



Throughout the community engagement process, the people of Ayer have identified the limited amount of open space and recreational area as one of the most important town issues. In area, Ayer is a relatively small town and the recent increase in development is transforming large portions of Ayer for residential and industrial use. This developmental pressure is limiting the town's options for expanding its current open space and recreation area network.

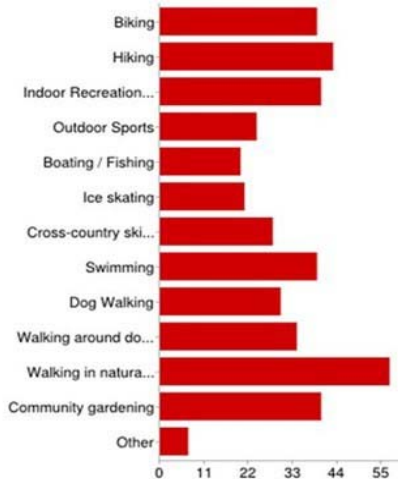
Additionally, the community has voiced a desire for the creation of small open spaces, or pocket parks, in the more densely developed portions of Ayer. Within a densely developed area, small areas of open space can provide residents with easier access to a natural setting. Transforming underutilized or abandoned parcels into a series of smaller urban open spaces supports Ayer's community while providing increased access to open space for both the town's environmental justice and senior populations.

Ayer needs to quickly adopt a developmental strategy that balances future residential and industrial development with the expansion of its open space and recreation network. This strategy needs to plan for the equal distribution of future OSR development across the town, with a special emphasis placed on serving Ayer's environmental justice and aging populations.

## Improved Pedestrian Connectivity

Many residents would like to increase the local and regional connectivity of Ayer's pedestrian network (trails, sidewalks). Improving connections between Ayer's residential, industrial, open spaces, and recreation areas would likely decrease automobile congestion and improve health, while increasing public access to, and use of, OSR areas. Sixty- seven percent of questionnaire respondents said they would like to see more opportunities to walk around Ayer's open space.

In the online questionnaire, participants were asked to identify which of these recreational activities they would like to see increased opportunities for in town. Walking in nature (67.1%) received the most votes.



Biking	39	45.9%
Hiking	43	50.6%
Indoor Recreation (gym, swimming, indoor sports)	40	47.1%
Outdoor Sports	24	28.2%
Boating / Fishing	20	23.5%
Ice skating	21	24.7%
Cross-country skiing / snowshoeing	28	32.9%
Swimming	39	45.9%
Dog Walking	30	35.3%
Walking around downtown	34	40%
Walking in natural areas	57	67.1%
Community gardening	40	47.1%
Other	7	8.2%

Emissions resulting from the widespread use of automobiles negatively impact the planet's environment.. Increasing the capacity of Ayer's pedestrian network would directly respond to the community's desires, while reducing pollution.

Increasing the amount of indoor, year-round recreational opportunities was discussed at both community meetings and received strong support (47%) in the online questionnaires. The community identified a regional lack of indoor recreation areas, and future opportunities for increasing these spaces should be explored.



There are many opportunities to improve Ayer's walkability, including repurposing the recently abandoned railroad track running northwest from downtown to Groton.

## Water Access

From the Nashua River to its great ponds, Ayer has a diversity of water resources. However, recreational access to many of these areas is limited or nonexistent. One of the main water access issues is the size and limited amount of available parking at the Sandy Pond Town Beach. Sixty-eight percent of survey respondents chose Sandy Pond as one of their top three places in Ayer, yet there is only one small public beach and no public boat access. Town residents not living on Sandy Pond are forced to launch their boats illegally. Community members have also voiced concerns over the dangerous parking situation and general crowdedness of Sandy Pond Beach during the summer. Ayer needs to prioritize increasing public accessibility to its water resources.



There are opportunities for creating public water access on vacant property surrounding Ayer's ponds.

## 7C. MANAGEMENT NEEDS AND POTENTIAL CHANGE OF USE

### Increased Staffing and Volunteer

**Capacity** Open space provides Ayer with environmental, scenic, cultural, social, educational, and economic benefits, yet protecting it to achieve these ends can be difficult. There are currently modest staffing resources available to oversee the town's OSR areas. Ayer would greatly benefit from greater capacity to protect and manage its open space, natural resources and recreation amenities. Ayer lacks a volunteer group or Town employee responsible for managing the stewardship and acquisition of open space. The creation of such a position would greatly help Ayer to realize its OSR goals.

Ayer has many residents who care about protecting the town's natural resources but there are not enough volunteers to address all the time-consuming work involved in planning for, protecting and managing OSR areas. Although the Greenway Committee attracts volunteers to periodically upgrade the trail system, Ayer needs to adopt a strategy that emphasizes public outreach and education in order to increase volunteer participation. Spreading awareness and knowledge of Ayer's OSR opportunities may potentially help to inspire and increase volunteer participation.

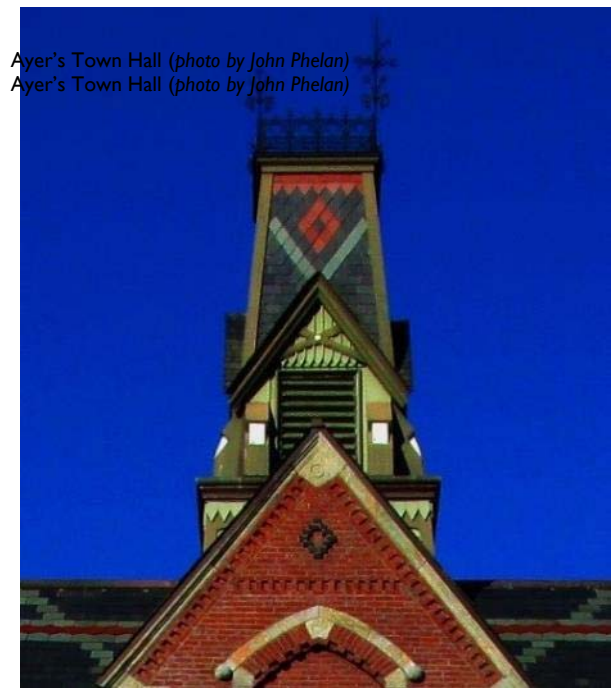
The community has voiced their support for the establishment of a new farmers' market in town. A market manager would be needed to facilitate, run, and guide the market. A farmers market would build a public space that supports the local economy. Ayer would also like to create pocket parks and community gardens throughout town. This may require a re-organization of Parks and Recreation department, time, and financial resources. Volunteers to help with park upkeep and design would be very helpful.

## Financial Needs

Like many small towns, Ayer has few dedicated funds available for resource conservation. In order to meet its OSR goals, Ayer will have to strategically balance development with increasing its OSR opportunities. Ayer needs to adapt to its evolving regional context by adopting a comprehensive proactive policy of conservation by design. The Town should coordinate with organizations like the Montachusett Regional Planning Commission and the Nashua River Watershed Association to help articulate a comprehensive conservation and development strategy to ensure that the community's goals are met.

The Town should consider additional sources of revenue, as Ayer may not be able to finance the implementation of all of its OSR goals from CPA funds alone. The Town should conduct a review of its policy on collecting usage fees for the maintenance and improvement of its OSR areas. Other funding sources could include the authorization of a local water conservation bond and actively seeking state and federal grant funds.

The town would greatly benefit from investing in the creation of a full-time professional town planner with expertise in environmental and land use planning as well as working to develop partnerships with local land trusts to help manage its OSR resources. Land trusts can help the Town to negotiate conservation deals, develop legal agreements, and solicit donations of cash, land, Conservation Restrictions, and Chapter lands. Many resources, such as the Land Trust Alliance, exist to help towns and individuals identify and contact local land trusts.



Ayer's Town Hall (photo by John Phelan)  
Ayer's Town Hall (photo by John Phelan)

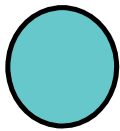
Ayer's Town Hall (photo by John Phelan)

# 8. Community Open Space and Recreation Goals

- **Water resources are well protected, and provide an adequate supply for future water needs.**
  - An adequate amount of safe, clean, and high quality drinking water is maintained.
  - Waterways, wetlands and floodplains are protected.
  - Surficial water quality is improved.
- **Wildlife habitats, forests and farmland are well protected and resilient.**
  - Wildlife habitats, including those of common and rare species, are monitored.
  - Core wildlife habitats and Areas of Critical Environmental Concern are protected.
  - Protection of limited prime forest and farmland soils is prioritized.
  - Invasive and noxious species are inventoried and managed.
  - Connectivity between wildlife habitat, support corridors, wetlands and open space is improved.
- **Ample multi-use paths create numerous connections between open space and recreation facilities.**
  - Ayer's network of town sidewalks and trails has been developed and expanded, increasing its connections with trail networks in neighboring towns.
  - Public accessibility to open space and recreation areas is significantly increased.
- **Opportunities for recreation have grown, and continue to meet the community's changing needs.**
  - Steadily decreasing rates of automobile use has been facilitated by an increase in the use of mass transit and other types of low-emission transportation.
  - Ayer's protected lands and recreational opportunities are significantly increased.
  - A local agricultural community has developed, preserving Ayer's landscape character while providing the community with fresh food and educational opportunities.
  - Clear public access to Ayer's water resources has been created for swimming, boating, and fishing.
  - Sponsoring a series of locally focused educational outreach programs has significantly increased the number of volunteers Ayer receives.

# 9. Seven-Year Action Plan

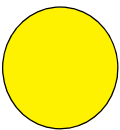
This map shows spatial recommendations for Ayer's open space and recreation. Recognizing, protecting, preserving, and improving priority open space and recreation in Ayer will serve the human and wildlife communities that rely on these places for well-being.



## 1. Water resources are well protected and provide adequate supply for future needs.

- Drinking water aquifers are studied and protected.
- Pollution is remediated, pollution sources are controlled, and safe public use resumes at Town ponds.

- A. Plow Shop Pond
- B. Grove Pond
- C. Spectacle Pond



## 2. Wildlife habitats, forests, and farmland are well protected and resilient.

- Priority wildlife habitat areas are inventoried, protected and responsibly maintained.
- 1. The Nashua River Corridor continues to be a focal point for wildlife protection, and becomes a focus for open space and recreation, and education.
- 2. Wetland and wildlife corridor connections are protected and responsibly maintained.
- 3. Snake Hill wildlife habitat, a wildlife corridor adjacent to MA Audubon Rocky Hill Wildlife Sanctuary, is further researched, protected and responsibly maintained.



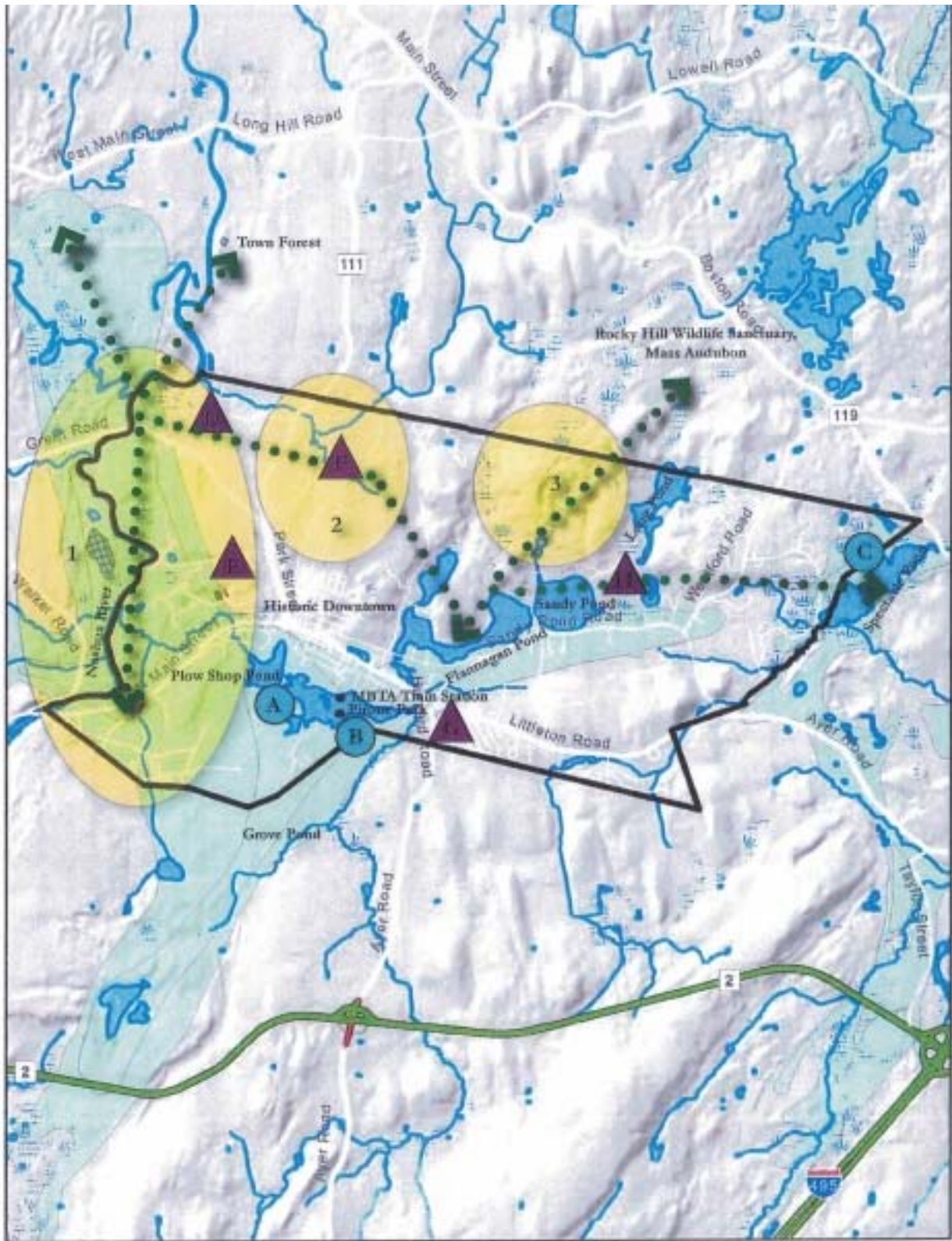
## 3. Ample multi-use paths create numerous connections between open space and recreation facilities.

- Town-wide greenway connections, trails, and bikeways are created, providing people with greater OSR access and wildlife education opportunities.



## 4. Opportunities for recreation have grown, and continue to meet the community's changing needs.

- D. State Game Farm becomes an OSR area.
- E. Pocket parks and community gardens are created with good public access, and in or near EJ population areas.
- F. Central pocket parks, a possible community center, and additional trails increase connectivity between the schools, high-density residential areas, existing trails, and OSR areas.
- G. Pirone Park soil is remediated, new and safe playground structure installed and trails made throughout.
- H. Public boat launch is built at Flanagan Pond on vacant



**Map 9A.1 Seven-Year Action Plan**

0 0.5 1 Miles



## **Key for abbreviations on following action plan:**

ACC – Ayer Cultural Council  
AMC – Appalachian Mountain Club  
AO- Assessor’s Office  
APAC – Ayer Public Access Channel  
ASRSD – Ayer Shirley Regional School District  
BOH – Board of Health  
BOS – Board of Selectmen  
CC – Conservation Commission  
CED – Community and Economic Development  
CPC – Community Preservation Committee  
DBA – Downtown Business Alliance  
DEV – Devens  
DFW – Massachusetts Department of Fisheries and Wildlife  
DPW – Department of Public Works  
ELA – Ecological Landscaping Alliance  
FNRRT – Friends of the Nashua River Rail Trail  
GC – Greenway Committee  
GCT – Groton Conservation Trust  
GRO – Town of Groton  
HAR – Town of Harvard  
IT – Information Technology Office  
LCT - Littleton Conservation Trust  
LIT – Town of Littleton  
MACC – Massachusetts Association of Conservation Commissions  
MAS – Massachusetts Audubon Society  
MDAR – Massachusetts Department of Agricultural Resources  
MDOT –Massachusetts Department of Transportation  
MRPC – Montachusett Regional Planning Commission  
NCLT - North County Land Trust  
NESFP – New Entry Sustainable Farming Project  
NHESP – National Heritage and Endangered Species Program  
NPS – National Parks Service  
NRWA – Nashua River Watershed Association  
NVCC – Nashoba Valley Chamber of Commerce  
NVMC - Nashoba Valley Medical Center  
OSWG – Open Space Working Group (formation recommended)  
PACE – People of Ayer Concerned About the Environment  
PB - Planning Board  
PDC – Pond and Dam Committee  
PRC – Parks and Recreation Commission  
SHI – Town of Shirley  
TTOR – The Trustees of Reservation  
USFWS – United States Fish and Wildlife Service  
ZBA – Zoning Board of Appeals

Goal 1: Protect water resources and provide an adequate supply of drinking water for current and future needs.			
Action	Timeline	Responsible Party	Resources
<b>Objective 1.1: Maintain an adequate amount of safe, clean, and high quality drinking water.</b>			
1.11: Enforce an ongoing and appropriate Zone I protection plan for well areas at Grove Pond, near Devens (In progress).	2017-2022+	PB, DPW, CC	DPW
1.12: Prioritize and financially prepare to purchase and permanently protect or implement conservation restrictions for parcels within Zone II.	2017-2020	DPW, CPC, BOH	NRWA
1.13: Create and adopt a water supply protection overlay bylaw for Zone II.	2017-2022+	PB, DPW	NRWA
1.14: Regulate underground sprinkler systems to conserve water and implement lawn watering bylaws to lower water consumption. Require that all new construction and significant rehabilitation projects use water-conserving fixtures and grey water recovery systems.	2017-2022+	PB, DPW	NRWA, ELA
1.15: Evaluate private well restrictions and industrial public water supply restrictions during emergency drought conditions.	2017-2022+	BOH, PB, DPW	NRWA
1.16: Ensure Ayer has jurisdiction over the MacPherson well and the aquifer at the Moore Army Airfield		BOH, PB, DPW	DEV
<b>Objective 1.2: Protect waterways, wetlands and floodplains.</b>			
1.21: Create and adopt a local wetlands protection bylaw that expands the Wetlands Protection Act for pollution prevention, flood and storm mitigation, water quality, habitat, and natural resource protection.	2017-2018	CC,PB, DPW	NRWA, MACC
1.22: Create and adopt an earth removal/ land clearing and grading bylaw that requires all clearing over 10,000 square feet of land be reviewed by the planning board in order to protect mature trees, and prevent erosion (currently in process).	2017-2018	PB, DPW, CC	NRWA, MAS
1.23: Create and adopt a floodplain protection bylaw to protect waterways, people, property, soils, and re- evaluate already developed areas in flood zone to avoid or mitigate damage.	2017-2018	PB, DPW, CC	NRWA, MAS
1.24: Ensure the integrity of the dams and explore the possibility of dam removal, where feasible	2017-2022+	PB, DPW, CC	
<b>Objective 1.3: Improve surficial water quality.</b>			
1.31: Commission a study to assess relationships between surficial and underground water resources and potential permeability of clay layer.	2017-2022+	DPW, CC, BOH	NRWA
1.32: Monitor water quality in ponds, brooks, rivers, and develop a plan for addressing pollution in Grove and Plowshop Ponds (In progress).	2017-2022+	DPW, CC	NRWA, DEV, PACE
1.33: Limit the use of road salts and sands. Source environmentally responsible product options, new techniques for pre-treating winter roads, and minimize application near water bodies.	2017-2018	DPW, PB	
1.34: Revise town stormwater bylaw to have effective implementation and regulate pollution entering waterbodies	2018	DPW, PB, CC	
1.35: Identify and secure funding for implementing recommendations in the Biological Survey, Assessment, and Management Recommendations for Ayer's Ponds (May 2016, Geosyntec Consultants), for example stormwater best management practices to reduce runoff impacts to ponds.	2018	DPW, PB, CC	
1.36: Create management plans for the lakes and ponds, using information identified in the Biological Survey, Assessment, and Management Recommendations for Ayer's Ponds (May 2016, Geosyntec Consultants)	2018-2020	DPW, CC	PDC

Goal 2: Protect natural habitats, forests and farmland and increase their resiliency.			
Action	Timeline	Responsible Party	Resources
<b>Objective 2.1: Prioritize protection of core wildlife habitats, prime forest and farmland, and Areas of Critical Environmental Concern (ACECs).</b>			
2.11: Adopt mandatory open space/conservation zoning bylaw in ACECs and in documented rare or endangered species areas and incentivize option for all developments.	2017-2018	PB, ZBA, CC	NRWA, MAS
2.12: Enable utilization of the updated natural resource, open space, and trail maps for Planning Board, Conservation Commission, OSRPC, and public education programs, meetings and planning decisions.	2017-2021+	PB, CC, IT	
2.13: Contact owners of lands (including Chapter 61 tracts) located in ACECs and rare or endangered wildlife habitat to share information about best management practices and provide resources for land conservation, conservation restrictions, and/or easements.	2017, 2022+	PB, CC, CED, AO	DFW, NHESP, MAS
2.14: Evaluate Town-owned properties to determine conservation and recreation value and permanently protect key parcels, including the forested school property on Groton Harvard Road.	2017-2022+	CC, PB, BOS, ASRSD	PRC
2.15: Evaluate and identify monitoring needs for wildlife habitats, especially those of rare species. Strive to create a partnership with school system. Implement monitoring program.	2018+	CC, PB	NHESP, ASRSD
2.16: Adopt a bylaw that limits development on prime farmland and forest land to only working-farm or working-forest based development.	2017-2018	PB	NRWA, MAS
2.17: Permanently protect core habitat, prime farm and forest, and ACEC lands the town already owns.	2018	CC, PB	
2.18: Prioritize land acquisition or conservation/agricultural restrictions to permanently protect key habitat, farm, forest, and ACEC lands. Work with Ayer Gun and Sportsman club to permanently protect their property.	2017-2022+	PB	Land Trusts, DFW
<b>Objective 2.2: Create Conservation Management Plans for All Conservation Properties and Lakes/Ponds</b>			
2.21: Periodically assess uses of conservation and recreation properties and revise if detrimental uses are found.	2017-2020+	CC, PB, PRC	MRPC
2.22: Conduct routine inventory of invasive and noxious plants in town water bodies and priority habitat areas of concern.	2017-2020+	CC, GC	NRWA
2.23: Form a strategic framework to deal with invasive plants. For aquatic invasives refer to the Biological Survey, Assessment, and Management Recommendations for Ayer's Ponds (May 2016, Geosyntec Consultants).	2017-2022+	DPW, CC	NRWA
<b>Objective 2.3: Improve connectivity for natural habitats and open space</b>			
2.31: Protect and help manage land surrounding the Nashua River, especially at the northern corridor connection to Groton State forest and extension of the Oxbow Wildlife Refuge. If appropriate for wildlife, add a trail network.	2017-2018	PB, CC	USFWS, NRWA
2.32: Seek opportunities for connecting conservation land to the rivers, streams, Nashua River Rail Trail, and Utility Corridors, as regional wildlife corridors.	2017-2018	PB, CC	FNRRT

Goal 3: Improve connections to increase and improve access to open space and recreation facilities.			
Action	Timeline	Responsible Party	Resources
Objective 3.1: Expand Ayer's network of town sidewalks, multi-use paths, and trails, increasing its connections with trail networks (including those in neighboring towns).			
3.11: Establish a trail system connecting the central and eastern residential areas of Ayer to the Audubon Property directly north of Long Pond, in Groton.	2017-2018	PB, CC, PRC	MRPC, DFW, MAS
3.12: Explore the possibility of developing an easily accessible trail network connecting Ayer's downtown to the Nashua River, in conjunction with Devens and the Oxbow NWR.	2017-2018	CC, PB, DPW, PRC	USFWS, NRWA
3.13: Conduct a feasibility study for repurposing the abandoned railroad track, that extends northwest from downtown Ayer into a rail trail.	2017-2018	PB, DPW, PRC	MRPC
Action	Timeline	Responsible Party	Resources
3.14: Coordinate with Harvard to develop a trail that links the high-density EJ population in Devenscrest with Harvard's trail network to the south, to increase their OSR access.	2017-2018	PB, DPW, PRC	HAR, MRPC
3.15: Integrate the Complete Streets Framework into the town's upcoming revision of its Master Plan (In progress).	2017-2018	PB, DPW, PRC	DEV, GRO, HAR, SHI
3.16: Develop a land conservation plan specifically focused on creating a network of trails and protected lands connecting Pine Meadow Conservation Area with Groton conservation land across the northern border.	2019-2018	CC, PB, DPW, PRC	GRO
3.19: Connect and build greenways through Ayer with the addition of open space, and parks wherever possible, small or large.	2017-2022+	CC, PB, DPW, PRC	
Objective 3.2: Increase public accessibility to open space and recreation areas.			
3.23: Conduct inventory of town owned and vacant property to determine the best parcels for the establishment of pocket parks and community gardens in areas of town with the highest population density and/or proximity to senior and environmental justice population.	2017-2018	PB, PRC	
3.23: Evaluate opportunities to increase accessibility of existing open space and recreation facilities based on ADA inventory of properties.	2017-2018	PB, CC, PRC	
Objective 3.3: Promote walkability, bicycling, active transportation, and transit use to reduce green house gas emissions and improve health.			
3.31: Plan for and support the development of a bike lane network along existing town roads with the Complete Streets Prioritization Plan process.	Ongoing	PB, DPW, PRC	
3.32: Increase the use mass transit by improving public access to the train station, while encouraging the revitalization of the downtown.	Ongoing	PB, DPW	MRPC

Goal 4: Increase and improve Ayer's opportunities for recreation to meet the community's changing needs.			
Action	Timeline	Responsible Party	Resources
<b>Objective 4.1: Increase Ayer's protected lands and recreational opportunities.</b>			
4.11: Prioritize the purchase or protection of vacant lands between the middle/high schools and the Nashua River Rail Trail in order to provide OSR access to Ayer's Environmental Justice Population, and increase ecological connectivity and overall town walkability.	2017-2018	PB, DPW, PRC	FNRRT
4.12: Prioritize protection and/or trail easements to connect trails, open space, commercial and schools/civic institution destinations, and community gardens, especially where land is vacant and in proximity to Environmental Justice populations	2017-2018	PB, DPW, PRC	
4.13: Prioritize the protection of lands between the Nashua River Rail Trail and the Ayer State Game Lands, to create a greenway connecting Ayer's OSR areas with Groton Town Forest.	2017-2018	PB, DPW, PRC	FNRRT
4.14: Develop pocket parks throughout Ayer's most densely populated neighborhoods in order increased open space accessibility for the town's Environmental Justice Populations.	2017-2018	PB, DPW, PRC	
4.15: Conduct a feasibility study for building a youth-oriented community center to provide Ayer with year-round, indoor recreational opportunities.	Ongoing	PB, DPW, PRC	
<b>Objective 4.2: Expand Ayer's local agricultural community, preserving landscape character while providing the community with fresh food and educational</b>			
4.21: Establish community gardens within ¼ mile from Ayer's high-density Environmental Justice Populations, along Pearl Street and within Devenscrest, and in other densely EJ populated areas.	2017-2018	PB, PRC	MDAR, NCLT, GCT, LCT
4.22: Coordinate with Nashoba Medical Center to help establish an independently operated and sustainably managed community farm or community gardens in its open fields.	2017-2018	PB, PRC	NESFP, NVMC
4.23: Inventory vacant and available parcels to determine their suitability for establishing additional community gardens throughout Ayer.	2017-2018	PB, PRC	NESFP
4.24: Promote local agriculture by re-establishing a farmers market, possibly a weekday evening farmers market near Ayer's commuter rail station or proposed parking facility/ the Rail Trail.	2018	ACC, CED	MDAR, NVCC, DBA
Action	Timeline	Responsible Party	Resources
<b>Objective 4.3: Create public access to Ayer's water resources for swimming, boating, and fishing.</b>			
4.31: Protect available vacant land west of Long Pond and provide access.	2017-2018	PB, CC, PRC	
4.32: Identify potential opportunities to gain easements or town ownership to secure access to Flanagan and Sandy Ponds for small boat craft	2017-2018	PB, CC, PRC	PDC
4.33: Conduct a feasibility study on creating a public boat ramp for Flanagan and Sandy Ponds	2017-2018	PB, CC, PRC	PDC
<b>4.5: Make additional improvements to existing recreational facilities and programs.</b>			
4.51: Remediate Kiddie Junction Playground, replacing existing wooden structure with new equipment.	2019	PB, BOS, PRC, CPC	
4.52: ADA compliant bathhouse is constructed at Sandy Pond Beach, along with additional play structures and an expanded dock system.	2020	PB, PRC, CPC	
4.53: Resurfacing of existing Basketball courts at Pirone Park	2018	PRC	
4.54: Construction of perimeter and networking paths around Pirone Park	2017-2019	PB, BOS, PRC, CPC	

Goal 5: Increase Engagement, capacity, and collaboration to meet goals of open space and recreation protection and management.			
Action	Timeline	Responsible Party	Resources
<b>Objective 5.1: Promote community awareness of water resources, natural resources, open space and recreation areas and values by increasing open space and recreation programs and</b>			
5.11: Work with local schools and other existing community organizations (Boy Scouts, Girls Scouts, 4-H, etc.) to integrate Ayer's landscape, ecology, and history into curriculum.	2017-2018	PB, PRC	CED, NRWA
5.12: Offer public education programs about wetlands and water resources, their vulnerability and how to best protect them.	2017-2022+	PB, CC, ASRSD	NRWA
5.13: Conduct routine family-oriented, nature-themed walks in Ayer conservation lands for families and adults. Solicit environmental educators and get grants for funding.	2017	PB, PRC, ACC	NCLT, AMC, MAS, TTOR, CED
5.14: Work with Ayer Public Access Channel to develop and broadcast programs highlighting natural resources and protection values.	2017-2018	APAC, CC, GC	NRWA, GCT, NCLT, DFW
5.15: Educate the public to reduce and eliminate the use of invasive species in landscaping.	2017	PB, CC, PRC	NRWA
5.16: Increase social media presence by organizing Facebook and Twitter accounts to share conservation, agriculture, invasive species concerns, and recreation information, raise awareness, announce events, and help manage fundraising campaigns	Ongoing		
5.17: Coordinate programs to increase public awareness of invasive species threats to identify new introductions early and allow for strategic response.	2018-2020	PB, CC, PRC	NRWA
5.18: Post signs that identify river and stream crossings	2017	PB, CC, PRC	NRWA
5.19: Develop interpretive trails for conservation lands. Solicit environmental educators and get grants for funding.	2018-2020	GC	
<b>Objective 5.2: Increase volunteer participation in natural resource planning and management</b>			
5.21: Revive a more formal Ayer Greenway Committee and form an Open Space Working Group (OSWG) to implement open space goals	2017-2018	CC, GC	
5.22: Sponsor a series of adult oriented environmental education workshops focused on documenting and conserving Ayer's ecological integrity.	Ongoing	CC, GC, ACC	CED, NCLT
5.23: Coordinate outreach to the educational community to increase volunteer participation in open space and recreation maintenance and improvement projects.	Ongoing	CC, GC, ASRSD	CED
5.24: Consider using <u>Senior Worker Program</u> to conduct open space and recreation activities	Ongoing	BOS, CED, PRD	
5.25: Solicit support from volunteers who may coordinate private fund raising campaign and/or grant writing	Ongoing	BOS, CED, CC, PRD	CED, NCLT

Objective 5.3: Raise awareness and coordinate community efforts to support surface water management and water quality improvement efforts			
Action	Timeline	Responsible Party	Resources
5.31: Encourage and support the formation of lake/pond associations comprised of residents who live adjacent to the water body and "friends" who use and want to protect these resources	Ongoing	PB, PRC, DPW	PDC
5.32: Strengthen the working relationship with the Nashua River Watershed Association to assist in water protection outreach and monitoring.	Ongoing	CC, PB	NRWA
5.33: Publish education materials with the most recent pond water quality information and distribute in water bills for widespread notice. Add information on water quality of surface water bodies (for example summary of findings of Lake and Pond Study).	Ongoing	DPW, CC	
5.34: Support the Nashua, Squannacook, Nissitissit Rivers Wild and Scenic Designation and future Management Plan	Ongoing	PB, CC	NRWA, NPS
5.35: Offer public education workshops about alternatives to lawn/garden chemicals and fertilizers, and gardening.	Ongoing	PB, CC, DPW	NRWA, MRPC
Objective 5.4: Identify, plan for, and apply to funding opportunities and develop fundraising plans to meet open space and recreation goals			
5.41: Land Trust partner outreach. Coordinate with North County Land Trust and those of adjacent towns.	Ongoing	PB, PRC, CC	NCLT, GCT, LCT
5.42: Strengthen relationships with the Dept. of Fish and Game, Dept. of Conservation and Recreation, Natural Heritage Endangered Species Program to help create environmentally responsible strategies for permanent protection of rare wildlife habitats.	Ongoing	PB, PRC, CC	
5.43: Utilize funding opportunities ( <u>state examples</u> ) for implementing priority stormwater treatment projects	Ongoing	DPW	
5.44: Utilize Commonwealth funding opportunities and partner with Mass Wildlife, DCR, Mass Audubon, and The Trustees to acquire open space.	Ongoing	PB, PRC, CC	
5.45: Revisit Chapter 61 Right of First Refusal Policy to be able to more rapidly react to acquisition opportunities	Ongoing	PB, PRC, BOS	
5.46: Continue participation in MassDOT's Complete Streets Program and routinely revise prioritization plan and continue to advance improvements.	Ongoing	DPW, PB	MRPC, MDOT
5.47: Increase participation in MassDOT's Safe Routes to School Program	Ongoing	DPW, ASRSD, PB	MRPC, MDOT
5.48: Continue to fund and support full time staff in the positions of Town Planner and Conservation Administrator with priorities of implementing the goals herein.	Ongoing	BOS, CC, PB	MRPC, MDOT

# 10. Community Input

## Contributing Community Members

Amy McCoy – Community Meeting Participant  
Beth Suedmeyer - Co-Chair Ayer OSRP Committee  
Jason Mayo - Co-Chair Ayer OSRP Committee  
Chief William Murray - Police Chief:  
Cindy Knox - Town I.T. Manager:  
David Maher –Economic Development  
Eric Hebert – Department of Parks and Recreation  
Ruth Rhonemus – Historical Commission  
Faith Salter – Community Meeting Participant  
Gabe Vellante - Building Commissioner:  
George Bacon - Historical Commission  
Jason Stanton - Montachusett Regional Planning  
Jeff Thomas - Parks and Recreation Director  
Janet Providakes - CPC Chair  
Jeremy Callahan - Planning Board Chair  
Jessica Gugino - Conservation Commission  
Julie Corenzi – Community Meeting Participant  
Keziah Salter – Community Meeting Participant  
Jennifer Gell – Community Meeting Participant  
Laurie Nehring - PACE  
Linda Garant – Community Meeting Participant  
Robert Pontbriand - Town Administrator  
Ruth Maxant-Schulz – Meeting attendant  
Susan Copeland - Town Clerk and Tax Collector:  
Al Futterman - Nashua River Watershed Association  
Carolyn McCreary - Green Communities Chair  
Tom Hogan - Ayer Assessor

## Organizational Support

Ayer Conservation Commission  
Ayer OSR Committee  
Ayer Office of Economic Development  
Ayer Greenways Committee  
Ayer Parks and Recreation Department  
Ayer Planning Board  
Ayer DPW  
Ayer Historical Commission  
Ayer Water Department  
Community Opportunities Group, Inc.  
ENSR International  
Nashua River Watershed Association  
MassGIS  
Montachusett Regional Planning  
People of Ayer Concerned about the Environment  
(PACE)  
University of Massachusetts CAPS Program  
Ayer Town Administrator's Office

# II: Works Cited

- "1995 to 2020 Vision for the Nashua River Watershed". The Nashua River Watershed Association. 1995, Print.
- "2013 Data Release – American Community Survey." census.gov. United States  
Census Bureau, n.d. Web. 24 Mar. 2015.
- Abel, David. "Development Encroaching on Mass. Lands at Fast pace." bostonglobe.com. The Boston Globe, 30 June 2014. Web. 24 Mar. 2015.
- "Ayer Comprehensive Plan Update 2005" Community Opportunities Group, Inc. Ayer, Massachusetts, 2005.
- "Ayer Reconnaissance Report." Freedom's Way Heritage Association. Massachusetts  
Department of Conservation and Recreation, 2006. Print.
- Buchanan, David, and Rebecca Way. "Devens Regional Trails Initiative." Devens, MA: Devens Enterprise Commission, 2000. Print.
- "Census Data 1900-2010." Census.gov. United States Census Bureau, Web. 24 Mar. 2015.
- "Communities Connected by Water: Looking beyond Devens: Planning for the Future in the Nashua River" Area.  
Westford, MA: ENSR International, 2001. Print.
- "Community Preservation Plan 2010-2014" JM Goldson Community Preservation and Planning. Ayer, Massachusetts, 2010 Print
- "Devens Reuse Plan", prepared by Vanasse Hangen Brustlin, Inc., Nov.14, 1994.
- "Fort Devens Site: Devens, Massachusetts" Agency for Toxic Substances and Disease Registry. Boston, Massachusetts, 2014, Print.
- "Montachusett Regional Strategic Framework Plan." Montachusett Regional Planning Commission. Massachusetts Executive Office of Housing and Development, 2011. Print.
- "Natural Community and Wildlife Habitat Inventory of Snake Hill in Ayer, MA." MA Audubon Society. Nashua River Watershed Association, 2002. Print
- "NRWA Historical Highlights." Nashua River Watershed. The Nashua River Watershed Association, Web. 24 March 2015.
- "Oxbow National Wildlife Refuge." fws.gov. U.S. Fish and Wildlife Service, 19 Dec. 2014. Web. 24 Mar. 2015. "Paleolimnological Assessment of Grove and Plow Shop Ponds, Ayer, Massachusetts, USA." Journal of Environmental Monitoring, 6 May 2004. Web. 24 March 2009.
- "Squannassit." Mass.gov. MA Executive Office of Energy and Environmental Affairs, n.d. Web. 24 Mar. 2015.
- "Town of Ayer Open Space and Recreation Plan Update 1997-2004." Community Opporntnities Group, Inc.
- "Town of Shirley Open Space and Recreation Plan Draft." The Conway School of Landscape Design. Print. 2011
- "Water Supply Distribution System Study: Town of Ayer, Massachusetts." Tata and Howard, Inc. Ayer, Massachusetts, Reference: <https://www3.epa.gov/region1/superfund/sites/devens/246620.pdf>

# Appendix A: Map Sources



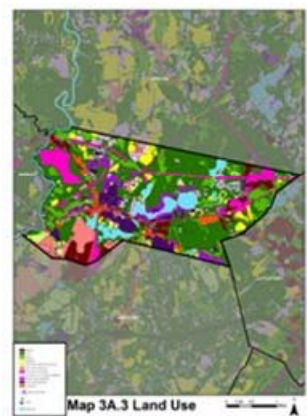
## Map 3A.1 Ayer Context

MassGIS 1:5,000 Shaded Relief, MassDOT Roads, MassDEP Integrated List of Waters, MassGIS Data Community Boundaries, MassGIS Data Major Ponds and Major Streams



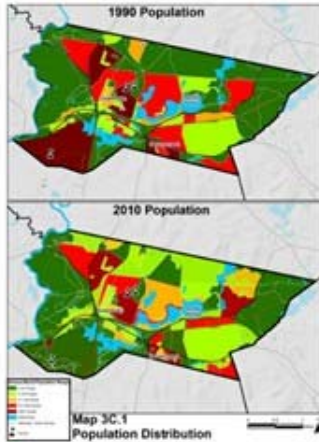
## Map 3A.2 Regional Context

MassGIS 1:5,000 Shaded Relief, MassGIS Trains, MassDOT Roads, MassGIS Towns, MassGIS Protected and Recreational Open Space, MassGIS Adjacent States' Town Boundaries, MassGIS Data Community Boundaries, MassGIS Data Major Ponds and Major Streams



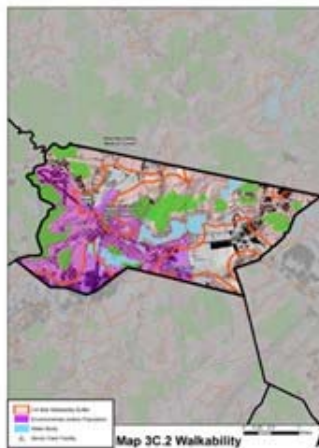
## Map 3A.3 Land Use

MassGIS 1:5,000 Shaded Relief, MassGIS 2005 Land Use, MassGIS Major Ponds and Major Streams, , MassGIS Long Term Care Residences, MassGIS Schools, MassGIS Community Boundaries, MassDOT



### Map 3C.1 Population Distribution

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS 2005 Land Use, MassGIS Major Ponds and Major Streams, MassGIS Schools, MassGIS Community Boundaries, MassDOT Roads, MassGIS Trains, MassGIS 1990 Census, MassGIS 2010 Census



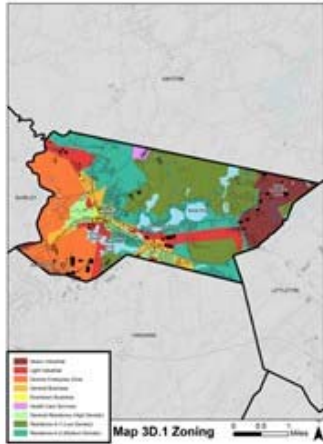
### Map 3C.2 Walkability

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Impervious Surface, MassGIS Building Structures, MassGIS Community Boundaries, MassDOT Roads, MassGIS Major Ponds and Major Streams, MassGIS 2010 Environmental Justice Populations, MassGIS Protected and Recreational Open Space, MassGIS Long Term Care Residences



### Map 3C.3 Regional Environmental Context

MassGIS 1:5,000 Shaded Relief, MassGIS Community Boundaries, MassDOT Roads, MassGIS Major Ponds and Major Streams, MassGIS 2010 Environmental Justice Populations, MassGIS Protected and Recreational Open Space



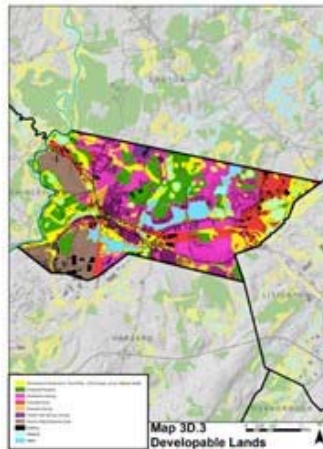
### Map 3D.1 Zoning

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Building Structures, MassGIS Community Boundaries, MassDOT Roads, MassGIS Major Ponds and Major Streams, MassDEP Integrated List of Waters, MassGIS Level 3 Assessors' Parcel Data



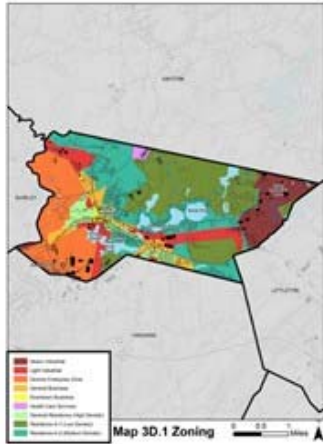
### Map 3D.2 Existing Infrastructure

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Impervious Surface, MassGIS Building Structures, MassGIS Community Boundaries, MassGIS Major Ponds and Major Streams



### Map 3D.3 Developable Lands

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Level 3 Assessors' Parcel Data, MassGIS Building Structures, MassGIS Community Boundaries, MassGIS Major Ponds and Major Streams, MassDEP Integrated List of Waters, FEMA National Flood Hazard Layer, NRCS Soil Layer



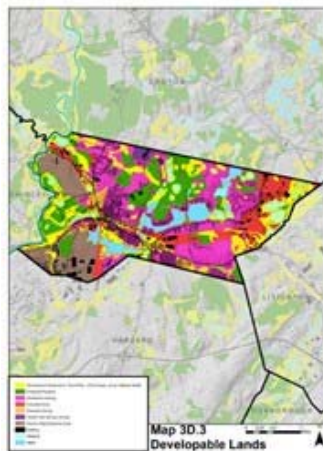
### Map 3D.1 Zoning

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Building Structures, MassGIS Community Boundaries, MassDOT Roads, MassGIS Major Ponds and Major Streams, MassDEP Integrated List of Waters, MassGIS Level 3 Assessors' Parcel Data



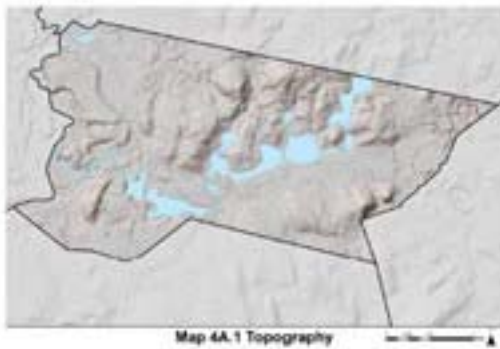
### Map 3D.2 Existing Infrastructure

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Impervious Surface, MassGIS Building Structures, MassGIS Community Boundaries, MassGIS Major Ponds and Major Streams



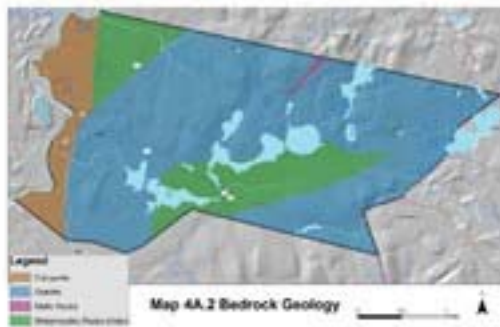
### Map 3D.3 Developable Lands

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000 Elevation Contours, MassGIS Level 3 Assessors' Parcel Data, MassGIS Building Structures, MassGIS Community Boundaries, MassGIS Major Ponds and Major Streams, MassDEP Integrated List of Waters, FEMA National Flood Hazard Layer, NRCS Soil Layer



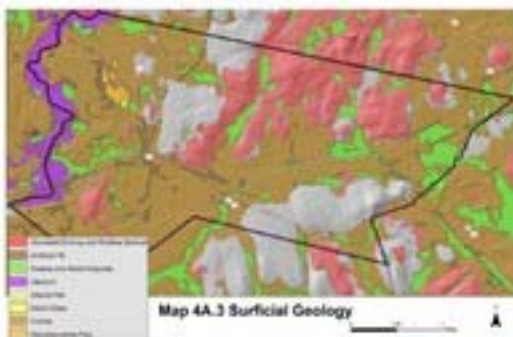
#### Map 4A.1 Topography

MassGIS 1:5,000 Shaded Relief, MassGIS 1:5,000, Elevation Contours, MassGIS Hydrologic Connections: Linear Features, Water Bodies, MassGIS Towns Poly



#### Map 4A.2 Bedrock Geology

MassGIS 1:5,000 Shaded Relief, Mass GIS Towns Poly, MassGIS Hydrologic Connections: Linear Features, Water Bodies, MassGIS Bedrock Lithology



#### Map 4A.3 Surficial Geology

MassGIS 1:5,000 Shaded Relief, Mass GIS Towns Poly, MassGIS Hydrologic Connections: Linear Features, Water Bodies, MassGIS Surficial Geology



#### Map 4A.4 Agricultural Soils

MassGIS 1:5,000 Shaded Relief, Mass GIS Towns Poly, MassGIS Soils, Farmland Type, Worcester County Soils, Middlesex County Soils, Mass GIS Wetland Types



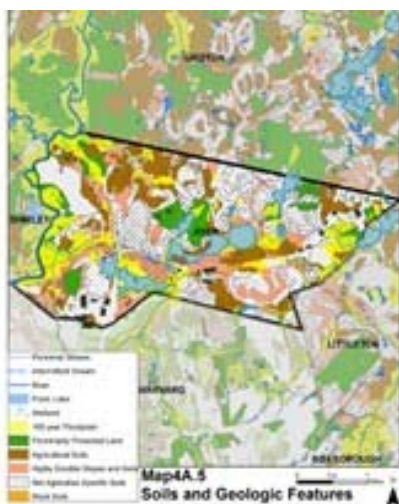
### Map 4C.1 Regional Water Connections

MassGIS 1:5,000 Shaded Relief, 1:100,000 USGS  
Hydrography: Rivers and Streams, Lakes and Ponds,  
Waterbodies, Aquifers, MassGIS Towns Poly, MassGIS  
Subbasins Poly



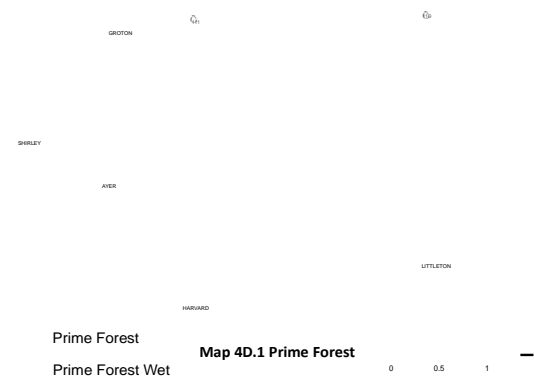
### Map 4C.2 Water Resources

MassGIS 1:5,000 Shaded Relief, 1:25,000 USGS  
Hydrography: Rivers and Streams, Lakes and Ponds,  
waterbodies, MassGIS Towns Poly, MassGIS Aquifers,  
MassGIS DEP Wetlands 1:12,000, MassGIS  
Certified/Potential Vernal Pools



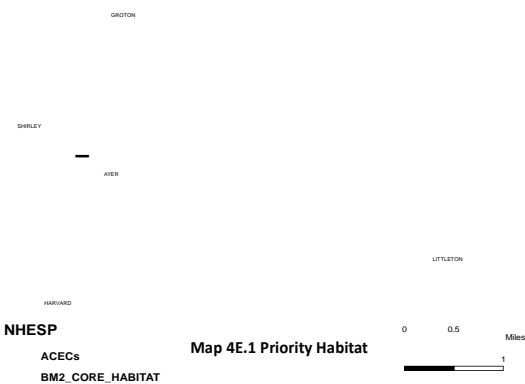
### Map 4A.5 Soils and Geologic Features

MassGIS 1:5,000 Shaded Relief, 1:25,000 USGS  
Hydrography: Rivers and Streams, Lakes and Ponds,  
waterbodies, MassGIS Towns Poly, MassGIS Structures  
Poly\_19, MassGIS Worcester County, Middlesex  
County Soils, MassGIS FEMA National Flood Hazard



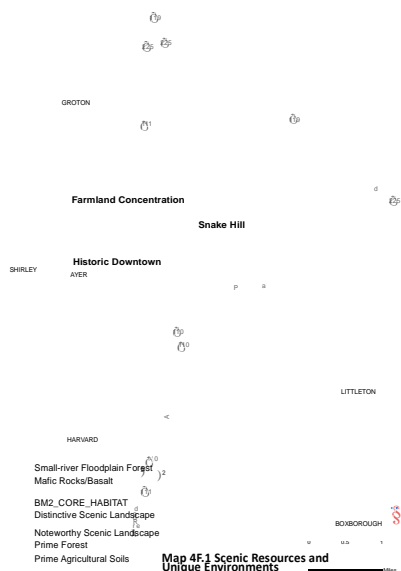
### Map 4D.1 Prime Forest

MassGIS 1:5,000 Shaded Relief, MassGIS Towns Poly, MassGIS Current Infrastructure, MassDOT Major Roads, MassGIS Hydrography: Water Bodies, MassGIS Prime Forest Land (Northeast)



### Map 4E.1 Priority Habitat

MassGIS 1:5,000 Shaded Relief, MassGIS Towns Poly, MassGIS Current Infrastructure, MassDOT Major Roads, MassGIS Hydrography: Water Bodies, Certified/Potential Vernal Pools, MassGIS ACEC'S, MassGIS BioMap 2 Core Habitat

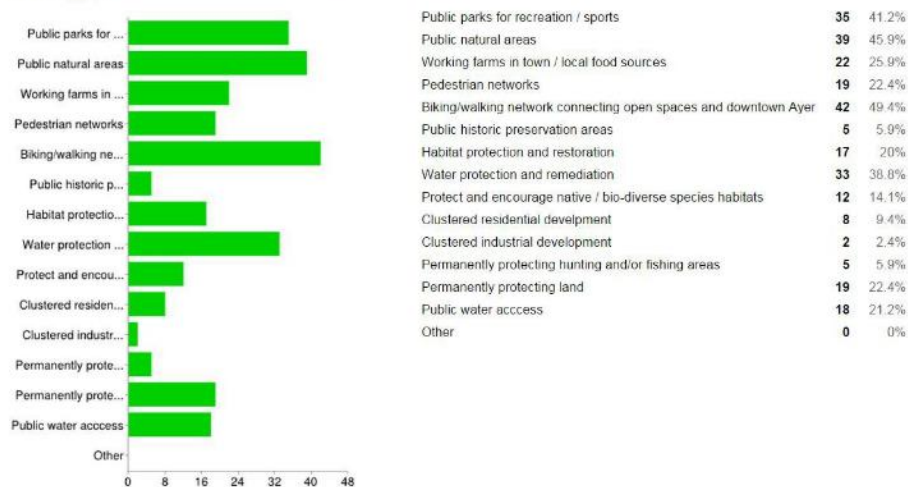


### Map 4F.1 Scenic Resources and Unique Environments

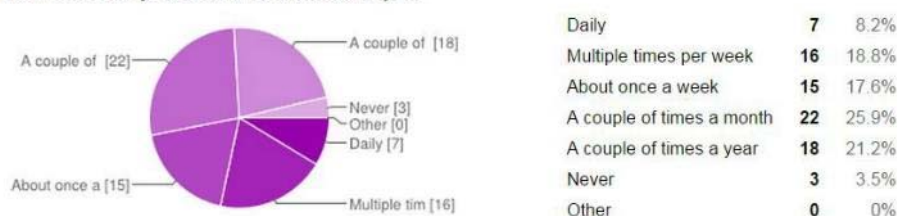
MassGIS 1:5,000 Shaded Relief, MassGIS Towns Poly, MassGIS Current Infrastructure, MassDOT Major Roads, MassGIS Hydrography: Water Bodies, MassGIS NHESP Natural Communities, MassGIS Bedrock Lithology (Group A), MassGIS BioMap 2 Core Habitat, MassGIS Scenic Landscape Inventory, MassGIS Prime Forest Inventory, MassGIS Worcester/Middlesex County Soil

# Appendix B: Online Community Questionnaire Results

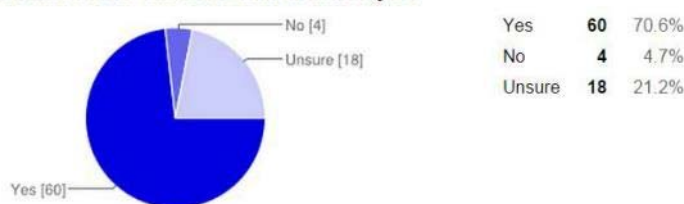
Please Identify the three most important open space and recreation frameworks/strategies you would like Ayer to focus on. Mark all that apply.



How often do you walk in downtown Ayer?



Do you want it to be easier to walk around Ayer?



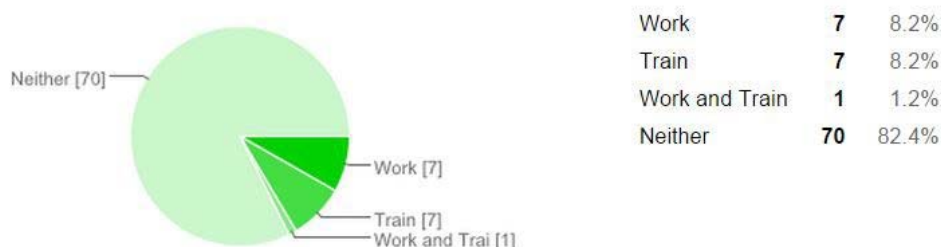
**What outdoor recreational activities do you enjoy doing in Ayer? Identify as many as appropriate.**



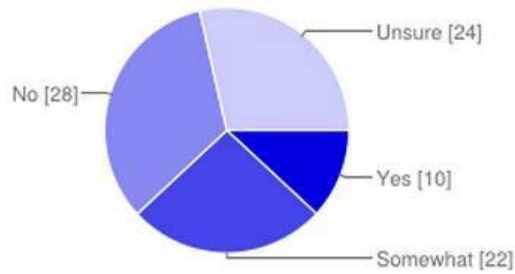
**How often do you walk in Ayer's conservation lands?**



**Do you ride a bike to work and/or the train?**

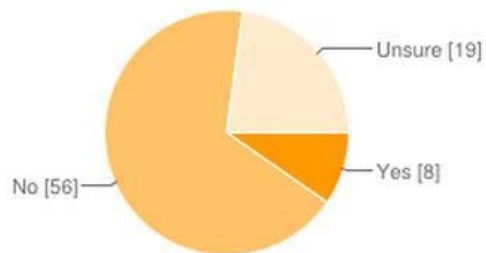


**Are you satisfied with the places/opportunities for youth to recreate in Ayer?**



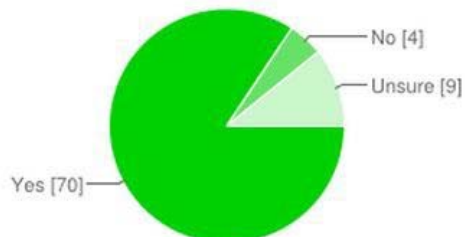
Yes	10	11.8%
Somewhat	22	25.9%
No	28	32.9%
Unsure	24	28.2%

**Do you think that there is enough open space in Ayer?**



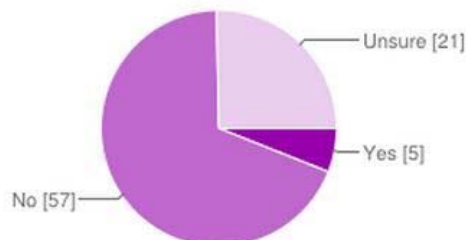
Yes	8	9.4%
No	56	65.9%
Unsure	19	22.4%

**Do you think Ayer should permanently protect more land?**



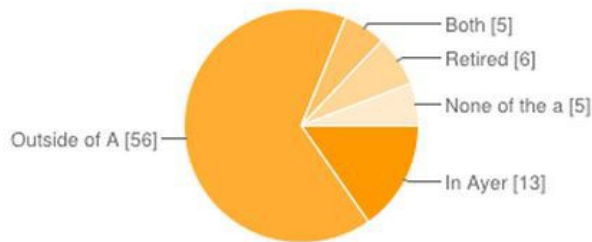
Yes	70	82.4%
No	4	4.7%
Unsure	9	10.6%

**Do you think that there is enough recreation space in Ayer?**



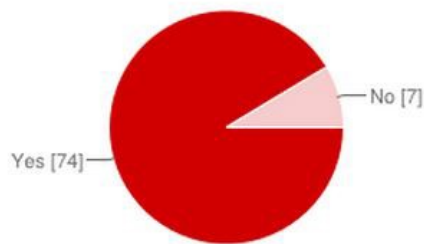
Yes	5	5.9%
No	57	67.1%
Unsure	21	24.7%

### Where do you work?



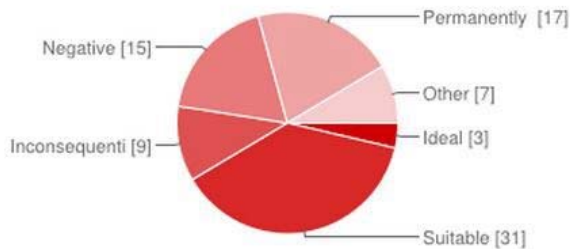
In Ayer	13	15.3%
Outside of Ayer	56	65.9%
Both	5	5.9%
Retired	6	7.1%
None of the above	5	5.9%

### Would you like to be able to walk to downtown Ayer?



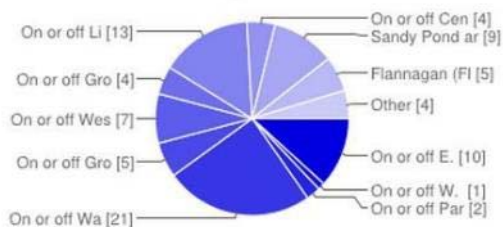
Yes	74	87.1%
No	7	8.2%

### In your opinion, Ayer's current residential development trends are?



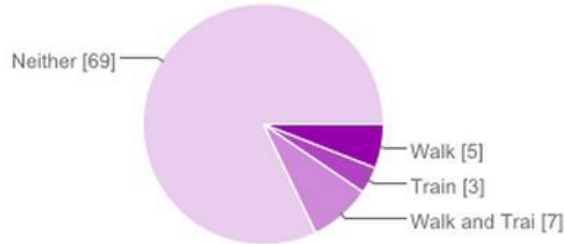
Ideal	3	3.5%
Suitable	31	36.5%
Inconsequential	9	10.6%
Negative	15	17.6%
Permanently harmful	17	20%
Other	7	8.2%

### What area of town do you live in?



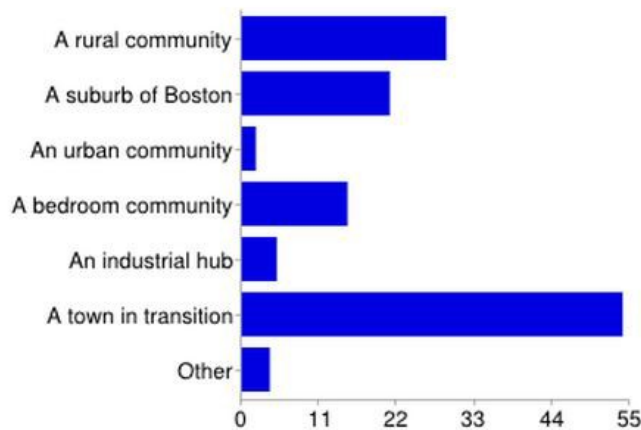
On or off E. Main Street	10	11.8%
On or off W. Main Street	1	1.2%
On or off Park Street	2	2.4%
On or off Washington Street	21	24.7%
On or off Groton School Road	5	5.9%
On or off Westford Road	7	8.2%
On or off Groton Harvard Road	4	4.7%
On or off Littleton Road	13	15.3%
On or off Central Avenue or Sandy Pond Road	4	4.7%
Sandy Pond area	9	10.6%
Flannagan (Fletcher) Pond Area	5	5.9%
Other	4	4.7%

### Do you walk and/or take the train to work?



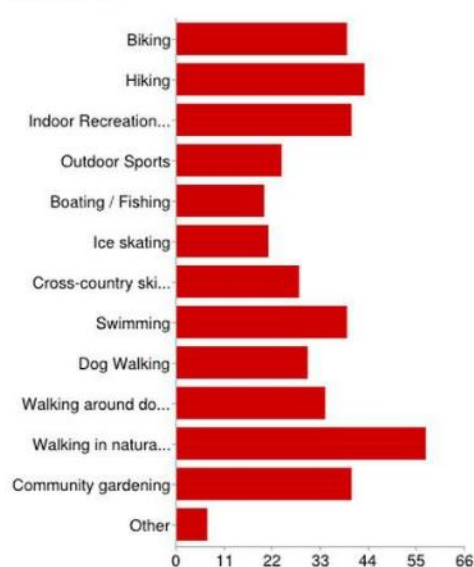
Walk	5	5.9%
Train	3	3.5%
Walk and Train	7	8.2%
Neither	69	81.2%

### Do you consider Ayer to be? Identify as many as appropriate.



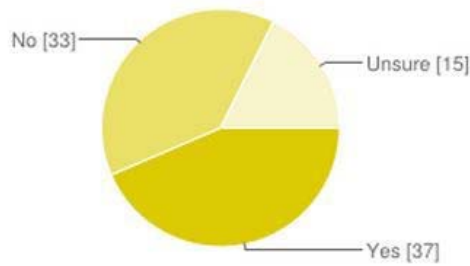
A rural community	29	34.1%
A suburb of Boston	21	24.7%
An urban community	2	2.4%
A bedroom community	15	17.6%
An industrial hub	5	5.9%
A town in transition	54	63.5%
Other	4	4.7%

### What recreation activities and/or outdoor/indoor opportunities do you want to see/see more of in Ayer? Identify as many as appropriate.



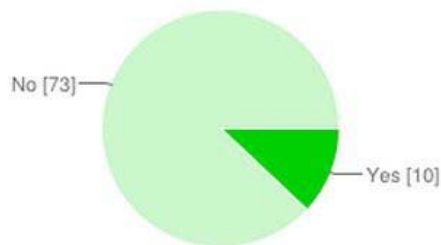
Biking	39	45.9%
Hiking	43	50.6%
Indoor Recreation (gym, swimming, indoor sports)	40	47.1%
Outdoor Sports	24	28.2%
Boating / Fishing	20	23.5%
Ice skating	21	24.7%
Cross-country skiing / snowshoeing	28	32.9%
Swimming	39	45.9%
Dog Walking	30	35.3%
Walking around downtown	34	40%
Walking in natural areas	57	67.1%
Community gardening	40	47.1%
Other	7	8.2%

### Would you take the train more often if it was easier to get to?



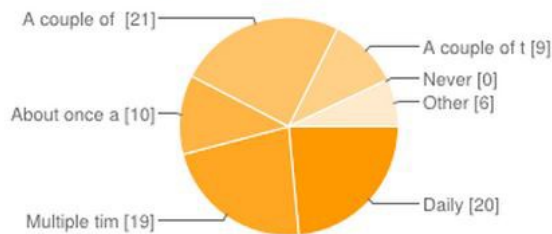
Yes	37	43.5%
No	33	38.8%
Unsure	15	17.6%

### Do you take the train to work?



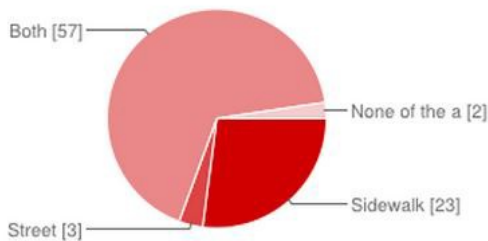
Yes	10	11.8%
No	73	85.9%

### How often do you walk on the town's sidewalks?



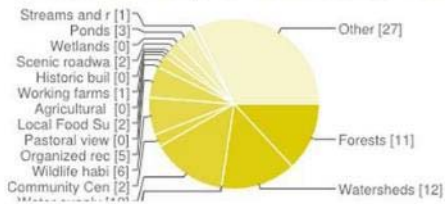
Daily	20	23.5%
Multiple times per week	19	22.4%
About once a week	10	11.8%
A couple of times a month	21	24.7%
A couple of times a year	9	10.6%
Never	0	0%
Other	6	7.1%

### Do you walk on sidewalks, in the street, or both?



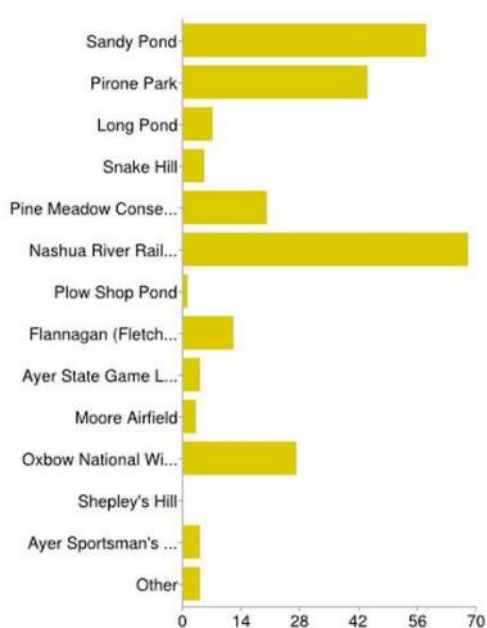
Sidewalk	23	27.1%
Street	3	3.5%
Both	57	67.1%
None of the above	2	2.4%

From the list below please identify the resources in Ayer you consider to be the most critical to protect. Mark all that apply.



Forests	11	12.9%
Watersheds	12	14.1%
Open Fields	0	0%
Tourist attractions	0	0%
Water supply	12	14.1%
Community Centers	2	2.4%
Wildlife habitat	6	7.1%
Organized recreation programs	5	5.9%
Pastoral views	0	0%
Local Food Supply	2	2.4%
Agricultural Soils	0	0%
Working farms	1	1.2%
Historic buildings and places	0	0%
Scenic roadways	2	2.4%
Wetlands	0	0%
Ponds	3	3.5%
Streams and rivers	1	1.2%
Other	27	31.8%

Please identify the three most important treasures, parks, trails and/or destinations in Ayer.



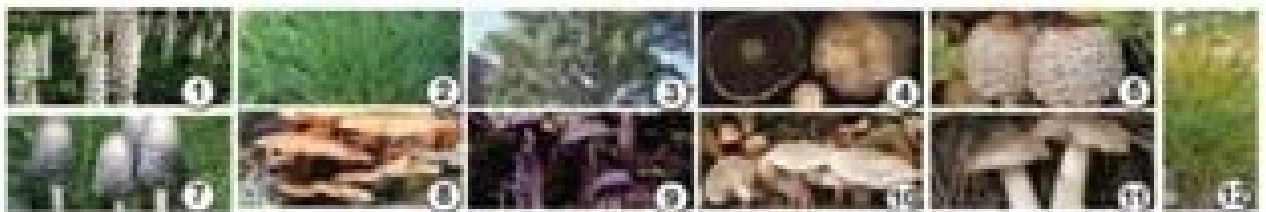
Sandy Pond	58	68.2%
Pirone Park	44	51.8%
Long Pond	7	8.2%
Snake Hill	5	5.9%
Pine Meadow Conservation Area	20	23.5%
Nashua River Rail Trail	68	80%
Plow Shop Pond	1	1.2%
Flannagan (Fletcher) Pond	12	14.1%
Ayer State Game Lands	4	4.7%
Moore Airfield	3	3.5%
Oxbow National Wildlife Refuge (along the Nashua River)	27	31.8%
Shepley's Hill	0	0%
Ayer Sportsman's Club	4	4.7%
Other	4	4.7%



# Appendix C: Bioremediation and Sustainability

## Heavy Metal Soil Remediation

Case Study Example:  
Orchard Arboretum Conservation Area Plan, Fall 2015  
Designer: Jennie Bergeron



Fungi with Trees for Arsenic Remediation							
Fungus #	Common Name (if any)	Scientific Name	Common Name	Notes	Location	Notes	Notes
1	Common Name (if any)	Scientific Name	Common Name				Notes
2	Common Name (if any)	Scientific Name	Common Name				Notes
3	Common Name (if any)	Scientific Name	Common Name				Notes
4	Common Name (if any)	Scientific Name	Common Name				Notes
5	Common Name (if any)	Scientific Name	Common Name				Notes
6	Common Name (if any)	Scientific Name	Common Name				Notes
7	Common Name (if any)	Scientific Name	Common Name				Notes
8	Common Name (if any)	Scientific Name	Common Name				Notes
9	Common Name (if any)	Scientific Name	Common Name				Notes
10	Common Name (if any)	Scientific Name	Common Name				Notes
11	Common Name (if any)	Scientific Name	Common Name				Notes
12	Common Name (if any)	Scientific Name	Common Name				Notes
Mushrooms for Arsenic Remediation							
Mushroom #	Common Name (if any)	Scientific Name	Common Name	Notes	Location	Notes	Notes
1	Common Name (if any)	Scientific Name	Common Name				Notes
2	Common Name (if any)	Scientific Name	Common Name				Notes
3	Common Name (if any)	Scientific Name	Common Name				Notes
4	Common Name (if any)	Scientific Name	Common Name				Notes
5	Common Name (if any)	Scientific Name	Common Name				Notes
6	Common Name (if any)	Scientific Name	Common Name				Notes
7	Common Name (if any)	Scientific Name	Common Name				Notes
8	Common Name (if any)	Scientific Name	Common Name				Notes
9	Common Name (if any)	Scientific Name	Common Name				Notes
10	Common Name (if any)	Scientific Name	Common Name				Notes
11	Common Name (if any)	Scientific Name	Common Name				Notes
12	Common Name (if any)	Scientific Name	Common Name				Notes