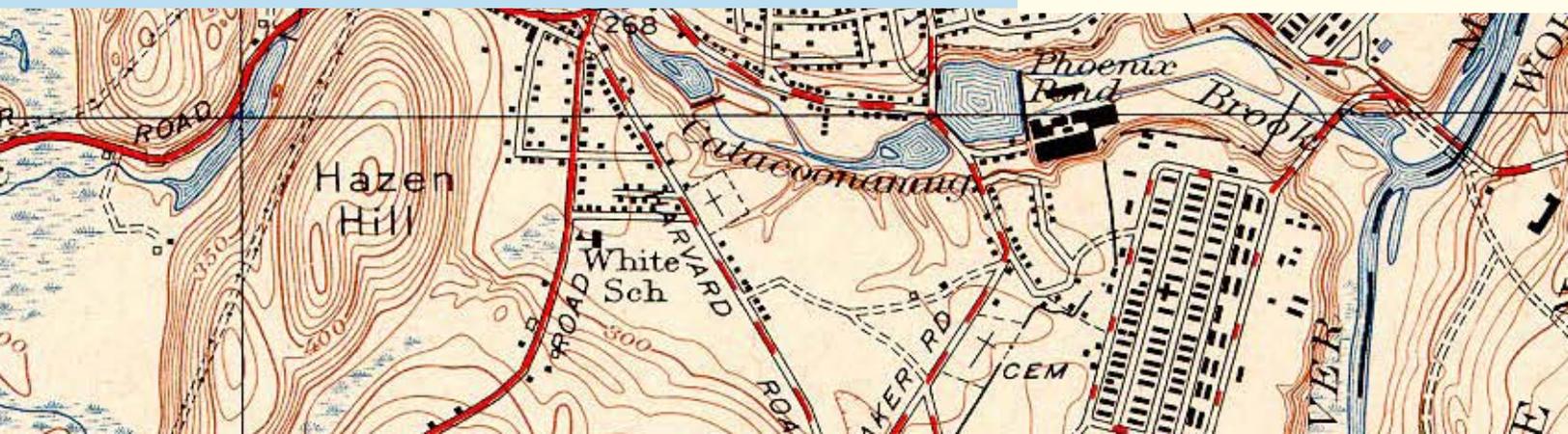




**Town of Shirley
Open Space and Recreation Plan**

**September
2014 Update**



Town of Shirley
Open Space and Recreation Plan
September 2014 Update
DRAFT FOR PUBLIC COMMENT



Longley Acres, Shirley, Massachusetts

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SECTION 1



PLAN SUMMARY



1. PLAN SUMMARY

community of Shirley in its land use decisions through 2021 and beyond.

The residents of Shirley are keenly aware of the special nature of their town. Scenic rivers, forested hillsides, wild wetlands, verdant meadows, and a variety of trail networks together characterize much of what people cherish about their town. While many of these special places have gained permanent protection in recent decades, numerous recreational and other open spaces throughout the town are still threatened with the possibility of development.

In addition to open space, Shirley has developed a number of active recreation sites, and has been recognized as a “playful city” since 2007 by Playful Cities USA, a national recognition program honoring cities and towns determined to prioritize play. Almost 6,000 residents currently call Shirley home along with 1,500 state prison inmates. As Shirley’s population continues to grow over the coming decades, new residents will seek to enjoy the many natural and recreational amenities afforded by the town.

This document is Shirley’s first complete update to its Open Space and Recreation Plan (OSRP) since 1996. Cognizant of the need to conserve open space and other natural resources while directing development in a positive direction, Shirley’s citizens have crafted the following goals:

1. Improve access, diversity and management of recreation facilities.
2. Protect and preserve natural and community resources.
3. Educate and engage the community by building a strong constituency of open space advocates.

The goals, objectives and actions presented in this OSRP update will help guide the

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SECTION 2



INTRODUCTION



*"I like Hunting Hill. There are eighty acres in Shirley, Townsend and Lunenburg."
-Resident*

2. INTRODUCTION

This Open Space and Recreation Plan (OSRP) is a 2014 revision and update of the 1996 OSRP, prepared by the Shirley Conservation Commission with the help of graduate students from the Conway School of Landscape Design.

2A. Statement of Purpose

Shirley has long recognized the importance of preserving and enhancing its open space. Beginning in 1971 with “A Conservation Plan for the Town of Shirley,” a total of four conservation planning documents have been created by the town. In 1975, the “Conservation and Open Space Plan for Shirley” updated the 1971 document which, in turn, was updated in 1988 as an Open Space and Recreation Plan. The last OSRP update occurred more than 14 years ago, in 1996. Since that time, Shirley’s population has grown, new homes have been built, and additional lands have been conserved. This 2014 update will help to reflect the changes that have occurred in Shirley’s landscape and community resources since the 1996 OSRP update.

The town of Shirley is changing. If growth trends in Shirley continue, Shirley’s population will almost double by the year 2030. Many of these new residents will be seeking to enjoy outdoor and recreational spaces in and around Shirley. As a working document that is updated every five years, the OSRP is a crucial part of Shirley’s enduring planning efforts.

The purpose of the OSRP is to:

- Engage the citizens of Shirley in the decision-making process.
- Plan for growth and development in a manner that recognizes Shirley’s natural and cultural heritage and its

unique community character, while providing adequate opportunities for recreation for adults and children.

- Meet the requirements of the Massachusetts Executive Office of Energy and Environmental Affairs for an Open Space and Recreation Plan, thereby making Shirley eligible to apply for state and federal funding for land acquisition.
- Serve as an important resource document, providing a centralized inventory of existing resources and a status report on open space and recreation conditions within the town.

Based on this Plan, more detailed assessments of needs can be identified and more specific action items can be followed through to address critical areas.

2B. Planning Process and Public Participation

An Open Space and Recreation Plan is only useful if it reflects current conditions and the goals of the community. Therefore, the Plan must be updated periodically to incorporate new information, reflect changes in the community and its resources, and involve the public in the planning process. This periodic update provides the opportunity for increasing education, awareness, and participation among Shirley's citizens about the importance of recreational and other open spaces.

To involve the citizens of Shirley in the recent OSRP update, the Conservation Commission included a questionnaire exploring open space and recreation needs with the 2010 tax bills, inserted it in the Shirley Volunteer, and distributed it to post office boxes and other prominent locations throughout town. On Saturday, February 5, 2011, at the Town Offices, three graduate students from the Conway School of Landscape Design had conversations with Shirley residents about their favorite outdoor places in Shirley. Residents were also encouraged to attend the first public meeting later that week regarding the OSRP update.

On February 9, 2011, the three Conway students hosted the first of two public meetings at the Shirley Town Offices. The meeting was publicized widely in the local newspaper, in fliers posted around town, in emails to citizens affiliated with the town government, and on the local public access television station. Sixteen people participated in the meeting, including one child whose perspective was appreciated. Two of the participants, both of whom lived outside of Shirley, attended the meeting to increase inter-town dialogue and collaboration relating to issues of open space and recreation. The

meeting was televised on the Shirley Public Access station, and an article about the meeting appeared in the local paper the day following the meeting.

Input was gathered from citizens and stakeholders about what they would like the future of open space and recreation to be in and around the town of Shirley. Particular questions relating to open space and recreation included favorite spots in Shirley, the issue of greatest concern, and recent successes. Attendees were then organized into breakout groups to address how to link important open spaces, which then fed into the question of how to identify the most important actions (particularly those that are simple and low-cost) that need to be taken in the next five years. The meeting concluded with a summary of the major themes of the evening.

At a second public meeting on March 2, 2011, participants discussed draft recommendations offered by the Conway School students, and provided additional input about how to prioritize the town's many important public resources. This meeting was also widely publicized – again, in notices and articles in two of the local newspapers, in fliers posted around town, in emails to the attendees of the first public meeting and to citizens affiliated with the town government, and on the local public access television station. Telephone calls were also made to coaches of the Shirley youth sports leagues to inform them of the meeting.

Citizens were also encouraged to participate in a short, ten-question online questionnaire (see Appendix A). A total of 38 respondents offered their feedback through the questionnaire. Although only a few dozen of Shirley's citizens participated in the questionnaire, the results suggest a need for additional infrastructure such as new playgrounds for children, additional sidewalks, and dedicated trails for

equestrians, ATV'ers, and bicyclists. Illegal ATV use on trails appears to be one of the biggest open space concerns in the town. Respondents also stressed the need for increased environmental awareness and education among Shirley's citizens.

An underserved population, composed of minority and low income persons, resides in the southern portion of Shirley (See Environmental Challenges map). The community outreach efforts mentioned earlier were advanced in hopes of involving members of this group in the public decision-making process. A targeted door-to-door community outreach effort to these underserved residents was contemplated but not employed due to time constraints. It is unknown whether this population of Shirley residents actually participated in the OSRP update process.

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SECTION 3



COMMUNITY SETTING



“ I like canoeing the Squannacook. I love the state and federal wildlife lands and Nashua corridor.”

-Resident

3. COMMUNITY SETTING

3A. Regional Context

Shirley is located in growing Middlesex County in northeastern Massachusetts. It is approximately 10,000 acres or 15.7 square miles. The town of Townsend borders Shirley on the northwest. Groton, Ayer, and Harvard are to the east, Lancaster to the south, and Lunenburg to the west. The Squannacook and Nashua Rivers forms a natural winding twenty-mile boundary along its entire eastern edge. Shirley is located 42 miles northwest of Boston, 25 miles northeast of Worcester, and 2 miles east of Leominster. Shirley is a member of the Montachusett Regional Planning Commission, a regional advisory board comprising representatives from twenty-two member communities.

Shirley is part of the Nashua River watershed. Four sub-basins are within the Shirley town line. Its rivers, streams, and aquifers connect it to neighboring towns. Every one of its neighboring towns sits over the same high- and medium-yield aquifers that run through Shirley. Some of its forests and recreational trails cross town boundaries and connect Shirley to its neighbors. Trails on the Lunenburg/Shirley border are part of the Valley Farm Conservation Area Trail Network. Hunting Hill and Squannacook River trails lie within the conservation areas in the north of the same name. Lunenburg, Townsend and Groton all share those trails. Other shared conservation land includes Oxbow National Wildlife Refuge (shared by Devens, Harvard, and Ayer).

Roadways and commuter rail also provide connections to the greater region. Route 2 is about 2 miles south of Shirley Village. Route 2A and Route 225 run through the northern portions of the town. Route 495 is located 10.5 miles east of Shirley Village, and Route 190, a direct link with Worcester, is located

approximately 3 miles west on Route 2. Commuter rail service on the MBTA purple line, via the Shirley station, provides exceptional access to communities from Gardner to Boston, where many of Shirley's residents choose to work.

3B. History of the Community

According to the Shirley Reconnaissance Report (MADCR 2006), Shirley's Native American history dates back to the Late Archaic Period (6,000-3,000 B.P.) with confirmed sites from this period and the Woodland Period (3,000-450 B.P.). However, information about other regions of southern New England suggests that Shirley too may have been a place of ancient settlement from the Paleo-Indian Period (12,000-9,000 B.P.).

Shirley's European settlement history began when Dean Winthrop received a land grant in 1655. However, not until 1753 was the district of Shirley set off from Groton. The first meetinghouse was constructed on the Common in 1773, and Shirley was incorporated as a separate town two years later in 1775.

Agriculture was the mainstay of the economy in the eighteenth century; however a clothier mill was built on the Squannacook River in ca. 1739 and saw and grist mills on Catacunemaug Brook in ca. 1748.

Early roads followed the waterways, connecting the mill sites with other parts of the territory. Squannacook Road followed the meandering Squannacook River while Great Road followed the course of Mulpus Brook where grist and sawmills as well as a forge were located from the mid-to late eighteenth century on. Leominster Road, which passed through the southern part of the town, connected Ayer to the east with Leominster to the west. Shirley Center was the focus of farming and civic activity with the first

meetinghouse, burial ground, town pound, and common. Early Shirley roads radiated from this center.

The Shakers had established their own community in the southern portion of town in 1793. The community built many fine houses and communal buildings that now are within MCI-Shirley, a state correctional facility. In 1849 the Shakers constructed the Phoenix Mill and Pond, a cotton factory at Shirley Village. By the time that the cotton mill was built, and with the advent of the Boston-Fitchburg Railroad in 1845, activity had begun to soar in Shirley Village. The construction of the railroad brought immigrants, particularly Irish, to Shirley, many of whom stayed to work in the mills. By 1855 nearly 1,500 people lived in Shirley, predominantly in the village area. That area, which has come to be known as Shirley Village, was the more densely developed part of town, supporting most of the population and businesses.

In the late nineteenth century the Phoenix Mill became Samson Cordage. At about the same time the Charles A. Edgerton Company opened its factory which was substantially expanded in 1896. It too was located on the Catacunemaug on the western side of the village. These companies operated through the twentieth century.

By the late nineteenth century, there were networks of new roads connecting to Shirley Village. An electric trolley route led from Ayer to Leominster along Front and Main Streets to Leominster Road. With the rise of the automobile, Route 2 (now Route 2A) was improved along Great Road. This and the Leominster/Ayer Road were primary routes while north-south roads remained secondary routes.

At the end of the nineteenth century, French Canadians came to work at the Samson Cordage (old Phoenix Mills), most settling in

Shirley Village due to the railroad and the mills. Moderate growth continued as factories expanded and in the early twentieth century immigrants arrived from Poland, Russia, and Lithuania to work in Shirley's factories.

The Shirley Historical Society reports that in the late nineteenth and early twentieth century, wealthy businessmen and intellectuals, who wanted to escape the city for the summer, bought some of the old Yankee houses on the lovely country hillside at Shirley Center. Shoe manufacturers, painters, book collectors, museum archivists, lawyers, antiques collectors, writers, pianists, conservationists, and others would plan summer entertainments and lyceum discussions at the old Town Hall. Many of the "Center Summer Folk" decided to stay in Shirley full time and added a new intellectualism to the old farming area.

Camp Devens (later Fort Devens) was established during World War I, taking some Shirley land in the southeast corner, for military housing. In the latter half of the twentieth century in the Village area, two schools were built and then expanded, and a new post office, fire station, bank and other buildings were added. In the 1990s two of the major mills, Samson Cordage and the George Frost facility, closed. The presence of Fort Devens led to a population increase in Shirley in the mid-twentieth century. According to the US Army Corps of Engineers, in 1990, more than 40 percent of the town's entire employment base consisted of civilian jobs at Fort Devens, and nearly 13 percent of its school children were dependents of Fort Devens military and civilian employees. The downsizing of Fort Devens in 1995 had a significant impact on the town, causing a region wide loss of population, jobs, and some decline in real estate values. Despite the impact of changes at Fort Devens, population in Shirley still grew. By 2000, Shirley had a population of 6,373 residents, including MCI-Shirley state prison inmates.

3C. Population Characteristics and Trends

Population Trends

Population of Shirley 1980-2000, including MCI state prison inmates (from *Final Economic Chapter to the Master Plan, 2010, MRPC*)

	Population 1990	Population 2000	Population 2010	Change 1990-2000	Change 2000-2010	% Change 1990-2000	% Change 2000-2010
Shirley	5,739	6,373	7,211	634	838	11.0%	13.0%

Population Estimates and Projections for Shirley 2015-2030

	2015	2020	2025	2030
Shirley	8,221	8,470	8,729	9,030

Shirley has grown over the past thirty years, and is projected to grow even further in the future. Population increases may require modifications or increases in recreational facilities and planning for the preservation of open space as demand for housing increases.

Estimates from American Community Questionnaire state that in 2005-2009, Shirley had a total of 2,700 housing units, 7 percent of which were vacant. Of the total housing units, 68 percent was in single-unit structures,

27 percent was in multi-unit structures, and 5 percent was mobile homes. Twenty-seven percent of the housing units were built since 1990.

The increased population and housing has resulted in the loss of open space, and corresponding increase in water use, recreational facilities use, and need for other town services.

Location of Work (In-Town, Out of Town) from *Final Economic Chapter to the Master Plan, 2010, Montachussetts Regional Planning Commission, 2000 Census*

Municipality	Total Workers	Worked in Town	% Worked in Town	Worked Outside Town	% Worked Outside Town
Shirley	2,791	351	12.6%	2,440	87.4%
Ayer	3,861	798	20.7%	3,063	79.3%
Groton	4,759	997	21.0%	3,762	79.1%
Harvard	2,752	471	17.1%	2,281	82.9%
Lancaster	3,087	720	23.3%	2,367	76.7%
Lunenburg	4,953	923	18.7%	4,030	81.4%

Compared to its neighboring towns, Shirley has the lowest percentage of residents working in their own municipality. This suggests that Shirley is a commuter town and that residents travel away from Shirley each work day. They may not spend as much time in or be as knowledgeable about the open

space and recreational opportunities in town. And they may be less likely to volunteer. Programs that inform the community about those opportunities may make sense for Shirley residents.

Environmental Justice

Environmental justice is based on the principle that all people have a right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment. The state designated Environmental Justice groups in Shirley are categorized as Low Income and Minority. "Low income" is defined as median annual household income at or below 65 percent of the statewide median; "Minority" means that 25 percent of the residents are minority, foreign born, or lacking English language proficiency.

The Shirley Environmental Justice (EJ) population as defined by the 2000 US Census lives in the southeast, south, and southwest areas of the town. EJ populations are within walking distance of a large percentage of open space and recreational areas. Improving the sidewalks and trails for access without having to have a car would be beneficial. Sidewalks in town are currently being assessed to determine if they meet town needs. Adding more recreational activities including basketball courts and community gardens in the Shirley Village area, where there are the most sidewalks, would also benefit these populations. Residents at the public meeting held on March 2, 2011 reported that the playground at the Lura A. White Elementary School was in need of repair, and organized funding through grants and donations to build a new playground in the fall of 2011. The only other playground in town, at the Benjamin Hill School, requires an automobile to get there safely from any location in town.

According to the American Community Questionnaire (ACS) 2005-2009, 7 percent of the people living in Shirley were foreign born. Ninety-three percent were native, including 64 percent who were born in Massachusetts. Among people at least five years old living in Shirley in 2005-2009, 10 percent spoke a language other than English at home. Of

those speaking a language other than English at home, 44 percent spoke Spanish; 25 percent reported that they did not speak English "very well."

For people reporting one race alone, 85 percent identified as White; 7 percent Black or African American; less than 0.5 percent American Indian or Alaska Native; 2 percent Asian; less than 0.5 percent Native Hawaiian or Other Pacific Islander, and 2 percent identified as some other race. Three percent reported two or more races. Nine percent of the people in Shirley identified as Hispanic. Seventy-eight percent identified as White non-Hispanic. People of Hispanic origin may be of any race.

From 2000 Census, Shirley's median household income of \$53,344 was higher than the Massachusetts median of \$50,502 but lower than the Middlesex County median of \$60,821. ACS reports that in 2005-2009, 7 percent of people were in poverty. Eleven percent of related children under 18 were below the poverty level, compared with 6 percent of people 65 years old and over. Six percent of all families and 16 percent of families with a single-parent female head of household had incomes below the poverty level. Even though these figures are lower than the state averages, sensitivity to the needs of this population is necessary. Open space and recreational opportunities should be made equally available to all. Shirley should continue to keep activities free, locate any new facilities within walking distance of the population if possible, and make information available in Spanish if requested.

The median age of residents has increased from 27.6 in 1980 to 32.2 in 1990 to 36.6 in 2000. The aging population will mean that there will need to be a greater emphasis on recreation for older people.

Despite its rural appearance, Shirley, at 403 persons per square mile (from 2000 Census)

remains the second most densely populated of the towns in its immediate vicinity. Only Ayer is more densely populated, with 826 persons per square mile. Figures for our other neighbors are: Groton - 293; Lancaster - 267; Lunenburg - 353; and Townsend - 282. Since the 1996 Open Space and Recreation Plan, Shirley's density has increased by 16 persons per square mile. There has been a growth in density of 25 percent over the past three decades. As density increases so will the strains on resources.

3D. Growth and Development Patterns

1. Patterns and Trends. Historically, development in Shirley had been concentrated around the town's historic center and Shirley Village and along the major roads and rivers. Comparatively more homes are along the Squannacook River, and more industry is along the lower half of the Nashua River in Shirley. As time has passed, development has moved away from those areas and farther into open spaces, especially into northern areas. Very few farms remain in the town. Shirley has transformed from a rural mill town to a suburban bedroom community. Its location between Worcester and Boston, along with good public transportation, has made it an appealing choice for those who work in those cities. Many people have also moved into Shirley for its quiet rural qualities, but their presence has changed some of those qualities.

2. Infrastructure

a) Transportation Systems. According to ACS (2005-2009) 6 percent of Shirley households did not have access to a car, truck, or van for private use in that period. Multi-vehicle households are not rare; 46 percent have two vehicles and another 17 percent have three or more. According to the 2004 Shirley Master Plan Update, east-west travel is reasonably

well-served by the two state arterial roads (Routes 225 and Route 2A). Yet north-south travel has taxed the capacity of Parker, Center, Walker and Lancaster Roads. The situation will worsen as population continues to grow.

At meetings and in questionnaires, residents state that the MBTA train is a large asset to the town, providing much valued public transportation, and lends to the town character. Daily, thirteen commuter passenger trains each way stop at Shirley's historic station, although train service has been suspended on weekends. There are 25 free parking spots available at the station. In 2009 over \$200 million in state and federal funds were allocated for upgrades to the right-of-way, tracks, switches, and signals, with the goals of reducing train travel times and improving safety. The station is located in Shirley Village where it is a convenient walk or bike ride to the station. Access from other areas of town is not as easy due to the lack of sidewalks and bike trails.

In general, for those wishing to bike or walk, trail networks need improvement. There are no marked bike routes, and Front Street is the only road that provides extra space available for bikes. The town's sidewalk system is concentrated in the village area, leaving most of the remainder of the town without safe routes to get to open spaces and recreational areas. The school system is a participant in the MassRIDES Safe Routes to Schools program, according to the *Lowell Sun* newspaper. The school district initiated its SRTS program in 2008 after budget cuts eliminated half of its school buses. Shirley formally requested and received a no-cost engineering assessment of walking and bicycling routes within one mile of its schools from the MassDOT. (Findings and recommendations may be found at: www.mrpc.org.) For those without vehicles, travel in Shirley can be a challenge.

The Senior Center provides transportation to shopping and medical appointments through the MART (Montachusett Regional Transit Authority) van, which runs on weekdays, and through a volunteer program which assists seniors in obtaining transportation to areas not covered by the MART program.

b) Water Supply Systems. The 2004 Town of Shirley Master Plan reports that the Shirley public water supply is operated by the Shirley Water District. The water system provides potable water to approximately 60 percent of the town through a network supplied by two groundwater wells, two reservoirs, and one standpipe. The three groundwater supply wells are the Catacunemaug, Walker, and Patterson Road wells. The Patterson Road Well supplies approximately 70 percent of all public water for the town. The supply system provides water primarily to the southern part of town, extending as far east as Patterson Road and as far north as Great Road. The remainder of the town is served by private well water. The district consumption rate rose 9 percent from 1996 to 2002. (See Section 4 for current protection of water supply.) As population continues to grow, the need to continue to protect the town’s valuable water supply will be critical.

c) Municipal Sewer System. According to the 2004 Town of Shirley Master Plan, the construction of the municipal sewage system was completed in 2004. The sewer line alleviated issues of groundwater contamination from septic leachate. The Sewer Commissioners and the agent from the Nashoba Board of Health reported to the Shirley Sewer Department that the sewer system alleviated the contamination.

One third of the town is on the sewer system. All of the Village area is on town sewer, Center Road, Brown Road, a portion of Walker Road and Hazen Road, Parker Road, Little Turnpike Road and portion of Great Road (234 Great Road to 154 Great Road).

The remainder of town relies on septic systems, including the aquifer recharge area. Refer to Figure 8, Zones of Control Map.

3. Long-Term Development Patterns

a) Housing Development. As reported in the 2004 Town of Shirley Master Plan, nearly half of its present homes were built after 1970, mainly in the central and northern sections of town. Four hundred and seventy-nine building permits were issued between 1997 and 2013. All six of the housing developments mentioned in the 1996 Open Space and Recreation Plan update have been completed, adding 90 houses to the Town of Shirley. In addition, eighteen new developments have been approved since 1996, with approximately 360 associated houses. Ten of these developments have been completed. Subdivisions still in progress include The Meadows Phase II (Clark Road), The Arboretum and Fairway Estates (Groton Road), Hazen Hill Estates (Lancaster Road), and Squannacook Estates (Townsend Road), as well as cluster subdivisions Apple Orchard Estates (Lancaster Road), and The Village at Phoenix Pond (Shaker Road).

	1980	1990	2000	% Increase
Number of Dwelling Units	1,829	2,183	2,156	18 % in 20 years

Source: Final Economic Development Chapter to the Master Plan, 2010, MRPC

b) Zoning. The zoning map shows the zoning districts established by the Town Zoning Bylaws.

Approximately 85 percent of Shirley is zoned for residential development, with minimum lot sizes ranging from 800,000 square feet in the Rural Residential zone to 15,000 square feet in the Residential 3 zone. Approximately

6 percent of the town is zoned business or mixed-use and approximately 9 percent is zoned for industrial use. Densest development is found in the southern half of town.

The Shirley Village Business District is located on Ayer Road, and the North Shirley Village District is located on Route 2A, with businesses clustered in them. A mixed use district lies to the west on Route 2A. Industrial development bisects Shirley Village, in an east-west band along Leominster Road and Ayer Road. The Lancaster Road Commercial District is found at the southern border.

Shirley has made changes in its Zoning Bylaws since the last OSRP was approved in 1996. The changes focus on protecting open space and resources and encouraging growth in already developed areas. Specifically bylaws also include important floodplain, water supply and well-head protection overlays. Changes to Zoning Bylaws have had a measurable impact on the course of development since 1996.

A Rate of Development Bylaw was passed at Special Town Meeting in September 2000. This Bylaw allows the issuance of no more than 30 dwelling units within one calendar year for five years. The Bylaw can be extended. There are limits as to how many building permits a particular person can receive in any year, in order to slow the pace of development. Changes in that Bylaw allow the Zoning Board of Appeals to require special permit applicants to present engineering data showing impacts on water resources.

Until 2005, special permits were available for cluster residential housing, allowing the Planning Board to waive the minimum frontage and lot shape requirements in exchange for permanent protection of open space through a Conservation Restriction held by the Shirley Conservation Commission or a non-profit conservation land

trust. Since 1996, eight such developments were permitted, contributing over 200 acres of permanently protected open space to the Town of Shirley.

In March of 2005, this permit was replaced by the Low Impact Development bylaw for lots of ten or more acres and a subdivision of six or more homes and requires at least 35 percent of the total land area as permanently protected open space, using a conservation restriction granted to the Shirley Conservation Commission. Due to economic conditions, there have not been any Low Impact Developments since the law was implemented.

c) Devens and Regional Open Space Planning. Parts of Shirley are located within the Devens Enterprise Zone, a special zone created by Chapter 498 of the Acts of 1993 for redevelopment of the former Fort Devens Army base. Shirley has participated in several regional, inter-municipal planning, and land protection efforts. As one of the host communities with land in Devens (along with Ayer, Harvard, and Lancaster), Shirley has been involved with those communities and MassDevelopment (the state agency managing redevelopment of Devens) to coordinate regional planning. Open space lands at Devens, including the Oxbow National Wildlife Refuge, interconnect with protected and unprotected undeveloped lands in adjoining communities including Shirley. The main stem of the Nashua River flows through the Refuge and Devens. Aquifers supplying Devens and the adjoining communities also overlap municipal and Devens boundaries.

Shirley is a member and regular participant in the Devens Open Space and Recreation Advisory Committee (DOSRAC). The DOSRAC consists of two representatives from each of the towns of Ayer, Harvard, and Shirley and one representative each from the U.S. Fish and Wildlife Service (Oxbow Refuge

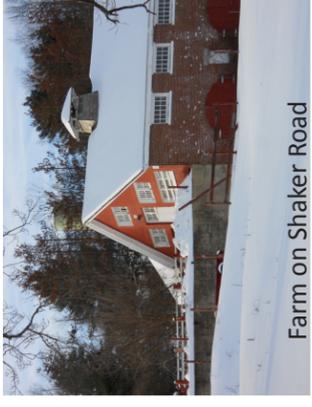
manager), Massachusetts Department of Conservation and Recreation, Massachusetts Division of Fisheries and Wildlife, and the Nashua River Watershed Association. Staff from MassDevelopment and the Devens Enterprise Commission (DEC) also attend these meetings. The Committee has worked successfully with MassDevelopment staff to advance several initiatives, including a trails map and interpretive brochure for the Mirror Lake Area and review and design refinement of several projects adjoining or affecting open space parcels. MassDevelopment and the DEC have prepared a regional trails plan that provides a framework for development of an interconnected trails network throughout Devens and connecting to Ayer, Harvard, and Shirley. Because ownership and use of Devens land has changed, there have been challenges in assuring that protection of open spaces has

been addressed. Ultimately, the land being made available to Shirley residents has provided opportunities for more recreational activities. 108 acres of Devens land was recently given to the MA Department of Fish and Game as MESA mitigation for a new solar farm, while the Oxbow Wildlife Refuge has been gifted another 20 acres in exchange for giving MassDevelopment access to the Wastewater Treatment Plant.

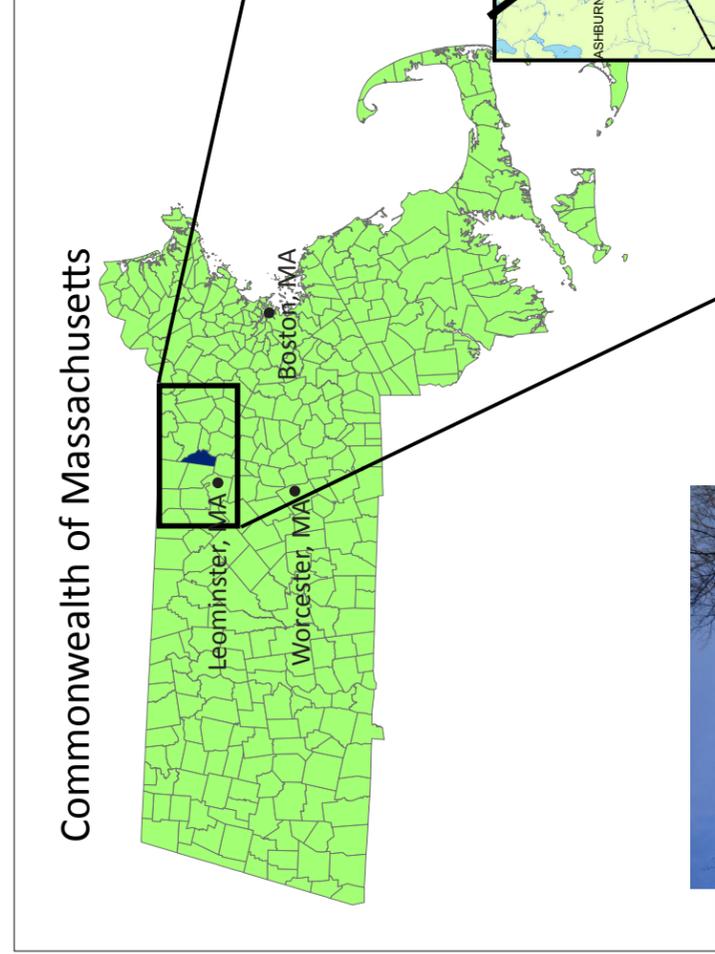
Eventually the towns of Ayer, Harvard, and Shirley will decide on the disposal of the land which used to belong to Fort Devens. The land may be used to form a new town of Devens or it may be returned to the jurisdiction of the towns it came from. The Shirley portion of the land is mostly undeveloped, except for projects the Town of Shirley has undertaken.

Location

Shirley is located in growing Middlesex County in northeastern Massachusetts. It is approximately 10,000 acres or 15.7 square miles. The town of Townsend borders Shirley on the northwest. Groton, Ayer, and Harvard are to the east, Lancaster to the south, and Lunenburg to the west. The Squannacook and Nashua Rivers form a natural winding twenty mile boundary along its entire eastern edge. Shirley is located 42 miles northwest of Boston, 25 miles northeast of Worcester, and 2 miles east of Leominster. Shirley is currently home to 7,335 residents.



Farm on Shaker Road



Commonwealth of Massachusetts

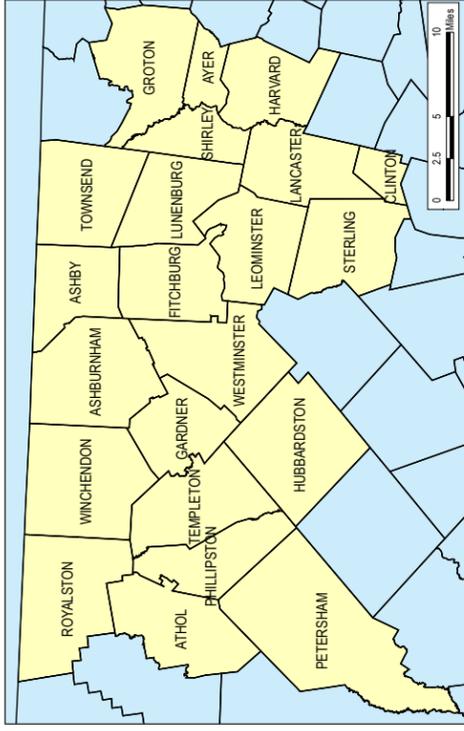
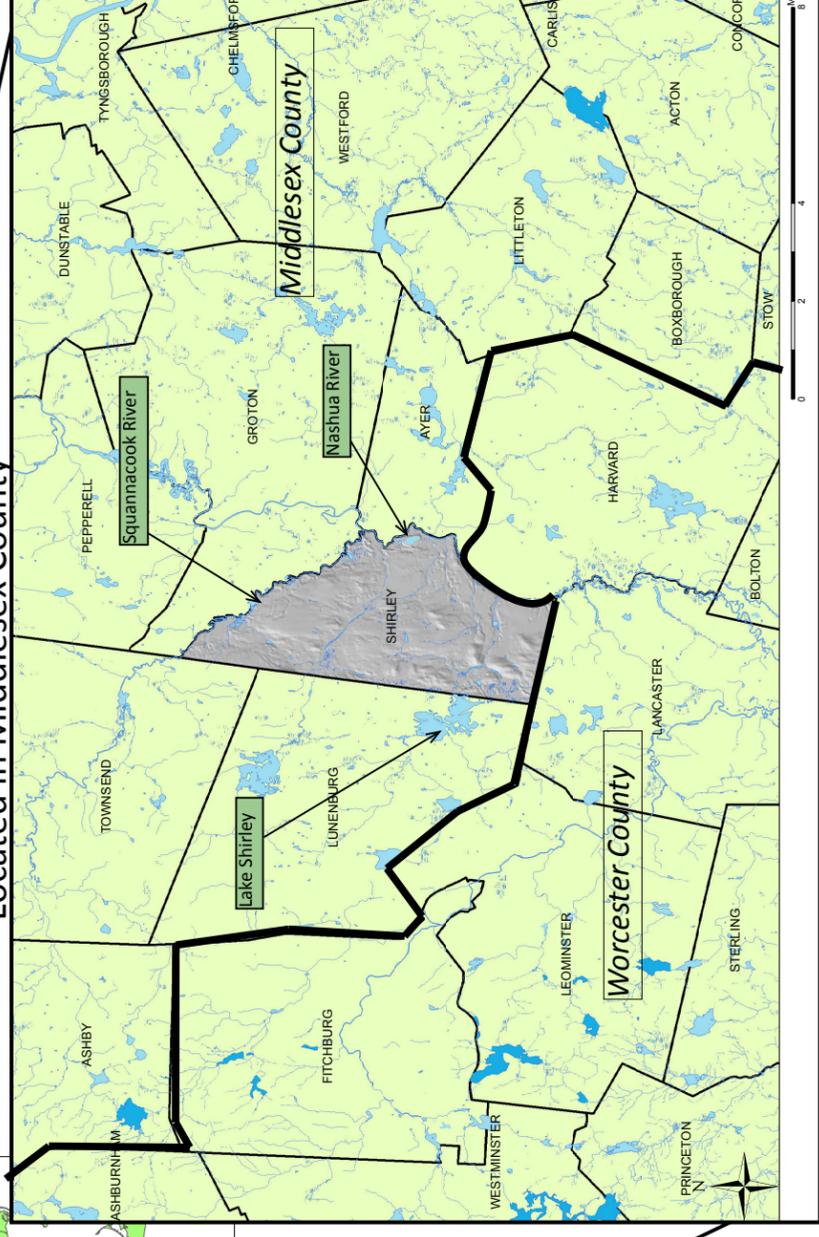
Leominster, MA
Worcester, MA
Boston, MA



Historic Meeting House

Shirley, MA

Located in Middlesex County



Montachusets Regional Planning Commission Planning Zone



Community Garden, Longley Acres

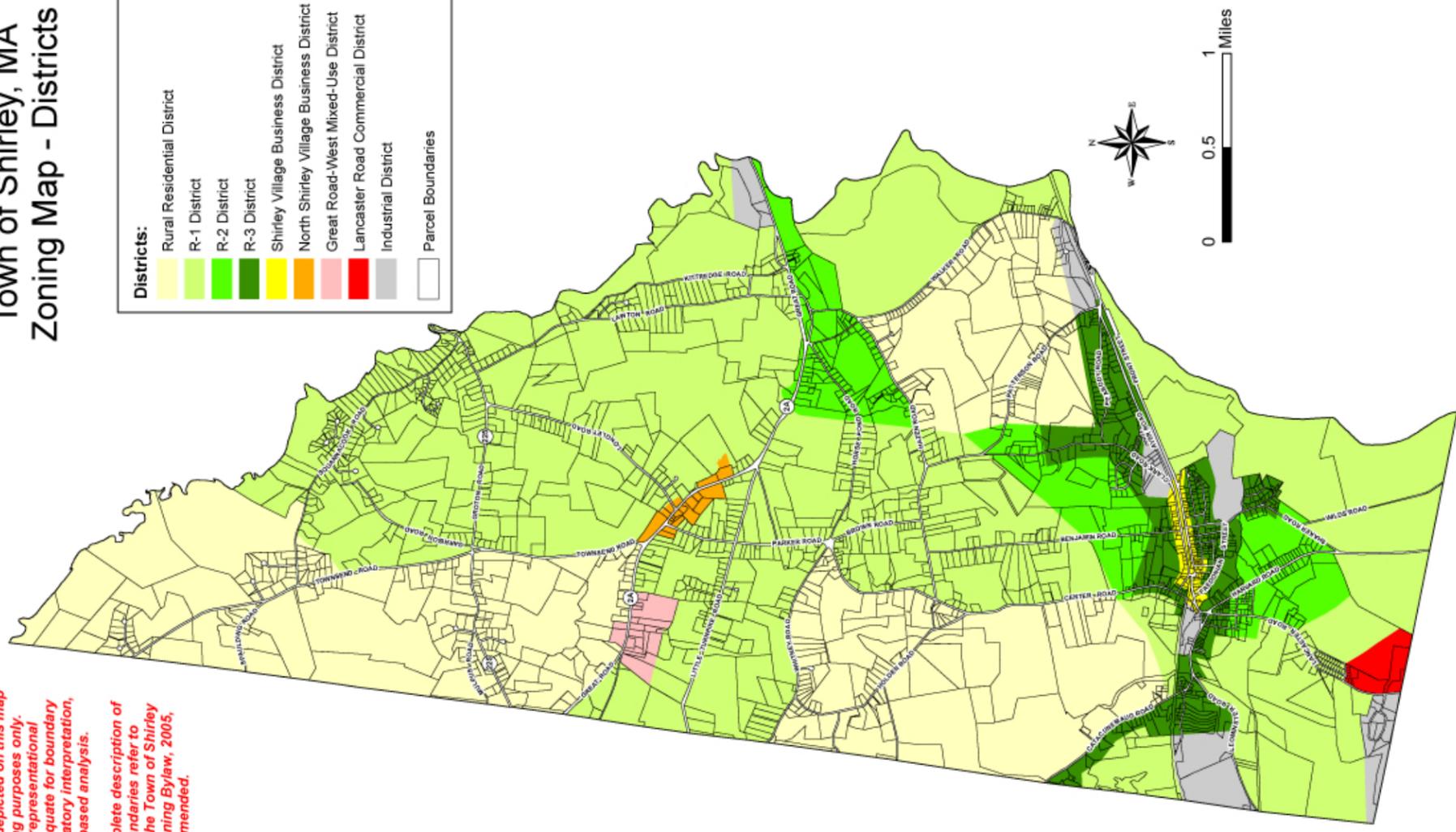
Town of Shirley, MA Zoning Map - Districts

The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

For more complete description of district boundaries refer to Section 13 of the Town of Shirley Protective Zoning Bylaw, 2005, as amended.

Districts:

- Rural Residential District
- R-1 District
- R-2 District
- R-3 District
- Shirley Village Business District
- North Shirley Village Business District
- Great Road-West Mixed-Use District
- Lancaster Road Commercial District
- Industrial District
- Parcel Boundaries



Zoning

Approximately 85% of Shirley is zoned for residential development, with minimum lot sizes ranging from 800,000 square feet in the Rural Residential zone to 15,000 square feet in the Residential 3 zone. Approximately 6% of the town is zoned business or mixed-use and approximately 9% is zoned for industrial use. Densest development of homes, businesses, and industries is found in the southern half of town.

The Shirley Village Business District is located on Ayer Road, and the North Shirley Village District is located on Route 2A, with businesses clustered in both districts. A mixed use district lies to the west on Route 2A. Industrial development bisects Shirley Village, in an east-west band along Leominster Road and Ayer Road. The Lancaster Road Commercial District is found at the southern border.

Shirley has made changes in its Zoning Bylaws since the last OSRP was approved in 1996. The changes focus on protecting open space and resources and encouraging growth in already developed areas. Specific bylaws also include important floodplain, water supply and well-head protection overlays. Low Impact Development was implemented in March 2005 for lots of ten or more acres and a subdivision of six or more homes and provides at least 35% of the total land area as permanently protected open space.



MBTA train station in the Shirley Business District



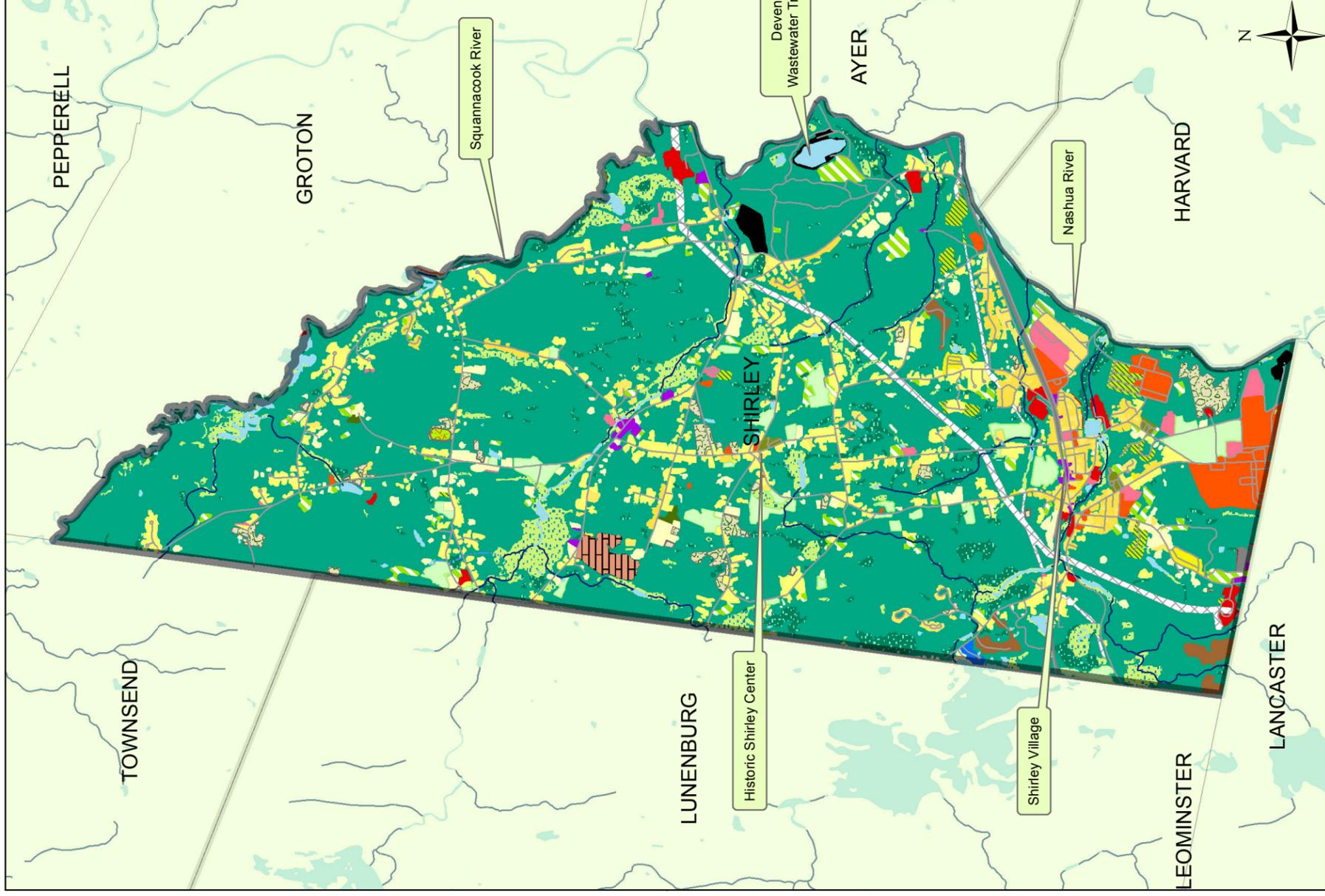
Business in the Great Road-West Mixed-Use District

DATA SOURCES: Town of Shirley, MRPC, MassGIS

DISCLAIMER: The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.



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GIS Department, September 2005
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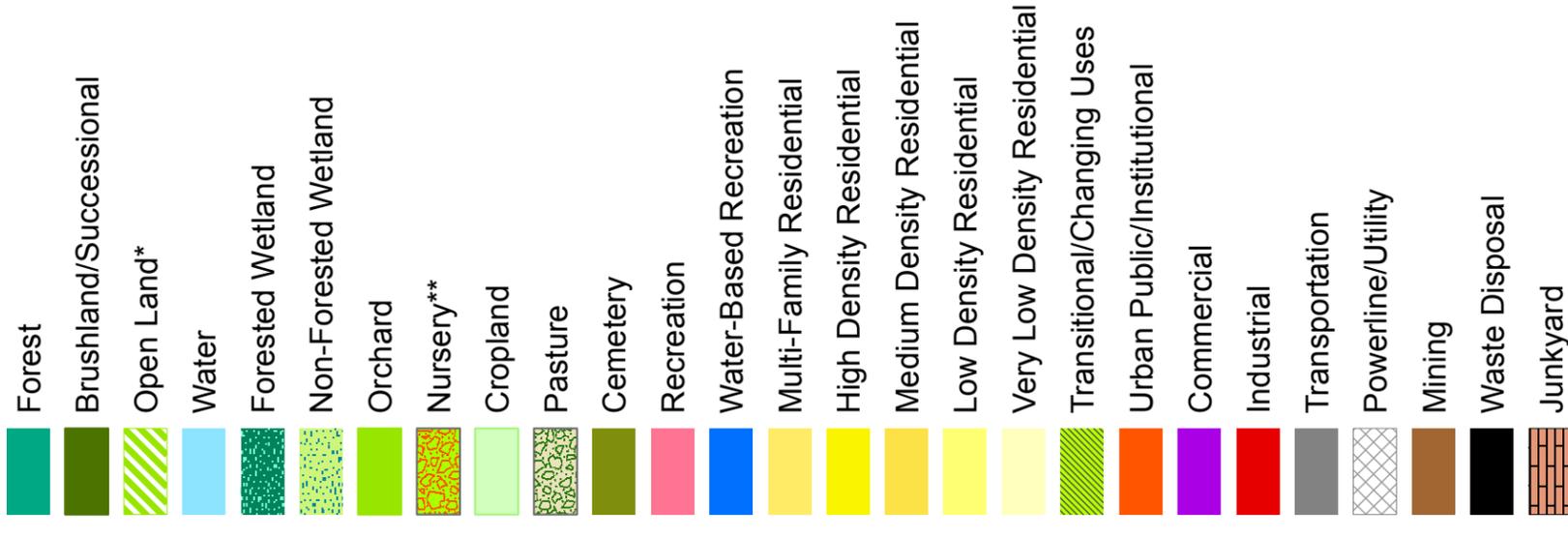
Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division, March 2011

Current Land Use

Historically, development in Shirley was concentrated around the Shirley Historic Center and Shirley Village and along the major roads and rivers. Comparatively more homes have been built along the Squannacook River since the town was founded, and more industry has developed along the lower half of the Nashua River in Shirley.

As time has passed, newer development has moved away from those areas and farther into open spaces. Most residential development follows along roads. Very few farms remain, and the town has largely reforested. Forests and wetlands are spread throughout Shirley with the exception of the Shirley Village area and the southeast corner, where homes, businesses, and industries are the most concentrated. Shirley has transformed from a rural mill town, with development focused on the rivers, to a suburban bedroom community with homes reaching deeper inland and further north.

Shirley's forests, wetlands and water resources define much of Shirley's unique character and contribute to the quality of life of its citizens.



*Open Land: Vacant land, idle agriculture, rock outcrops, and barren areas.
 **Nursery: Greenhouses and associated buildings, surrounding maintained lawn, Christmas tree farms.
 (MassGIS 2011)



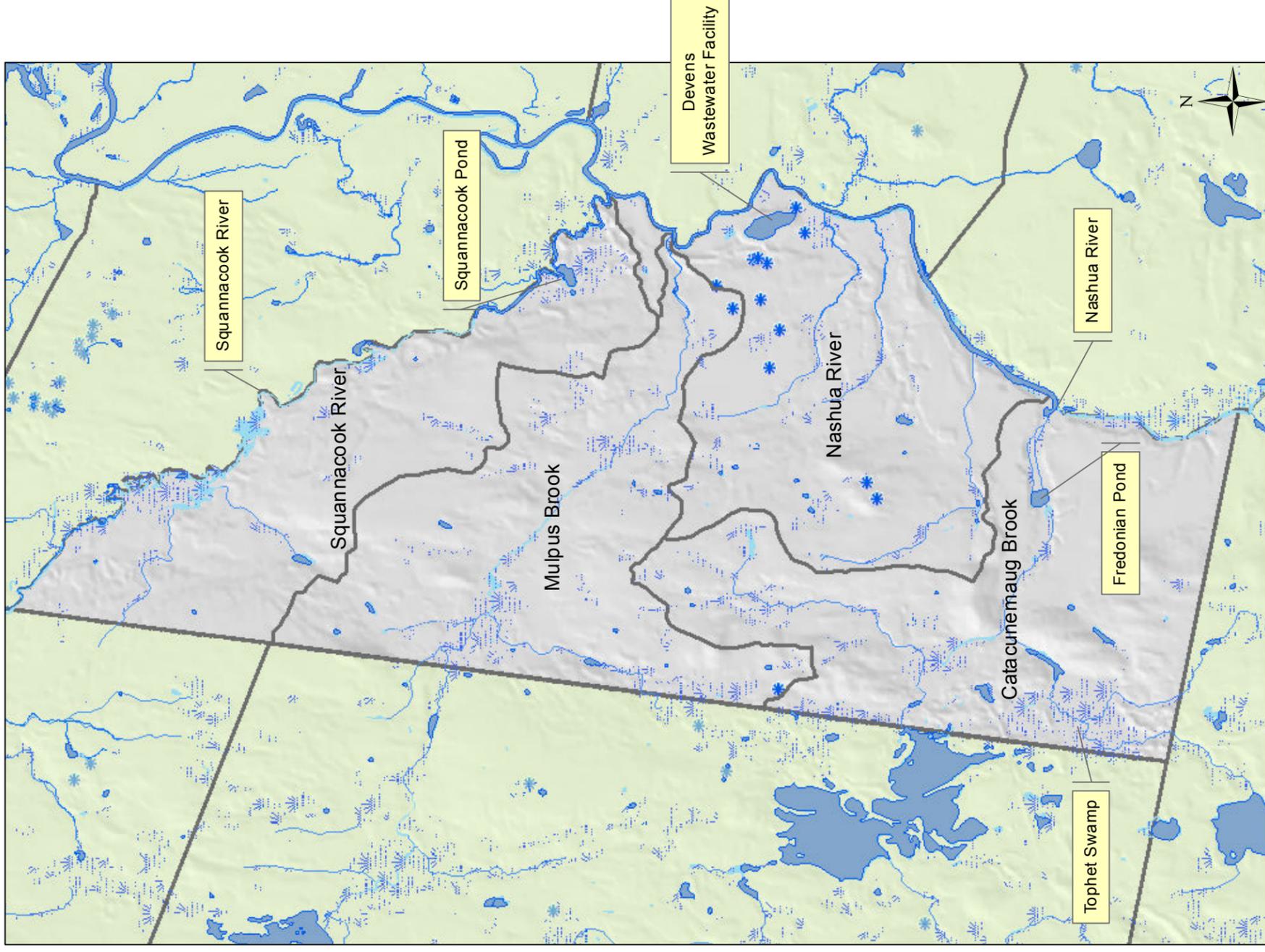
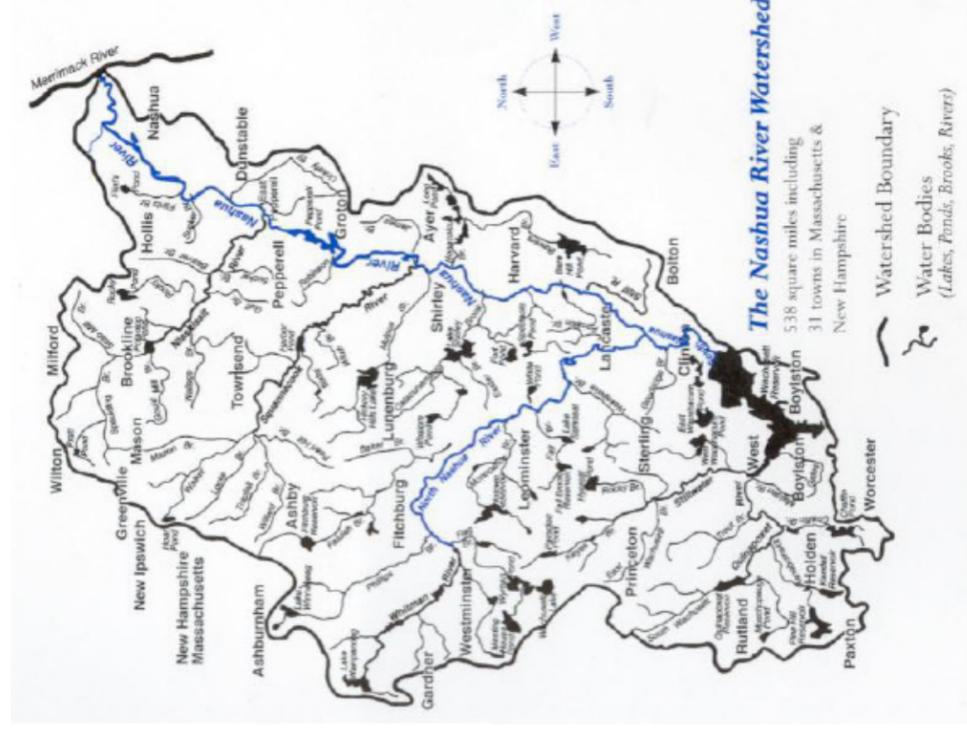
Water Resources

The Nashua and Squannacook Rivers define Shirley's eastern boundary. Within the town, four sub-basins define the interior watersheds. Wetlands are clustered along the west and southwest town boundary, and along the rivers and brooks. The Nashua River flows north, while its tributaries flow southeast. Where they converge is susceptible to erosion and increased exposure to pollutants.

Vernal pools have been registered in the Mulpus Brook and Nashua River sub-basins, which provide habitat for rare and endangered species and support biodiversity. There are several manmade and natural ponds that provide residents with recreational opportunities and support wildlife.

Surface water features are accessible to the public through conservation land, but access points are not clearly marked. Tophet Swamp is a high priority to protect because it feeds one of the town's main aquifer recharge areas, contains uniquely important soils (see Soils and Geology map) and supports biodiversity (see Plant & Wildlife map).

Continued protection of rivers, streams, wetlands and ponds is important because these resources act as filters for aquifer recharge areas, preserve biodiversity and provide recreational opportunities for residents and tourists. The town also depends on aquifers to supply 60% of their drinking water (see Zones of Contribution to Public Supply Wells). An Open Space Committee and Stream Teams can assist in inventorying, evaluating, managing, and advocating for these important natural resources.



Flood Hazard Zones

The 100-year floodplains hazard zones border the rivers and stream corridors in Shirley. The 500-year floodplains comprise areas with high water tables, wetlands and tributary streams. Hundred-year floodplains are areas that have a 1% annual chance of flooding. The 500-year floodplains are areas of minimal flood hazard but may have local drainage problems.

In Shirley the floodplains bisect the town along the Mulpus Brook, which runs along Route 2A, and the Catacunemaug Brook, which runs through Shirley Village. This area would cause the greatest impact in the event of a flood due to development density. Most development is outside of the 100-year flood plains, though many parcels are directly adjacent to floodplains. The 500-year floodplains are scattered throughout town and are fragmented due to road ways and parcel divisions. Since they are associated with wetlands, these areas are protected from further development by state and federal wetland protection acts.

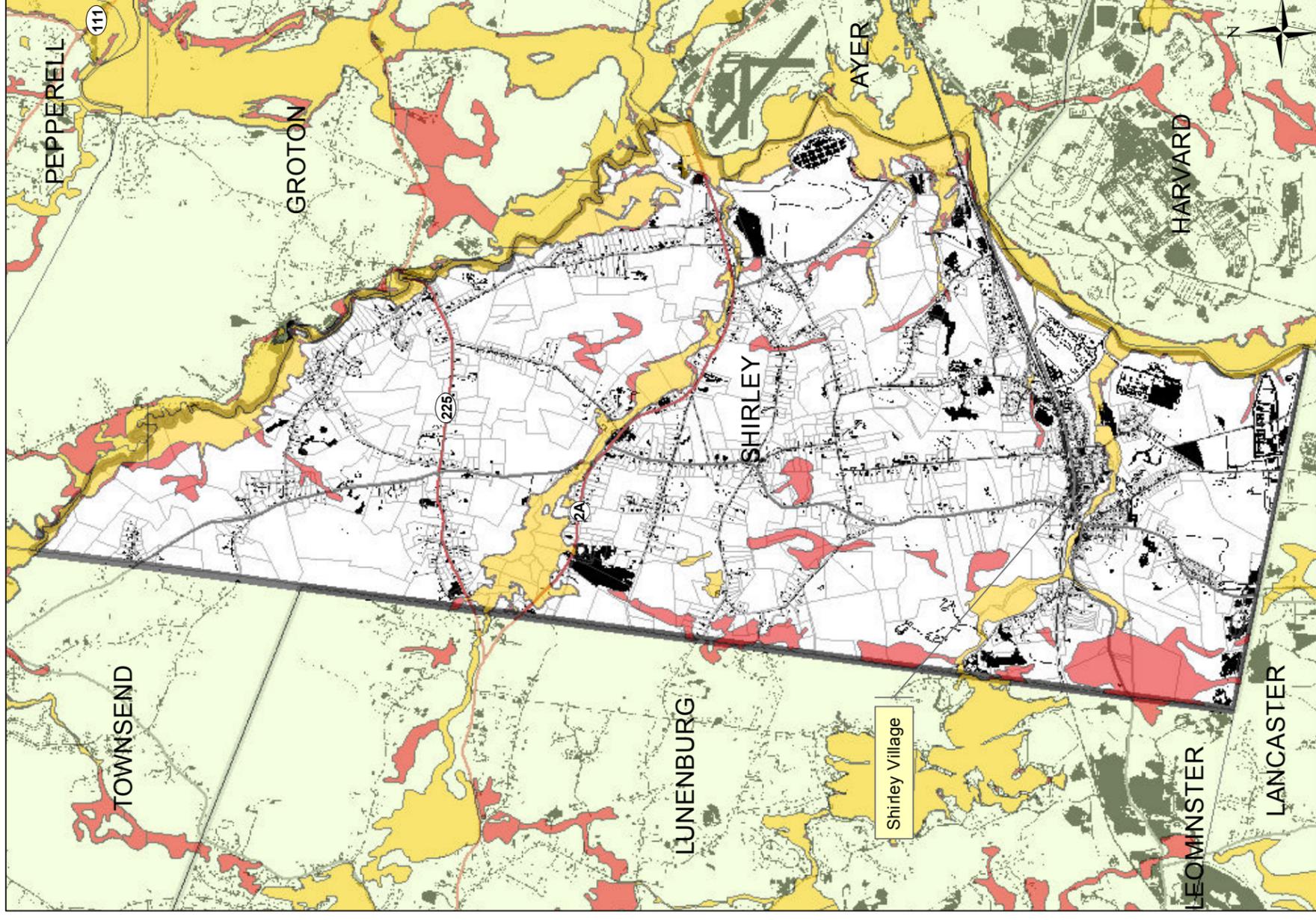
Development in floodplains is discouraged and avoiding development in these zones reduces insurance rates within communities. Most floodplains are protected by federal and state river and wetland protection acts, but may be monitored and maintained for recreation access and habitat corridors. Consolidating growth to avoid floodplains will also protect against the fragmentation of open space.



Flooded Squannacook River



Catacunemaug Brook



Zones of Contribution to Public Supply Wells

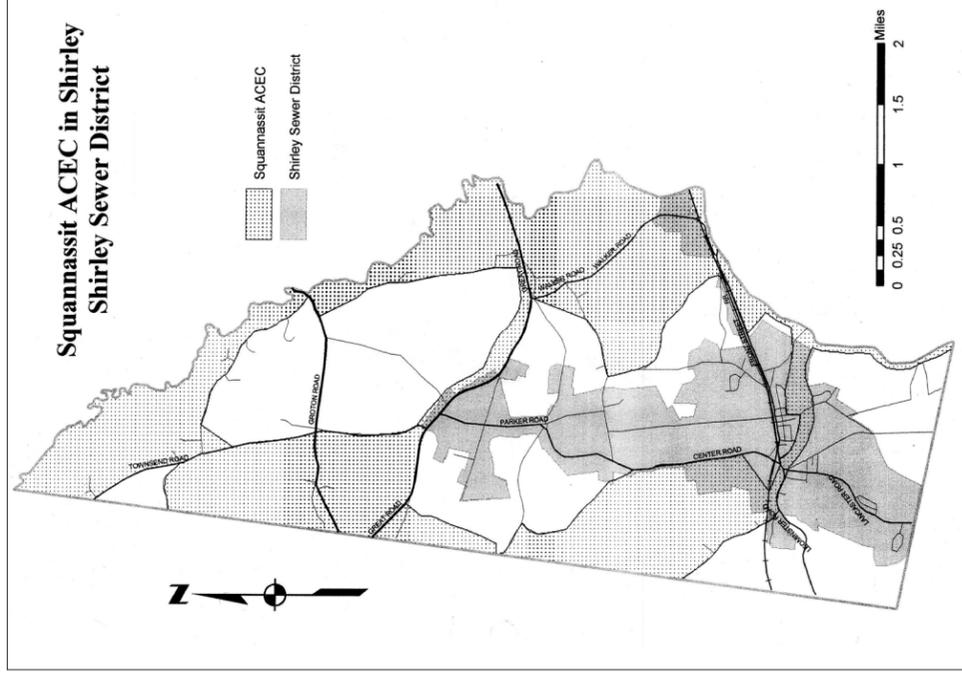
If current trends hold Shirley's population will increase, straining the town's water supply. Ground water supply is the town's main source of drinking water.

The Department of Environmental Protection mandates Public Water Supply Protection Areas. According to MassGIS, Shirley has Interim Wellhead Protection Areas (IPWA) and Zone II Groundwater Protection Areas. Shirley's Protective Zoning Bylaws treat these areas as Water Supply & Wellhead Protection Zone I and Zone II. Zone I is the IPWA zone where there are 800-1,000 feet radii around the wells. Construction is permissible for passive recreation paths and bridges, utilities that prevent groundwater contamination, and repair on existing structures so long as there is no increase in impervious surface. The Zone II Groundwater Protection Area is zoned in Shirley as Water Supply & Wellhead Protection Zone II. Construction is allowed with permits.

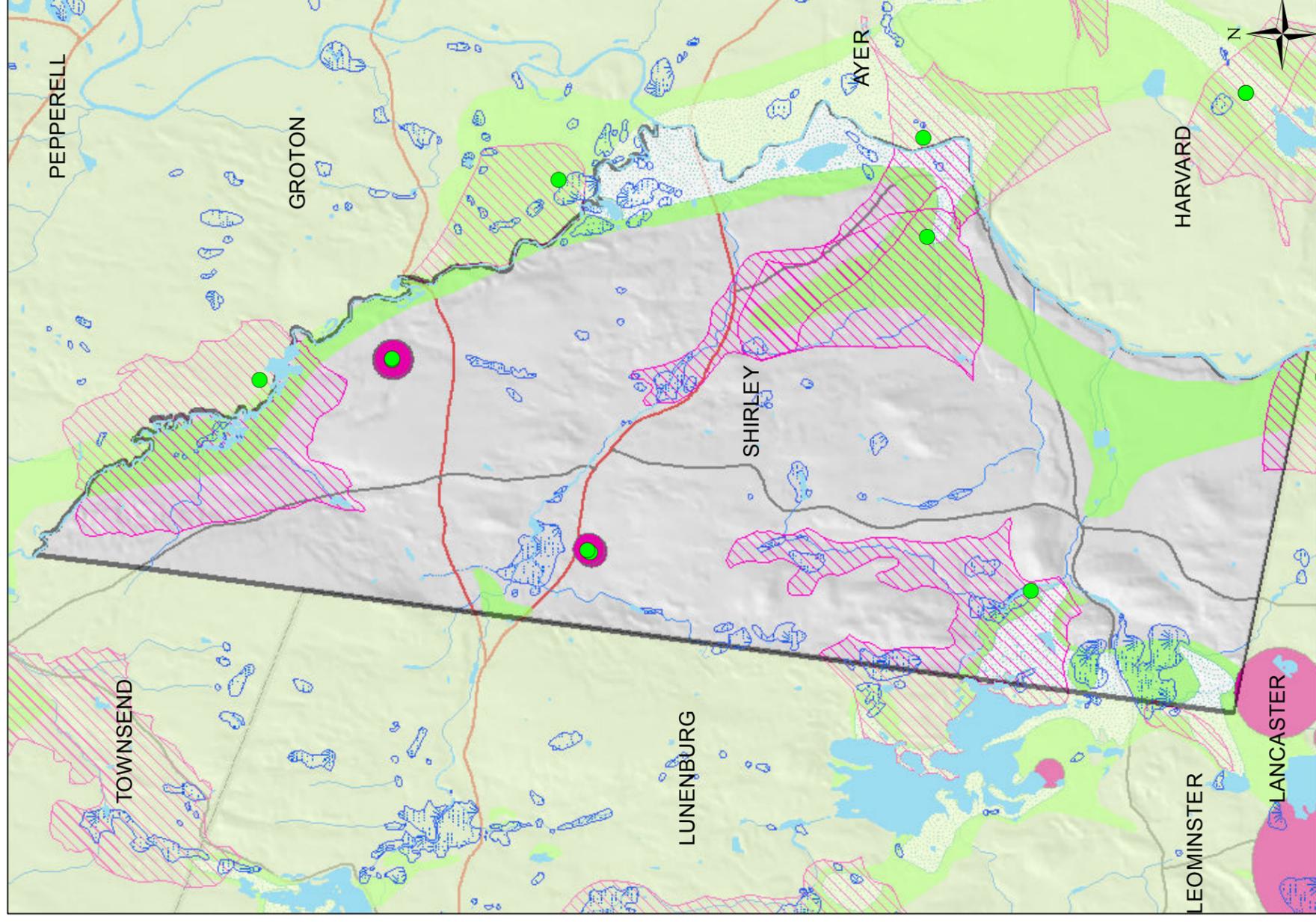
Shirley is located within state designated high and medium yield aquifers and the community groundwater wells in town supply 70 percent of the town's water. There are also major wells immediately bordering Shirley supplying water to neighboring towns.

Approximately half of developed land in Shirley is within the sewer district, yet a majority of the areas zoned for wellhead protection are not. These areas are on septic systems and more susceptible to leachate pollution. As population increases, risk of aquifer contamination will increase.

Conservation land acquisition priorities should be made in the Zone II Groundwater Protection Areas and Water Supply Wellhead Protection Zone II areas. Protecting aquifers, wells, and the surface waters that feed them from pollution supports human needs while supporting wildlife and vegetation.



This map indicates the location of Shirley Sewer District. The figure is from the 2008 OSRP draft.



Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division, March 2011

Existing Infrastructure & Open Space

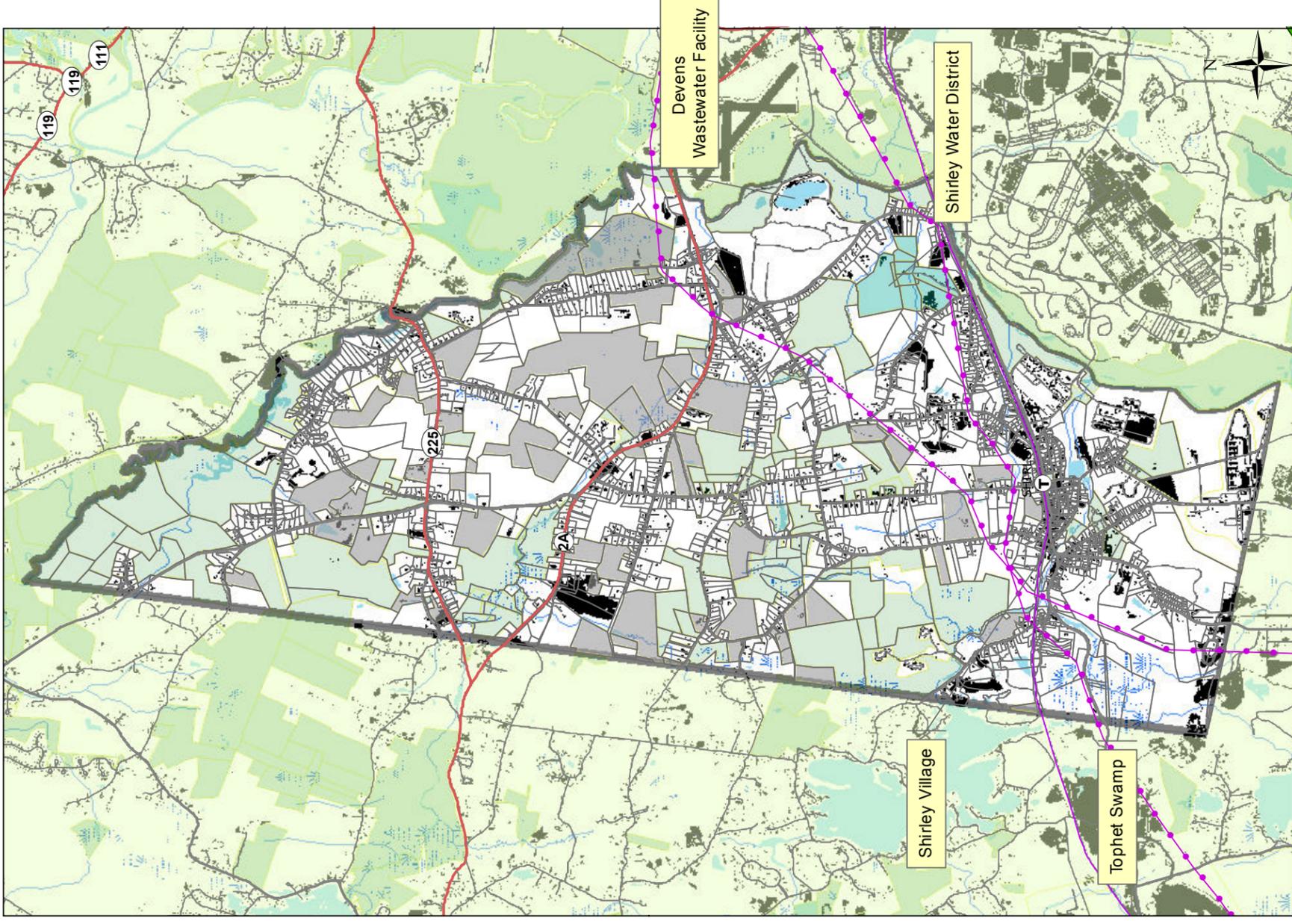
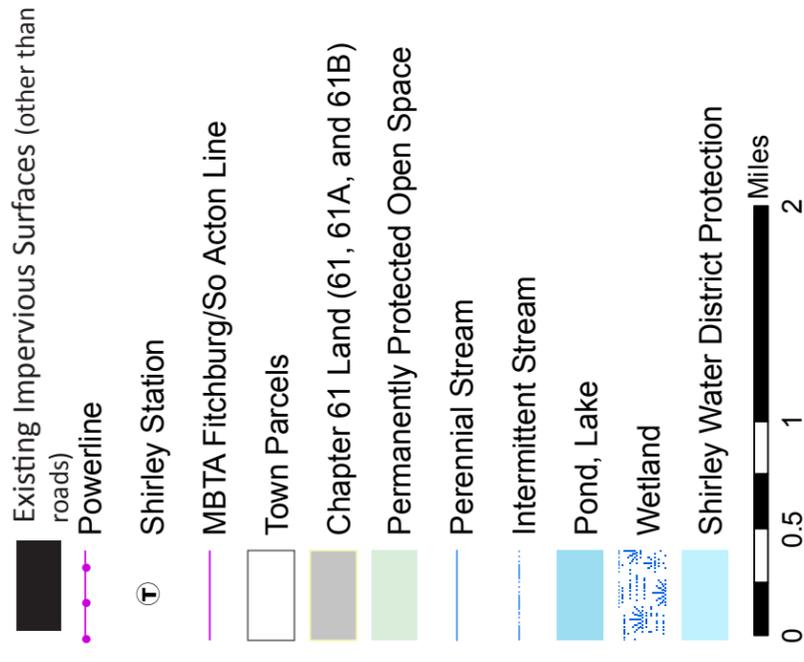
The densest areas of infrastructure are located in the village of Shirley in the southern part of town. Infrastructure includes homes, businesses, commercial and institutional development, and roads, rails, and utilities. In recent years, new development has expanded away from the village core, fragmenting open space. Extensions have been made to the road network to accommodate new development since the last OSRP. Open space protection is located mainly where there is limited infrastructure and along a significant amount of waterways and wetlands. Power lines and roads bisect Tophet Swamp.

Deven's wastewater facility is located in the eastern part of town, northeast of the Shirley Water District. Wells in this district supply 80% of the water distributed from the Shirley Water District. There is an MBTA rail station that runs through the village, accommodating commuters and making Shirley an accessible destination via public transit.

It is important to continually monitor protected space and prioritize conservation and recreation open space land acquisitions in areas where resources exist such as aquifers, stream, and river corridors. Locating future infrastructure development and improvements in the village core may help to prevent further open space fragmentation.



MBTA commuter rail service provides much valued public transportation, and lends to the town character.



Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division, March 2011
Chapter 61 information from MassGIS 2001

SECTION 4



ENVIRONMENTAL INVENTORY AND ANALYSIS

*“More development is
planned in the old apple
orchards. Can more of
this land be protected?”*

-Resident



4: ENVIRONMENTAL INVENTORY AND ANALYSIS

4A. Topography, Geology, and Soils

1. Topography

Shirley's landscape is notable for the abundant diversity and quality of its natural resources, particularly its waters, wetlands, woodlands, and rolling landscape. These features are influenced by the bedrock and topography of the land. Shirley is located at the eastern edge of the New England Upland physiographic province, within the southern portion of the Gulf of Maine Coastal Plain ecoregion and the Southern New England Coastal Plains ecoregion. The town of Shirley lies entirely within the Nashua River watershed. Elevations range between 220 feet to over 470 feet above sea level. Topographic features of note include Major Hills, Brattle Hill, Squannacook Hill, Benjamin Hill, and Tophet Swamp, and Spruce Swamp.

2. Geology

The wide valleys and rolling hills of Shirley were formed by glaciers that covered the region over 10,000 years ago. The glaciers left behind eskers, kames, and drumlins. The bedrock underlying Shirley consists of metamorphic sedimentary rocks: metamorphosed siltstone and schist in the eastern side of town, slate and phyllite in the west. In some areas, the bedrock forms abundant outcrops or ledge at the surface of the ground; northern Shirley has a significant amount of outcrop, whereas the outcrops in the central portion of town are smaller and scattered. The surficial deposits overlying bedrock consist primarily of glacial deposits of sand, silt, and gravel.

Glacial deposits are generally described as glacial drift, till, glaciofluvial deposits, and glacial outwash. Glacial drift is rock debris

transported by glaciers and deposited directly from the ice or from the melt water. Till is an unsorted, non-stratified glacial drift comprising silt, sand, gravel, cobbles, and boulders transported and deposited by melting glacial ice. Till deposits are characterized by low porosity and permeability; as a result they pose sewage disposal problems for developers and rarely constitute good aquifers. In Shirley till deposits exist in the central north to south portion of town. The till is interrupted by stratified drift, well-sorted sands, and gravel deposited by streams, the drift exists in congruence with most stream beds, wetlands, and aquifers. Thick sand and gravel deposits with a high potential for water supply are known as aquifers. Wells that draw from productive aquifers may yield up to 1,000 gallons per minute. More recently deposited sediment includes alluvium, floodplain deposits associated with major river valleys and the lower segments of tributary streams. Alluvial deposits consist of silt and fine sands and in Shirley are found in the floodplains of the larger brooks and rivers.

3. Soils

Surficial geology determines the soil types in a given area. Approximately half the town is composed of well-drained soils with an impermeable hardpan layer restricting the downward flow of water; these include areas where the surficial geology is made up of coarse glacial stratified deposits, abundant outcrop, and shallow bedrock, as seen in the Geology and Soils map. These areas are vulnerable to surface water pollution and generally not suitable for development, particularly for on-site wastewater disposal systems and leaching fields; however, these areas are often excellent wildlife habitats. About a third of the town is covered by well drained sandy and gravelly soils; this soil type poses the least challenges for development and the best conditions for aquifers, seen in the Zones of Contribution map.

There are prime farmland soils throughout Shirley. Most areas of prime farmland overlay coarse glacial deposit and till bedrock zones. Prime farmland is defined by the Natural Resource Conservation Service (NRCS) as:

Land that is best suited to produce food, feed, forage, fiber and oilseed crops. The soil qualities, growing season and moisture supply are those needed for well-managed soil to produce the highest yields and requires minimal expenditure or energy and economic resources, and farming it results in the least damage to the environment.

www.nrcs.usda.gov

In addition, the NRCS defines soil types of statewide or local importance to agriculture as:

...those that fail to meet one or more of the requirements of prime farmland, but are important for the production of food, feed, fiber or forage crops. They include those soils that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland if conditions are favorable.

www.nrcs.usda.gov

Three types of NRCS-designated prime farmland soils are spread throughout Shirley; 1,402 acres of prime farmland soil, 2,605 acres of local importance, and 577 acres of unique importance (MassGIS). Protecting land with soil types from development will ensure that appropriate lands are available for the production of local food, and the rural character of the town is maintained.

Wetland soil types are found in about 25 percent of the town, as seen in the Water Resources map, mostly along the western town border and brook and river corridors to the east. The rest of Shirley is underlain by bedrock. Wetlands are integral to biodiversity and should be monitored and protected.

Because the forested landscape is integral to Shirley's character and so important to residents, the soils that support tree growth should be considered important enough to conserve. This can be done through zoning and non-zoning means, increasing density in developed areas, and encouraging private land protection and forest management.

The U.S. Department of Agriculture (USDA) has designated prime forestland soils so that communities may use this information to protect forests from conversion to non-agricultural uses. Since 70% of Massachusetts' soils were classified as prime forestland soils, USDA funded a project by the Department of Forestry and Wildlife Management (now Department of Natural Resources Conservation) and the University of Massachusetts to define, classify, and map categories of prime forestlands in the State.

The USDA prime forestlands were divided into three categories; Massachusetts classes of forestland divided nine categories of soil types based on productivity and wetness. Prime I, II and III, Prime III wet, Statewide Importance and Statewide Importance wet, Local Importance and Local Importance wet, and Unique. The categories range from I, as the optimal with tree growth ranging from 80-100' mature trees, to III with trees reaching mature heights of 65-75'. Statewide and local important soils produce forest cover around 40' high, where trees are likely growing on shallow, outcrop, or ridge top soils. The wet forestland soils reflect hierarchy of tree growth in shallow, high-water table soils, which risk puts trees at risk wind throw, but can still have productive growth rates. Prime forestland soils support a production of white pine wood fiber at a rate greater than eighty-five cubic feet per acre per year, and northern red oak wood fiber at a rate greater than forty cubic feet per acre per year (see Prime Forest Soils map). The U.S. Forest Service defines forestland as

vegetated cover with a growth of wood fiber at a minimum rate of twenty cubic feet per acre per year.

Forestland with Prime I, II, and III soils would be the most important to conserve for commercial forest management. Soils of statewide and local importance have the potential for producing wood products but the financial return may not be as high. The town should consider Prime forestland soils as a criterion for assessing the relative value of productive forests (see link to New England Forestry Foundation case study link in Appendix N). The town should also use prime farmland soils to prioritize protection and conservation of forest corridors to prevent fragmentation and maximize productive sustainable forestry potential. Looking at successful examples, collaborating with Chapter 61 forestland management plans to create forest corridors can provide recognition and funding sources from larger agencies, enhance recreation opportunities within the forests, and expand wildlife corridors and greenways.

4B. Landscape Character

Shirley is largely defined by its open waterways and its woodlands. Water has played a central role in shaping Shirley's physical and visual character (see Unique Features map). There are approximately 20 miles of riverfront on the northeast and southeast boundaries, a third of the town boundary. These waterways include the Squannacook River and the Nashua River, which are of particular scenic interest and provide recreation opportunities such as swimming, fishing, and boating. They are among the most prized waterways in the region.

Two internal river systems, the Mulpus and Catacunemaug Brooks, provide views of maple-wooded wetlands, although lands

adjacent to the brooks have been densely settled. Along the western boundary, on the Lunenburg town-line, Beaver Pond, Long Swamp, and Tophet Swamp support unique wetland vegetation communities.

Scenic views are created by a mix of uplands, small wetlands, perched ponds, and hills. The crests of Benjamin Hill, Brattle Hill, Squannacook Hill, Chaplins Hill, Hazen Hill, and the Major Hills provide distant panoramas backed by Mt. Monadnock, Mt. Wachusett, and even the Boston skyline on a clear day.

The topographic features influence the biodiversity of natural systems and organisms in Shirley. Large swaths of Shirley are designated by the National Heritage and Endangered Species Program (NHESP) and BioMap 2 (See Appendix) as biologically important natural landscape and habitat and by the Squannacook Rivers Act as Areas of Critical Environmental Concern (ACEC). According to BioMap 2 and NHESP, biological core habitats are in the north, along the Nashua and Squannacook Rivers, across the central east to west belt that bisects the town, and in the southwest corner. Within these regions are critical natural landscapes; species of conservation concern, critical natural landscapes, wetlands, forests, vernal pools, and aquatic cores. Much of the NHESP and ACEC areas are permanently protected. Thirteen vernal pools are currently certified in Shirley, which qualify them for protection under the Wetlands Protection Acts. The certified vernal pools are located through a central east to west band that bisects the town, yet there are many that exist throughout the rest of town and have not been certified (see Plant & Wildlife map). Certain priority habitats also overlap with town aquifers and waterways. The majority of protected open space parcels within NHESP and ACEC designated areas are permanently protected.

Much of the NHESP, BioMap 2, and ACEC areas are currently protected. Certain priority habitats also coincide with town aquifers and waterways.

Conservation land acquisitions should be a priority for unprotected regions of NHESP and ACEC designations in order to protect biodiversity. In turn, the natural resources will also be protected for humans as wildlife viewing areas and water supply. In the 1990s and early 2000s a significant number of vernal pools were identified by a local couple, the Gabriels. An Open Space Committee could continue to certify vernal pools and advocate for protection and conservation land acquisition.

The numerous river corridors in Shirley are recreational assets; more planning is needed to determine the most ideal locations for boat launches and swimming holes so that human access doesn't damage habitat or water quality. Additionally linking priority habitats, potential greenway corridors and trail linkages should be considered to promote ecotourism and encourage town 'nurturing' of these resources.

4C. Water Resources

1. Watersheds

Water resources in Shirley have largely influenced the location of farmland, forestland, development nodes, and roads. About 440 acres of Shirley's total area are surface water: rivers, streams, lakes, and ponds. There are four sub-basins within the town of Shirley: Squannacook River, Mulpus Brook, Nashua River, and Catacunemaug Brook (see Water Resources map). Historically, development has grown around the waterways; roadways, farmland, and forests and rippled outwards from them. Shirley is part of the greater Merrimac River basin which includes the Nashua River

Watershed. Rivers and streams within the sub-basins are classified as Outstanding Resource Waters (ORWs) under the Squannacook-Nissitissit Rivers Sanctuary Act, which aims to protect the rivers from stormwater and wastewater discharges. Although the Squannacook and Nashua Rivers were severely polluted in the 1970-80s, over the past thirty years water quality management in the Nashua River Basin has been implemented by the Nashua River Watershed Association and the rivers are clean enough today to serve as regional recreational resources. The twenty miles of continuous riverfront are protected, undeveloped, and publicly accessible (www.nashuariverwatershed.org).

2. Surface Water

Draining into the Squannacook and Nashua Rivers are the ten streams that flow within the four sub-basins in Shirley:

- Mulpus Brook
- Catacunemaug Brook
- Trout Brook
- Walker Brook
- Trap Swamp Brook
- Pumpkin Brook
- Morse Brook
- Beaver Pond Brook
- Bow Brook
- Spruce Swamp Brook

The Nashua River forms 12.5 miles of Shirley's southeast town boundary. The Squannacook River runs along the remaining boundary to the northeast.

The confluence of the North and South Nashua Rivers forms the Nashua River in Lancaster, south of Shirley. The river flows north towards the Merrimac River in Nashua, New Hampshire. The river is dammed throughout its course; the Ice House Dam is in Shirley.

According to the Massachusetts 2012 Integrated List of Waters, the Nashua River segment from the confluence with North Nashua River, Lancaster to the confluence with the Squannacook River is impaired due elevated *Escherichia coli* (*E. coli*) and total phosphorus levels. Impairments to biology include aquatic macroinvertebrate bioassessments and sediment bioassay toxicity. There is a considerable amount of permanently protected open space along the Nashua, including the Oxbow National Wildlife Refuge one of the largest open spaces on the Nashua River sub-basin.

The Squannacook River joins the Nashua River on the eastern boundary of Shirley at the town juncture of Shirley, Ayer, and Groton. The Squannacook is designated an Outstanding Resource Water (ORW) under the Massachusetts Surface Water Quality Standards. It is a high-value riverine ecosystem with high aesthetic quality and wildlife habitat. However, the reach of the river above the Hollinsworth and Vose dam is impaired due to “lack of cold water assemblage” (the presence of dams warms the water), and *E. coli* in the upper reaches. The river is the focus of the Squannacook-Nissitissit Rivers Sanctuary Act, which protects ORWs from degradation by new discharges of non-point source pollution. A significant portion of this basin is protected in Shirley at the Squannacook Wildlife Management Area, managed by the Division of Fisheries and Wildlife (DFW) in the northern most part of town. There are several priority habitats connected with the river. Pumpkin and Walker Brooks are cold-water fisheries and stocked with trout. Both the Squannacook and the Nashua are classified as “B” rivers, suitable for primary and secondary contact recreation and fish and aquatic wildlife habitat.

The Mulpus Brook drains into the mainstem of the Nashua River just downstream of the Devens Wastewater Treatment Facility.

Beaver Pond Brook is a major stream that feeds the Mulpus Brook whose source water comes from a wetland complex at the base of Chaplin Hills. The Mulpus Brook Wildlife Management Area (WMA) and the Hunting Hills WMA in Lunenburg are the largest contiguous blocks of conservation land in this sub-basin. The Mulpus Brook sub-basin is currently under a medium level of stress due to run-off, sedimentation, and non-point source pollution (Nashua River Watershed Association). In the fall of 2000 the Shirley Greenway Committee did a stream-bank survey of Mulpus Brook. The brook was noted generally to have a good buffer and to be a high quality waterway, yet noted several problems including septic discharge at a mobile home park and sedimentation build-up at various road crossings.

Catacunemaug Brook flows southeast and reaches the Nashua River south of where the Squannacook River joins the Nashua. Just north of the Nashua and Catacunemaug confluence is the Oxbow National Wildlife Refuge. Several state-designated-NHESP wetlands feed the brook. Several ponds are associated with Catacunemaug Brook; Swamp, Spruce and Bow Brooks also feed it. There are several town-owned parcels protecting the riparian zone, including Holden Road Conservation Area. According to the Nashua River Watershed Association, threats to the brook and sub-basin include stormwater discharge, non-point contaminants, and road runoff.

Lake Shirley is located mainly in Lunenburg but has 1,500 feet of shoreline in Shirley, now inaccessible due to private development. Other surface water features in Shirley include several natural and manmade ponds. Squannacook and Dead Ponds are natural ponds, while Leatherboard, Fredonian, and Mill Ponds are examples of stream impoundments that were created to supply Shirley’s historic mill industries. Fredonian Pond is unswimmable, the area around

Leatherboard Pond is not protected as open space.

Boat launches and swimming holes on the Squannacook River may be accessed from the Conservation Commission parcel located off Squannacook Road, the Crow Island Conservation Area at the Groton Road Bridge, and the Squannacook DFW parcels. The Nashua River is accessible through the Conservation Commission parcel on Great Road, through Devens open space, and at the Ice House Dam. The Mulpus Brook is accessible through DFW parcels on Townsend Road. Rich Tree Farm, Valley Farm, and other public conservation lands provide access to Spruce Swamp, Spruce Swamp Brook, and Walker Brook. The Fredonian Nature Center hiking trails provide access to Catacunemaug Brook.

Conservation of riverfront and shorelines are important because a riverine “greenway” acts as a vegetated buffer to protect water quality and wildlife habitat, prevent flood damage, and provide outstanding recreation opportunities. Priorities for protection include a riparian buffer for Mulpus Brook near Brattle and Squannacook Hills in Shirley, the brook is a crucial corridor for wildlife movement towards the Oxbow National Wildlife Refuge and wildlife areas nearby.

3. Aquifer Recharge Areas

Groundwater is the town’s main source of drinking water. Shirley’s most productive aquifers are associated with thick deposits of glacial outwash sediments. Productive groundwater wells in Shirley and in the entire Nashua River valley are where porous glacial sediments are between 75 and 95 feet deep. Low-yield aquifers are found in smaller valleys, such as the Squannacook River valley. The two aquifers in Shirley are located in the central region of town, one located within the Catacunemaug sub-basin and one partially in the Mulpus Brook sub-basin and mostly in the

Nashua River sub-basin (see Zones of Contribution to Public Supply Wells map). The Shirley Water District includes Patterson Well, Walker Road, and Catacunemaug Well along with potential well sites in North Shirley which include the Squannacook, Cook Farm, and Bow Brook sites. The Environmental Business Zone of Fort Devens is on the Shirley side of Devens North Post and located within the aquifer that supplies the Patterson and Walker Road Wells. This zone includes the Devens Wastewater facility which treats all water from the Shirley sewer system. Most of the homes north of Great Road have private wells.

Protecting Shirley’s water quality and specifically its aquifer recharge areas have been important town goals since the first OSRP because the composition of the till bedrock means that aquifers are susceptible to contamination. In 1986 the town created four Water Supply Protection Zones to minimize the threat of pollution to these valuable town resources.

Stormwater management policies are extremely important in Shirley. By controlling construction and post-construction run-off and instituting best management practices for municipal operations, communities can reduce the risk of non-point source pollution to wetlands, surface waters, and groundwater supplies. Stormwater management systems are important to prevent risk to public health problems by protecting the water supply and surface waters for clean drinking water. Responsible waste management practices and septic system design and maintenance at residential properties can also help to minimize the threat to Shirley’s aquifers. According to the Massachusetts Department of Environmental Protection’s Surface Water and Protection Report (SWAP) for the Shirley Water District, current threats to water resources include potential contamination from the Shirley landfill and gravel removal operations near the down-gradient of the

Catacunemaug Well caused by point and non-point discharges. Also Dalan, Inc. and Bemis Association are generators of small quantities of hazardous waste (DEP SWAP Report, 2003). Currently there are nine sites in Shirley with underground storage tanks; three gasoline tanks at the Citgo gas station on Front Street; and one gasoline tank, three fuel oil tanks, and two diesel tanks at MCI-Shirley. These tanks are being monitored by the MassDEP. Other concerns include sedimentation and erosion caused by careless human activity. These can hasten the filling of ponds and disrupt these fragile ecosystems, causing damage to plant and animal life. Even small changes to ponds can be enough to inhibit photosynthesis or interfere with other natural processes. Fredonian Pond along the Catacunemaug Brook are still unusable for swimming due to contamination from upstream septic leachate according to information gathered at the February public meeting. The 2004 connection of the Shirley Village area to sewer and the wastewater facility at Devens should help to abate this pollution by reducing leach fields that run towards the Catacunemaug Brook and Fredonian Pond. According to monitoring by the Nashua River Watershed Association, the Catacunemaug River just upstream of Fredonian had E. Coli counts above MassDEP swimming standards (126 cfu/mL) in the summers of 2013 and 2014.

4. Flood Hazard Areas

The Federal Emergency Management Agency (FEMA) 100-year floodplain areas are along the Nashua and Squannacook Rivers and the Mulpus and Catacunemaug Brooks. Several smaller tributaries have associated floodplains, including Bow, Spruce Swamp, Walker, Morse, Trout, Trap Swamp, Pumpkin, and Beaver Pond Brooks. The town of Shirley Zoning Regulations and Wetlands Protection Bylaw, and the Massachusetts Wetlands Protection Act restrict new development within the 100-year floodplain. Seasonal flooding occurs in some of these areas, such as along Walker Road and the southern

portion of Clark Road, which were developed prior to these regulations. Recreation areas associated with waterfront are located within floodplain zones, such as Lake Shirley waterfront, the Rod and Gun Club land, the Oxbow National Wildlife Refuge and the Squannacook boat launch.

5. Wetlands

Floodplains, wetlands, and swamplands cover approximately 1,000 acres of the town. The Mulpus and Beaver Pond wetland complex connect through Beaver Pond Brook to make up the largest wetland complex in Shirley. Tophet, Spruce, and Long Swamps cover approximately 300 acres. Wetlands associated with open surface water provide valuable flood storage by acting as a sponge to absorb and gradually release water. Wetlands allow water to seep into and recharge the groundwater. In doing so, wetlands act as natural filters that maintain water quality in surface water systems while serving as valuable vegetation and habitat for fish and wildlife.

Wetlands at lower elevations are associated with the regional water table. At the lower elevations these wetlands have consistent water levels and tend to be more biologically productive year-round. Some of these wetlands are located near lakes and streams, other wetlands derive water from groundwater seepage or surface runoff. Wetlands located at higher elevations tend to occur in areas where the water table is perched above bedrock or till. These wetlands tend to be small and isolated, and sometimes seasonal.

6. Vernal Pools

Vernal pools are seasonal wetlands that provide valuable habitats. They can be protected if certified through the Massachusetts Natural Heritage and Endangered Species Program. (Certifying a vernal pool documents that it exists and gives it certain protections under various federal

and state law, and is regulated under the Massachusetts Wetlands Protection Act.) Some amphibians require vernal pools to complete their life cycles and they are important wildlife habitat and sources of food and water for many other fauna. They contribute significantly to the biodiversity of the forest and are particularly important for rare species. Vernal pools are vulnerable to development because of their small size and the fact that most dry out during the summer months, rendering them unrecognizable to the untrained eye. The pools need associated areas of adjacent upland to be viable since many species, including salamanders, spend only a portion of their lifecycles in the pools. According to NHESP, Shirley has thirteen certified vernal pools.

4D. Vegetation

The traditional New England landscape of open fields and forest is integral to the character of Shirley. Over 50 percent of the town is forested, although most of the large contiguous forested lands are being fragmented due to development (see Prime Forest Soils map). Vegetation in Shirley is characteristic of northeastern Massachusetts and generally consists of upland forests, wetlands, and grasslands. The mix of vegetation within these communities is critical for wildlife habitat and flood storage capacity, and it can buffer humans from noise and wind, while reducing manmade erosion and sedimentation.

Existing vegetation in Shirley can be roughly divided into the following plant communities. The locations are based on elevation, topography, ground water supply, and human use patterns.

1. Forest

The most common woodlands are found on warm, south- and west-facing upland successional forests which are oak-dominated and include white pine, red maple, blackbirch, and pignut hickory. This kind of forest can be

observed at Rich Tree Farm. Thinner, relatively dry soils found on hilltops support some of the same species, as well as scarlet and black oaks. American beech, Eastern hemlock, and white birch appear on the cooler, north-facing slopes. This combination of tree species is common in the Massachusetts Division of Fisheries and Wildlife land near Squannacook Road and the DFW Pumpkin Brook area. Lower elevation forests include red oak and white ash. Eastern white pine grows in virtually all upland habitats and some wetland habitats, and is one of the first tree species to appear on former agriculture land.

2. Wetlands

Shirley's wetlands include swamps, bogs, wet meadows, vernal pools, and seasonally flooded areas. Most of Shirley's wetlands are red maple swamps. Some wetlands host specialized vegetation communities adapted to high water tables and acidic, low-nutrient conditions. Examples are Spruce Swamp, where ericaceous shrubs (such as blueberries), leatherleaf, sphagnum, sedges and other rare species are found (see NHESP Species of Endangered, Threatened, and of Special Concern).

It is important to permanently protect wetlands; they foster important biodiversity and replenish drinking water. Wetlands are protected by federal and state restrictions, but are still at risk. If an entire wetland cannot be acquired for protection, the buffer around the wetland should be acquired to protect the interior.

3. Grasslands

As agriculture shifted westward from New England, many farm fields were abandoned and are in various stages of becoming reforested. Some grasslands and meadows remain, however, including in Shirley, off Townsend and Lawton Roads in DFW land; along Whitney Road, north of Route 225; off Center Street; and near Harvard Center Road.

Without management the meadows often convert to early succession forests. Hayfields and meadows that appear along roadsides in Shirley provide scenic vistas, including Longley Acres and Valley Farm. In addition to the aesthetic value of an attractive rural landscape, these areas provide prime habitat for birds and butterflies and thus increase biodiversity.

4E. Fisheries and Wildlife

The range and complexity of habitat types in Shirley, which support a wide diversity of wildlife and fish species, are due to the variability of soils, topography, water resources, and vegetation.

The town's primary habitat types are mature and successional upland forests and emergent, scrub-shrub and forested wetlands. The riparian corridors along the Nashua and Squannacook Rivers provide habitat for a variety of wildlife that depends on riparian habitat, including otter, beaver, black ducks, muskrats, and white-tailed deer. Since the last OSRP, bluebird nesting boxes have been installed around town. In recent years, there has been an increase in [maybe comment about the increase in black bear, fisher, turkey, moose & bobcats. Birdfeeders should be taken down from April to December to prevent conflicts with bears.](#)

According to the NHESP there are several areas of estimated rare species and priority habitats across the central and northern parts

of town (see Plant & Wildlife map). A number of wildlife habitats have restrictions against all but passive recreation, allowing natural processes to occur while open only to public observation. An extensive wildlife habitat in the western part of town, the Hunting Hill Conservation areas, has been preserved in this way and connects to protected land in Lunenburg.

Shirley's rare species habitat should be managed in cooperation with neighboring communities and state and federal agencies. Protection of linked corridors of open space is important to the ecological integrity of the region.

The Massachusetts DFW owns approximately 364 acres in Shirley, habitat for common and rare species. The Division stocks pheasant for hunting and trout for fishing in the Mulpus, Bow, Pumpkin, Catacunemaug and Squannacook River. The Nashua River and its tributaries contain warmwater and coldwater fish species. Warmwater fish include largemouth bass, perch, dace, and several species of sunfish such as bluegill, pumpkinseed, and black crappie. The Squannacook River harbors coldwater brook and brown trout. Maintaining these wildlife populations is important not only to the populations themselves, but also to foster environmental awareness and appreciation within town and to attract recreational users.

Shirley Open Space and Recreation Plan
2014 Draft

Table 4.1 Rare and Endangered Species potential in Shirley

Taxonomic Group	Scientific Name	Common Name	MESA Status	Most Recent Observation
Vertebrate	<i>Ambystoma laterale</i>	Blue-spotted Salamander	Special Concern	2006
Vertebrate	<i>Clemmys guttata</i>	Spotted Turtle	Delisted	2000
Vertebrate	<i>Emydoidea blandingii</i>	Blanding's Turtle	Threatened	2010
Vertebrate	<i>Glyptemys insculpta</i>	Wood Turtle	Special Concern	2007
Vertebrate	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened	2011
Vertebrate	<i>Hemidactylium scutatum</i>	Four-toed Salamander	Delisted	2007
Vertebrate	<i>Notropis bifrenatus</i>	Bridle Shiner	Special Concern	1954
Invertebrate	<i>Alasmidonta undulata</i>	Triangle Floater	Delisted	2006
Invertebrate	<i>Anax longipes</i>	Comet Darner	Special Concern	2010
Invertebrate	<i>Neurocordulia obsoleta</i>	Umber Shadowdragon	Special Concern	2004
Invertebrate	<i>Ophiogomphus aspersus</i>	Brook Snaketail	Special Concern	2006
Invertebrate	<i>Rhionaeschna mutata</i>	Spatterdock Darner	Special Concern	1997
Invertebrate	<i>Somatochlora kennedyi</i>	Kennedy's Emerald	Endangered	1939
Invertebrate	<i>Strophitus undulatus</i>	Creeper	Special Concern	2006
Invertebrate	<i>Stylurus scudderi</i>	Zebra Clubtail	Delisted	2010
Invertebrate	<i>Stylurus spiniceps</i>	Arrow Clubtail	Delisted	2010
Invertebrate	<i>Notropis bifrenatus</i>	Bridle Shiner	Special Concern	1954
Vascular Plant	<i>Asclepias purpurascens</i>	Purple Milkweed	Endangered	1916
Vascular Plant	<i>Cyperus houghtonii</i>	Houghton's Flatsedge	Endangered	2006
Vascular Plant	<i>Lupinus Perennis</i>	Wild Lupine	Watch List	1997
Vascular Plant	<i>Lygodium palmatum</i>	Climbing Fern	Special Concern	Historic
Vascular Plant	<i>Senna hebecarpa</i>	Wild Senna	Endangered	1882

Source: Natural Heritage and Endangered Species Program (2014)

Two studies by Hyla Ecological Services (2005 and 2007) commissioned by Mass-Development for the Environmental Business Zone on the Shirley portion of Devens North Post, confirmed that the area contains over a dozen vernal pools supporting breeding populations of wood frogs and mole salamanders. The parcel supports at least two state-listed rare species, Blanding's turtle and blue-spotted salamander; it is also probable habitat for at least one other listed species, wood turtle. The 2007 Hyla study found this species in adjacent areas including Town of Shirley water supply land. The site is mapped by the state as Priority Habitat for rare species, and it forms a link between the Oxbow Refuge and Shirley's Rich Tree Farm open space parcel and water supply lands. It is also located within the Squannassit Area of Critical Environmental Concern (ACEC).

4F. Scenic Resources and Unique Environments

Shirley's cultural resources include historic buildings, agricultural lands and their settings, archaeological features and remnants, and archaeologically sensitive areas. Historic landscape features include stone walls, foundations, burial grounds, cemeteries, trails, and historic trees which are an important part of Shirley's history and cultural resource inventory. There are many historic transportation routes that offer views from the road into the town's past. Parker and Center Roads are designated scenic roads under the Massachusetts Scenic Roads Act. Shirley Historic Town Center and the Shaker Village are traditional New England villages and are designated scenic areas by the Massachusetts Landscape Inventory. The Phoenix Mill complex, built by the Shakers, has been converted to a successful commercial development.

The old police and fire stations, the President's Suspender Factory, and the Umbagog Mill Building have been restored.

The revitalization of these historic features demonstrate civic pride and a commitment to village improvements

4G. Environmental Challenges

Due to a lack of heavy industrial sites, Shirley has relatively few severe environmental problems, but unplanned development and other pressures have left their mark. Unchecked, they will continue to be a threat to Shirley's future ecological health. Potential environmental challenges to open space, recreation, and conservation goals include hazardous waste sites, landfills, gravel pits, junkyards, erosion, sedimentation, non-point pollution, invasive species, environmental equity, and development impact issues.

1. Hazardous Waste Sites

All of MassDEP hazardous waste sites in Shirley are listed as "adequately regulated" or "responsive actions achieved a level of no significant risk" (Massachusetts Department of Environmental Protection Agency). The hazardous waste sites are qualified by sites where hazardous waste leaks from underground storage tanks or sites of improper waste disposal and management. Although the cleanup of these sites is state regulated through MGL Chapter 21E, the town needs to stay aware of progress of investigations and remediation of these sites in order to protect water resources and public health (see Environmental Challenges map).

Potential risks include remnant contaminants, such as Apple Orchard Estates where the former orchard used pesticides for agriculture. This site was excavated to consolidate and remove up to two feet of soil contaminated with DDE, DDT, Dieldrin, lead, and arsenic. Since development, this site has continued to have run-off and erosion problems and should be monitored to protect water resources in the Nashua River sub-basin (Nashua River Watershed Association).

Future commercial and industrial development in town must be planned to minimize potential impacts of oil and hazardous material usage in order to reduce detrimental effects on open space and recreation land. For instance, during the February public meeting the contaminants in the ground near Lura A. White Elementary School were cited as causing the land to be off limits for play and exploration.

2. Landfills, Gravel Pits, Junkyards

Shirley's closed landfill is of particular concern because of its proximity to the Catacunemaug Well aquifer; it is capped and maintained as grassland. Junkyards and gravel pits pose environmental threats. In regards to open space and recreation land, junkyards pose threats to water sources due to contaminant leakage and gravel pits increase risks of erosion and sedimentation in the water resources.

The Shirley Greenway Committee has erected bluebird boxes on the landfill and other degraded sites. These sites may also be appropriate for the production of potential zones of renewable energy with photovoltaic solar arrays or reuse as future recreation fields, such as tennis or basketball courts.

3. Erosion, Sedimentation, Non-Point Pollution

Human activity, such as residential development and road construction, has caused erosion and sedimentation in Shirley. Small-scale disturbances, such as using chemical lawn fertilizers or unmaintained septic systems, can significantly impact fragile ecosystems. Off-Road Vehicle use on passive trails has caused severe erosive damage to trails as well as streams. Through various regulations and educating the public on the hazards of these practices, erosion and sedimentation challenges can be monitored. Non-point pollution comes mainly from road runoff due to high volumes of cars and trucks on the roads and bridges (Nashua River

Watershed Association). Best Management Practices and stormwater management plans can alleviate these hazards, for instance, catch basins and road-side swales absorb runoff before it hits streams and streams.

4. Invasive Species

Invasive species can be a threat to native species in vegetated areas throughout Shirley. Residents at public meetings noted invasive garlic mustard; Russian olive, purple loosestrife, barberry, bittersweet, and buckthorn which have been identified growing around Fredonian Pond, in the Devens open space, the Oxbow National Wildlife Refuge, and near the Middle School. Invasives often out-compete native species, resulting in reduced biodiversity.

5. Environmental Equity

Low-income and minority populations in Shirley do not have equal access to all of the town's open space and recreation areas. Limited infrastructure such as sidewalks, bike lanes, and public transportation put a majority of conservation and recreation land out of reach to those who do not own a vehicle. For instance, the main recreation area in Shirley is at Benjamin Hill where there are no sidewalks. This is symptomatic of design and planning that primarily accommodates automobiles. Solutions include providing more variety of recreation resources, such as basketball courts or playgrounds in the village corridor, where most low-income and minority populations live, while promoting sustainable initiatives such as smart growth development, community gardens, and expanding services so that residents do not need to travel as far for basic necessities.

6. Devens Reuse Plan

Lacking sufficient information in 1994, the original Devens Reuse Plan consultants incorrectly concluded that there were no wetlands, rare wildlife, or other significant natural resources on the Environmental

Business Zone on the Shirley side of Devens North Post parcel (Ricci, Heidi March 2011). More recent information about natural resources and infrastructure constraints demonstrates the need for revision of the original plan to develop the Environmental Business Zone. In addition to important ecological values, much of this parcel lies over a major aquifer that provides existing and potential future water supplies to Shirley and Devens. It appears that about two thirds of the property, including areas bordering the Oxbow National Wildlife Refuge, the vernal pools and surrounding upland habitat, and turtle nesting areas should be permanently protected under the Massachusetts Endangered Species Act.

7. New Development

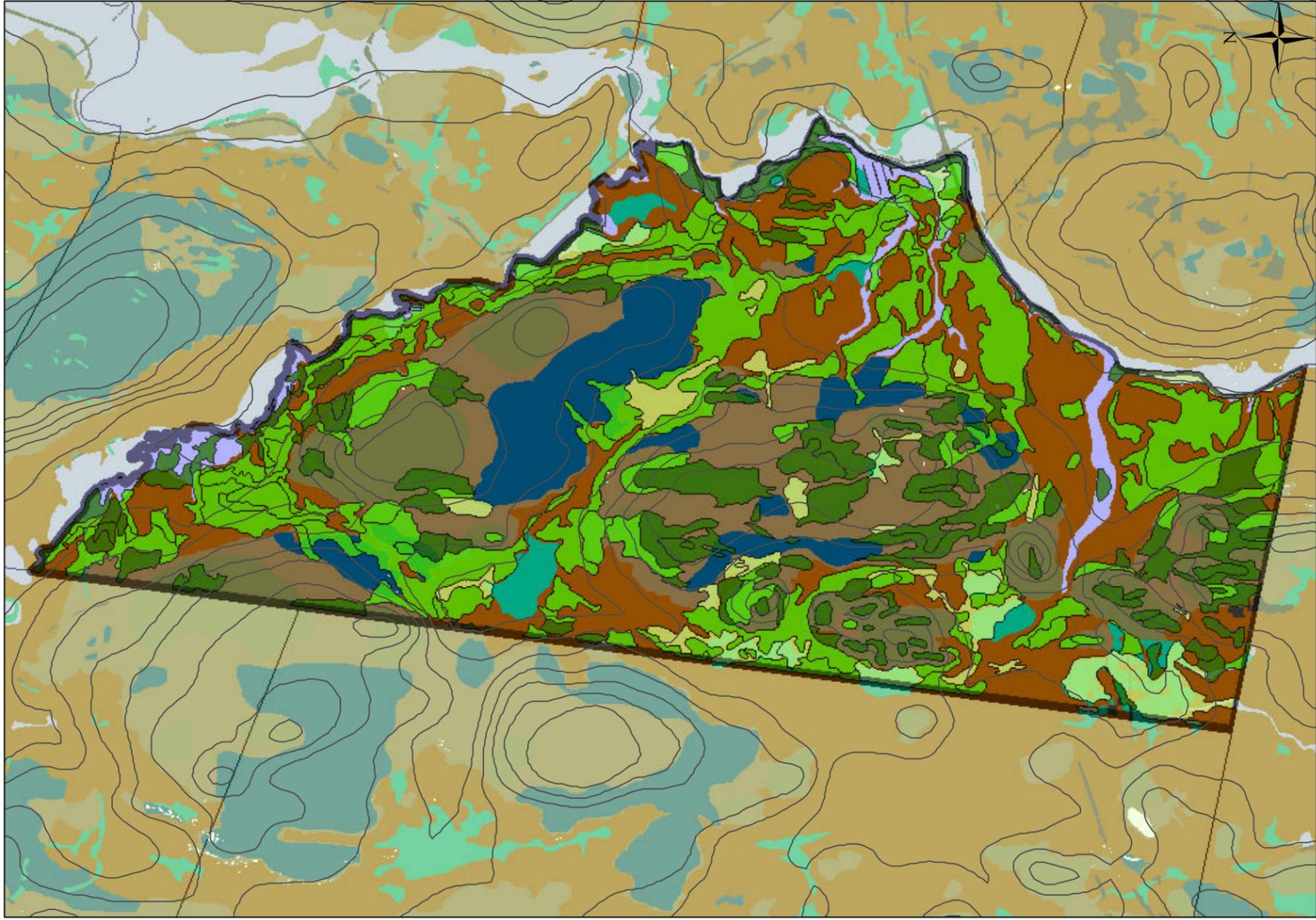
Development has the potential to cause increased erosion, sedimentation, flooding, pollution, fragmentation of habitat and open space. As the population expands there will be increased pressure to develop near or in wetlands. Currently Shirley has several bylaws in place to prevent fragmentation of habitat, open space and conservation lands from development. These include Cluster Zoning, Wetland Bylaws, and Protective Zoning Bylaws. Also in place are the Massachusetts Wetlands Protection Act and the Massachusetts River Protection Act. Through enforcement of these acts and ordinances the town can minimize the impact of development. In addition, Title V, the state's wastewater disposal regulations, has reduced potential impact. However, there has been concern among town residents since the last OSRP (1996) over allowing septic systems and development in areas with low percolation

rates and areas with shallow bedrock. The addition of sewer access and enforcement of Shirley's stringent septic system bylaw has helped reduce the risk of faulty septic systems (Shirley Protective Zoning Bylaws 2005).

Further enforcement of Protection Bylaws and identification of undeveloped land should continually be updated to accommodate the demands of an increasing population, which will put strain on water resources.

Potential development of brownfields, gravel pits, and the landfill should be pursued to address renewable energy resources as means of income generation and land reuse. Currently requests for proposals are out to install solar arrays at the Walker Road and Patterson Well fields/sand pits.

Environmental challenges should be met at all levels: residents, business owners, agencies, committees and town governance. Open space advocates should market the economics of open space; conservation land reduces costs of services to the town, maintains or increases property values, stabilizes property taxes, protects ground water recharge areas, and generates revenue for local business from ecotourism (Kerlinger, 1999, see Appendix K). Adequate staffing, resources, and collaboration of town boards and administrators, open space advocacy, educating the public, passing preservation ordinances, creating regional partnerships that serve to protect open space, and remediating environmental damage will preserve the towns resources and open spaces for everyone.



Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division, March 2011

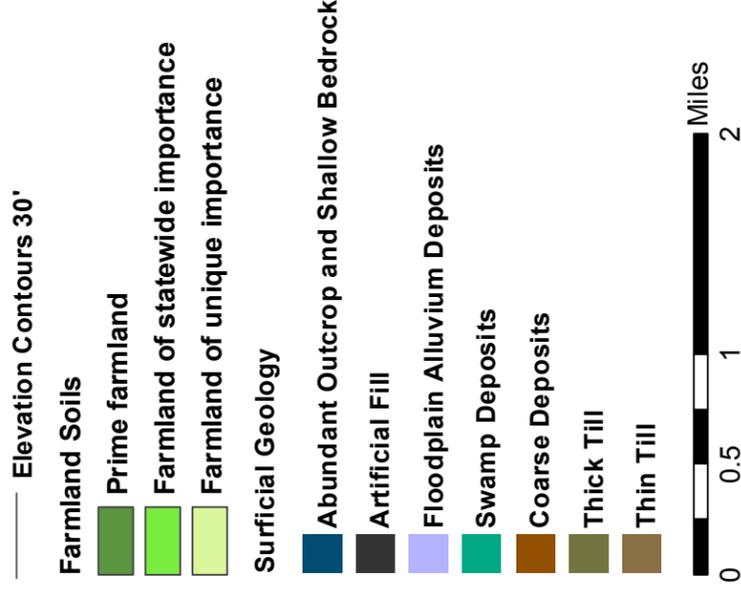
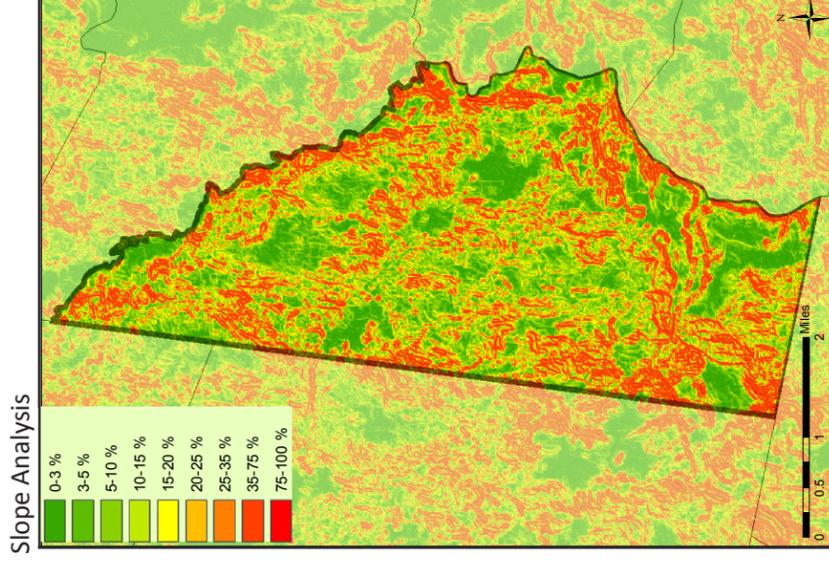
Geology & Soils

The surficial geology in Shirley was formed by glaciers that covered the region over 10,000 years ago. The town is primarily covered in glacial till with major areas of abundant outcrop, shallow bedrock, and thick and thin till. Areas of thick and thin till and coarse deposits provide the best soils for prime farmland. Areas of shallow bedrock, abundant outcrop, swamp and floodplain alluvium deposits offer ranges of good habitat but challenges for development. Excessively drained soils are good areas for development but are easily erodible and have potential to contaminate groundwater.

Most of the shallow bedrock, abundant outcrop, and thick till coincides with elevated slopes that are less developed than other parts of the town (see Existing Infrastructure map). Coarse deposits, floodplain alluvium, and swamp deposits exist in the valleys and tend to support the prime, statewide, and uniquely important farmland. There is minimal artificial fill, due to waste disposal and construction.

The farmland soils indicate the viability of farms in Shirley. Known farms, Longley Acres and Valley Farm, are located on prime farmland soils along the western town line. Historic farms existed through the central north-south zone of prime farmland and are now sub-divided along the roads. Other areas of statewide important farmland have been developed in the southern village core, along the rivers and roads (see Existing Infrastructure Map).

At the public meetings and in questionnaire responses, residents in Shirley said they want to protect farmland from further development. This data shows where prime farmland exists. An Agriculture Commission should be formed to further evaluate existing farmland and explore ways to protect it through Chapter 61 agriculture conservation restrictions or Agriculture Preservation Restrictions (APRs) for prime farmland soils. The town should consider having a Right to Farm bylaw.



Prime Forest Soils

Aside from what has been developed, most of Shirley has soils that are optimum for forests. The USDA designated forest soil classifications as prime, statewide important, local important, prime wet, statewide important wet, and local important wet forest soils.

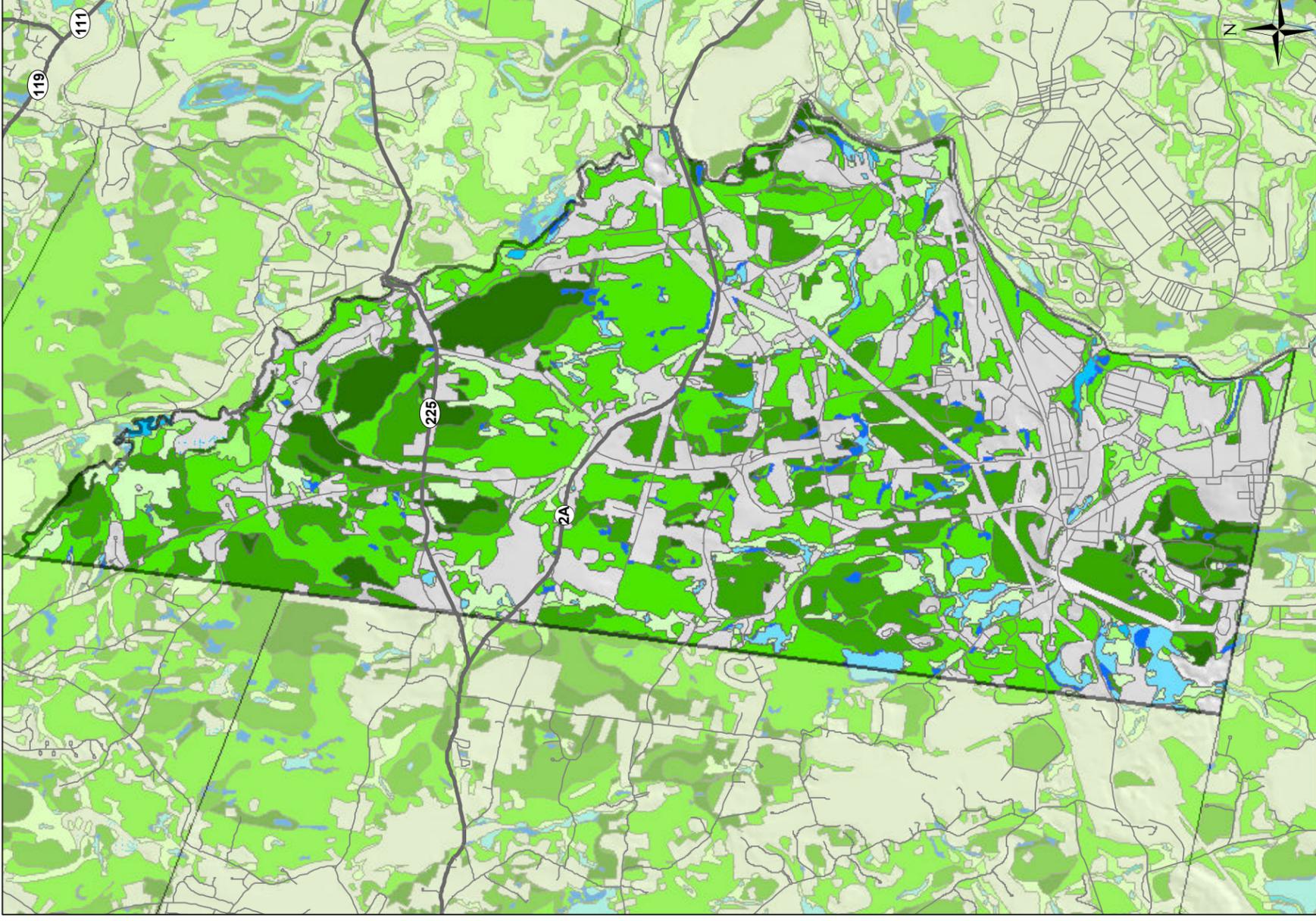
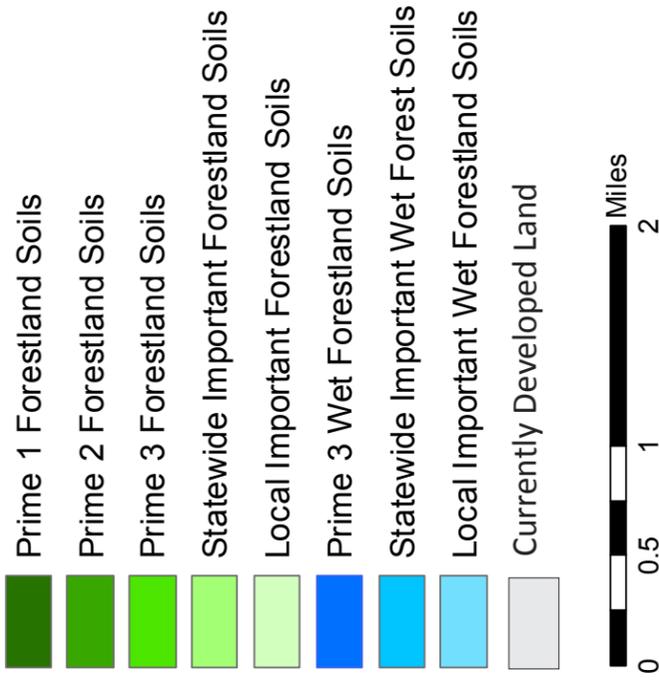
Since 70% of Massachusetts was designated prime forestland soil, the state further designated those soils as Prime 1, 2, or 3. The categories range from 1, the optimal, with tree growth ranging from 80-100' mature trees, to 3 with trees reaching mature heights of 65-75'. Statewide and local important soils produce forest cover around 40' high, where trees are likely growing on shallow, outcrop, or ridge top soils. The wet forestland soils reflect hierarchy of tree growth in shallow, high water-table soils, which puts trees at risk to wind throw, but can still have productive growth rates.

Along the northeast boundary, near the Squannacook River and bisected by Route 225, are large patches of Prime 1 forestland soils, ideal locations for productive and sustainably managed forests. In Shirley the considerable range of existing forest overlaps where the prime, state, local, wet important soils exist. The soils also overlap with prime agriculture soils and existing agriculture (see Geology & Soils map). Forests could be protected and contiguous parcels of woodland with prime forestland soils should be protected.

Forest stewardship plans should be developed for sustainable forestry practices and potential income for the town on parcels with Prime 1 forestland soils.



Forest view in the Pumpkin Brook Conservation Area



Unique Features

Shirley is largely defined by its historic places, fields, forests, rolling hills, and waterways. The Shirley local historic district includes Shaker Village and Shirley Historic Center, where historic foundations, rock walls, and historic structures persist today. Many Native American sites have yet to be documented, but due to the many water courses, the trails that followed them, and historic records in neighboring areas, there may be significant archaeological sites in Shirley.

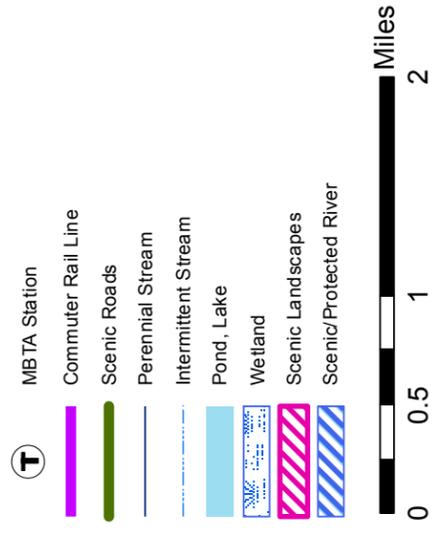
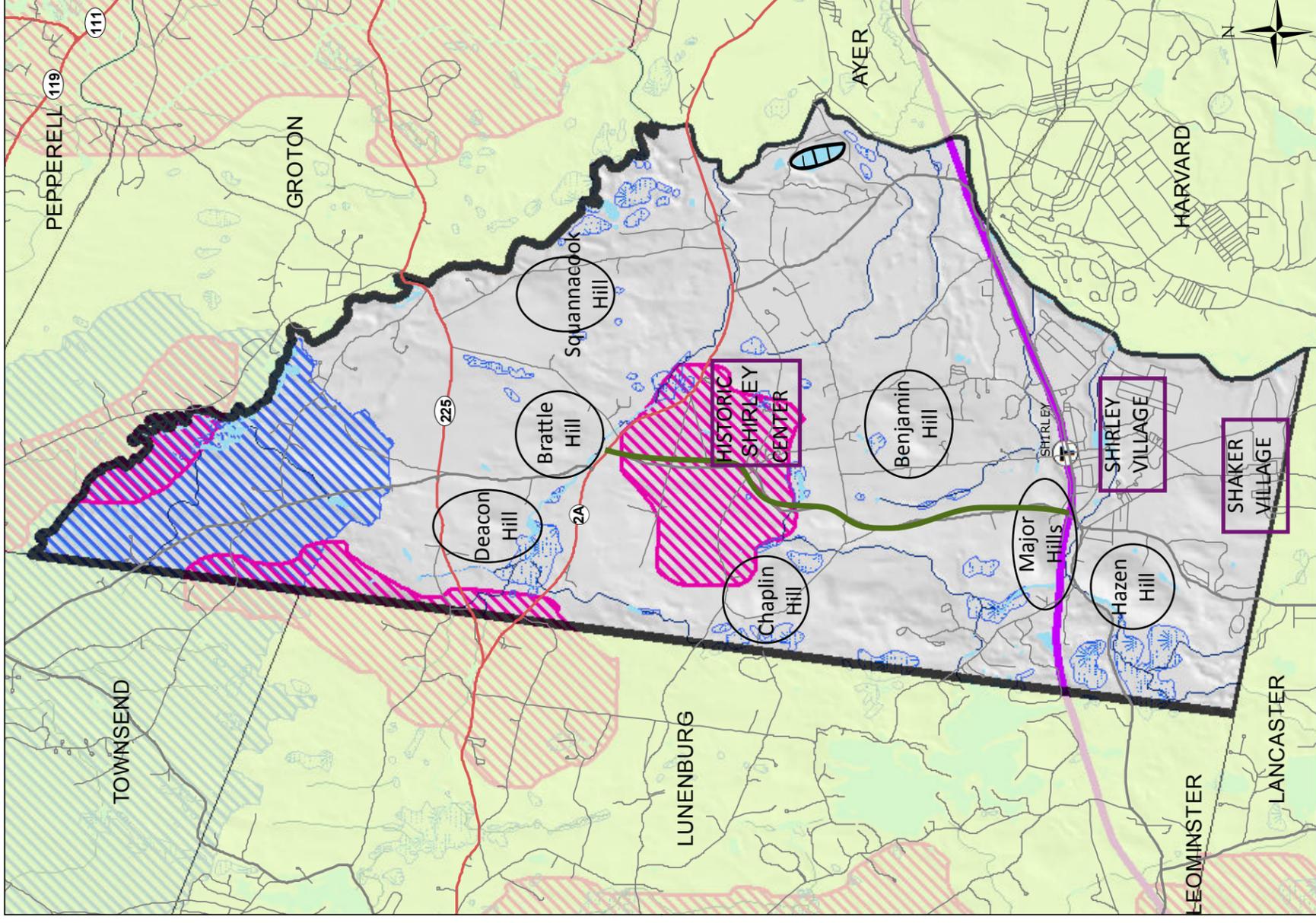
The crests of Benjamin Hill, Brattle Hill, Squannacook Hill, Chaplins Hill, Hazen Hill, Deacon Hill and the Major Hills provide distant panoramas backed by Mt. Monadnock, Mt. Wachusett, and even the Boston skyline on a clear day.

The Nashua and Squannacook Rivers provide scenic and recreational opportunities such as swimming, boating, and fishing. The numerous wetlands in Shirley provide crucial habitat for rare and endangered species. Shirley has two state designated scenic roads which link the Shirley Village to Shirley Historic Center. The MBTA commuter rail line and the station in Shirley provide means of transportation for commuters, draw tourists, and provide access to Shirley's unique resources.

Hilltops should have maintained trails and public access. Important archeological features should be protected and scenic areas highlighted. Town agencies should collaborate to protect unique natural and cultural features that together define Shirley's visual character.



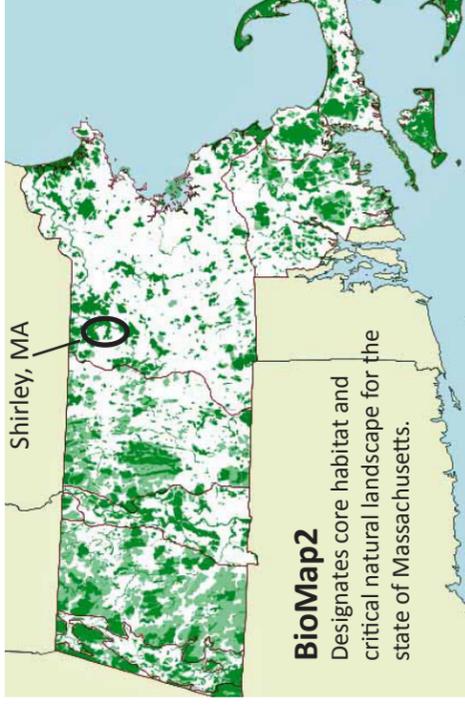
Vista from the Hunting Hill Conservation Area



Plant & Wildlife

A significant amount of land in Shirley is designated by the National Heritage and Endangered Species Program (NHESP) (and BioMap2, which coincides with NHESP designations) as biologically important natural landscape and habitat, and by the Squannassit Rivers Act as Areas of Critical Environmental Concern (ACEC). According to the BioMap 2 and NHESP, biological core habitats are in the north, along the Nashua and Squannacook Rivers, across the central east to west belt that bisects the town, and in the southwest corner. Within these regions are critical natural landscapes: species of conservation concern, critical natural landscapes, wetlands, forests, vernal pools, and aquatic cores. Much of the NHESP and ACEC areas are permanently protected. Thirteen vernal pools are currently certified in Shirley, which qualify them for protection under the Wetlands Protection Acts. The certified vernal pools are located through a central east to west band that bisects the town. Many that exist throughout the rest of town have not been certified. Certain priority habitats also overlap with town aquifers and waterways. The majority of protected open space parcels within NHESP and ACEC designated areas are permanently protected.

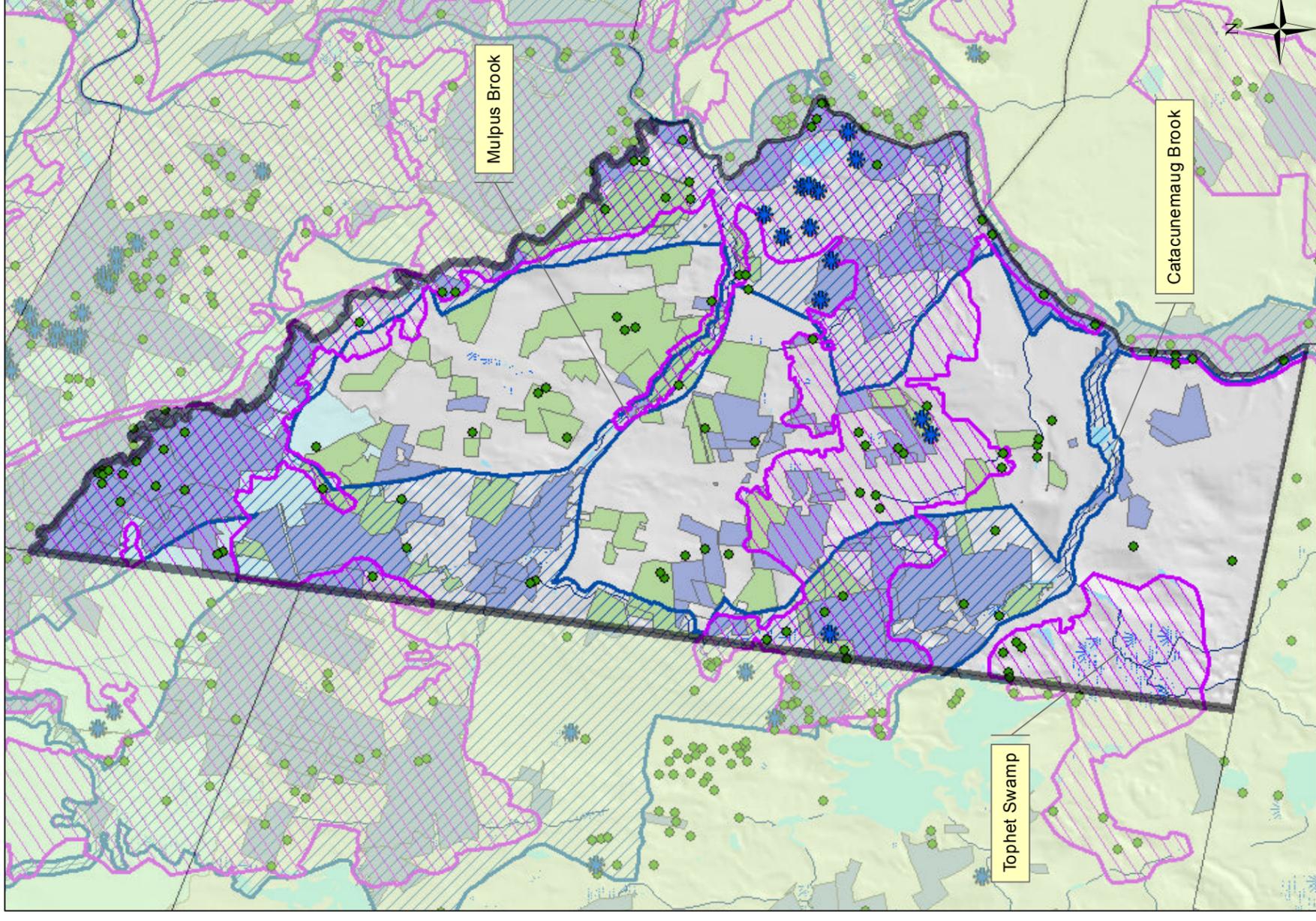
Places where NHESP and ACEC designated areas overlap are high priority sites for permanent habitat protection. Protection is lacking along the Mulpus Brook and Catacunemaug Brook NHESP/ACEC zones. There is no protection in the southwest corner, Tophet Swamp, and for many of the vernal pools. Permanently protected conservation land acquisitions should be a priority for unprotected regions of NHESP and ACEC designations in order to protect biodiversity. In turn, the natural resources will also be protected for humans as wildlife viewing areas and water supply. The certification process of vernal pools across Shirley should be revived in order to protect and conserve them.



Exploring in the Catacunemaug Brook



Spotted salamander - Rare & Endangered Species NHESP



- * NHESP Certified Vernal Pool
 - NHESP Potential Vernal Pool
 - NHESP Priority Habitat of Rare Species
 - Area of Critical Environmental Concern
 - All Chapter 61 Land
 - Permanently Protected Open Space
 - Outstanding Water Resource
 - Perennial Stream
 - Intermittent Stream
 - Pond, Lake
 - Wetland
- 0 0.5 1 2 Miles

Environmental Challenges

The MassDEP has determined that the three state-regulated hazardous waste sites in Shirley currently pose no significant risk or no longer contain any hazardous materials. All three of these sites are located in the town's industrial zone. The proximity of two of the three sites to NHESP-designated wildlife habitat and the Catacunemaug Brook may have adversely affected these riparian and riverine habitats in years past and monitoring should be continued.

Leachate from Shirley's landfill near Tophet Swamp and fluids from gravel pits and junkyards all have the potential to contaminate the town's underground water supply. Continued monitoring of water quality in and around the town's gravel pits, junk yards, and other sensitive areas is of utmost importance.

Flooding events along the Nashua and Squannacook Rivers, the brooks and wetlands across Shirley can cause erosion and sedimentation issues during snow melt and heavy rains, often on developed parcels and roadways.

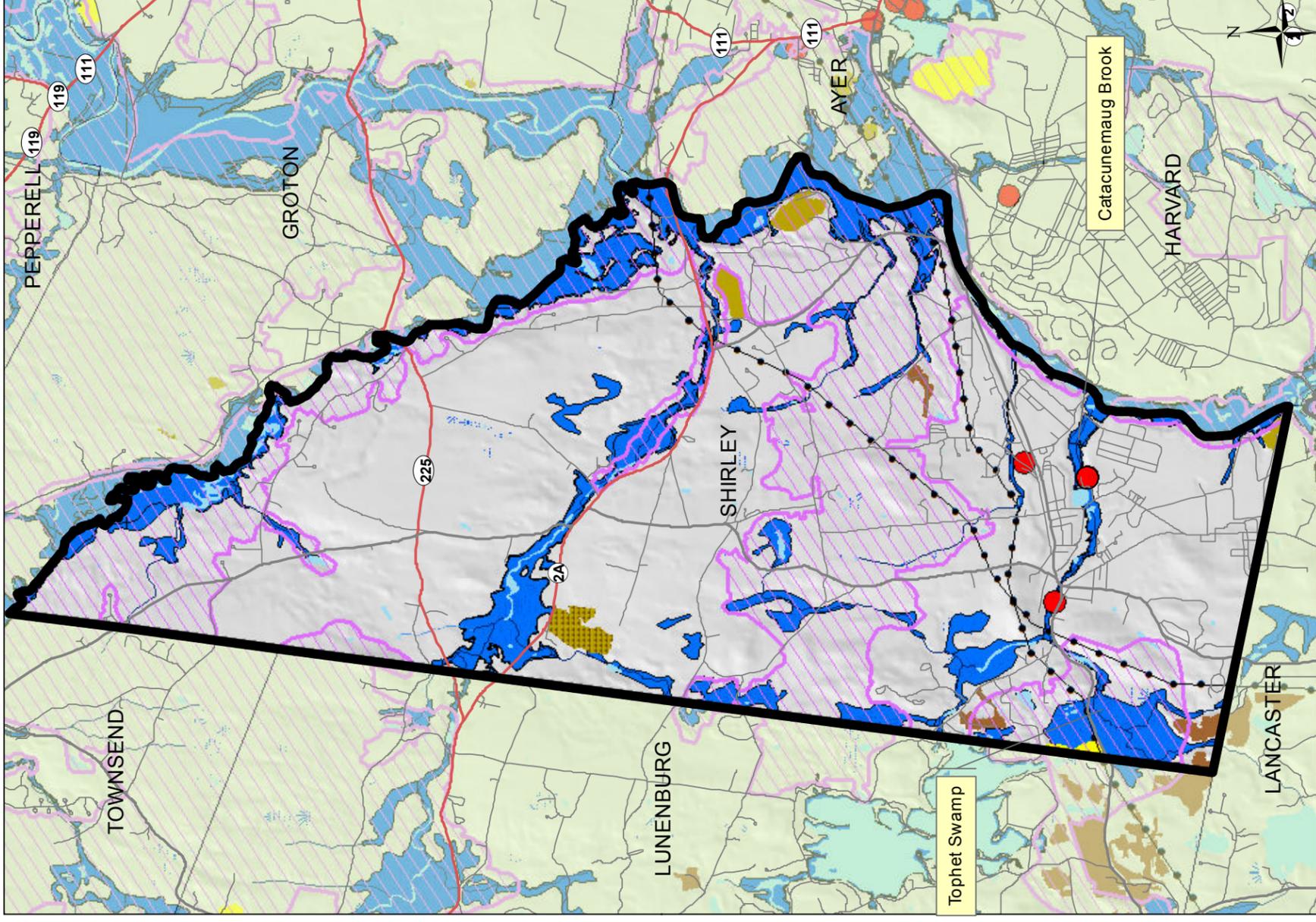
Off Road Vehicle (ORV) use on passive trails has caused severe erosion damage to trails and streams. Through various regulations, cooperation and education of trail users, these conditions can be improved.



ATV use is illegal on conservation land, and there are no legal trails in town.



ATV's use power line corridors causing trail degradation.



Source: Office of Geographic Information (MassGIS). Commonwealth of Massachusetts Information Technology Division, March 2011

Shirley Open Space and Recreation Plan
2014 Draft

SECTION 5



INVENTORY OF LANDS OF CONSERVATION INTEREST



*“There is amazing
wildlife at North Post of
Devens, rare species
habitat, and passive
recreation.”*

-Resident

5. INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

The term “open space” is often used to refer to conservation land, forested land, recreational land, agricultural land, corridor parks, such as small parks, green buffers along roadways, or any open area that is owned by an agency or organization dedicated to conservation. However, the term can also refer to undeveloped land with particular conservation or recreation interest. This includes vacant lots and brownfields that can be redeveloped into recreation areas. Some open space can be used for passive activities such as walking, hiking, and nature study while others are used for more active recreation such as soccer, tennis, or baseball.

The following section is an inventory of land that will include public, private and nonprofit properties. Some of the properties may already be protected open space dedicated to conservation or recreational use; others will be identified for future acquisition or other protection measures. Varying degrees of protection are associated with each of the parcels in this inventory. Consistent information about each parcel was not always available and detailed property inventories are planned on public recreation and conservation lands.

Private land can be protected in perpetuity if there is a conservation restriction placed on the property. The property owner maintains ownership while protecting land from development. A legally binding agreement entered into with a qualified conservation organization and with Commonwealth and Town approval, may lower property and estate tax liability as well as conserve the resource. The conservation organization that monitors the restriction to make sure its

conditions are met can be the Town Conservation Commission, the Commonwealth (Division of Fisheries and Wildlife or Department of Environmental Management), Massachusetts Audubon Society, The Trustees of Reservations, New England Forestry Foundation, Nashua River Watershed Association, etc., depending on the nature of the restriction. Other deed restrictions could include Agricultural Preservation Restrictions, historic preservation restrictions, or scenic resource restrictions. Those restrictions running in perpetuity are protected under Article 97 of the Articles of Amendment of the State Constitution.

Lands under special taxation programs are actively managed by their owners for forestry (Chapter 61), agriculture (Chapter 61 A), or recreation (Chapter 61B). The Town has the right of first refusal should the landowner decide to sell and change the use of the land, therefore it is important to assess these parcels for suitability for possible future protection. (See Acquisition Assessment in Appendix.)

Lands acquired for watershed and aquifer protection are often permanently protected open space.

Public recreation and conservation lands may be permanently protected open space (Article 97 land), provided they have been dedicated to such uses as conservation or recreational use by deed. Municipal properties may be protected if the Town Meeting votes to place a restriction on them.

Status of Devens Open Space Land

The closure of Fort Devens has presented the town with another opportunity for expansion of its recreational facilities. Arrangements are currently in place to use the playing fields on Shirley land at Devens for baseball, softball, and soccer programs. Some of these fields will be permanently dedicated to recreation,

while others may be developed according to the Devens Reuse Plan. The Massachusetts Development Finance Agency (MDFA) has prepared an Open Space & Recreation Plan (OSRP) for Devens. The MDFA's OSRP makes a commitment to retain most of the recreational facilities located within the Devens Open Space District. MDFA has also committed itself to a "no net loss" policy for recreational facilities at Devens, with the baseline level of facilities based on the needs assessment in "Fort Devens Regional Management Plan" prepared for the Fort Devens Reuse Center, Open Space & Recreation Task Force, and the Towns of Ayer, Harvard, Lancaster, and Shirley. This needs assessment was prepared with input from the Shirley Recreation Committee as well as the other affected communities. The MDFA and the Joint Boards of Selectmen (JBOS) of Ayer, Harvard, and Shirley have also signed a Memorandum of Understanding regarding future coordination for use and management of open space and recreational facilities at Devens. Shirley will have two representatives on the new Devens Open Space and Recreation Advisory Committee. This Committee and the JBOS will provide ongoing mechanisms to address issues related to community use of Devens recreational facilities. Of particular concern for Shirley are the fees charged by MDFA for use of the Devens facilities and the issue of affordability for the town to use these facilities. In addition, the needs assessment noted that the existing facilities in the respective towns and facilities proposed for use at Devens will not be adequate to meet the long-range needs of the communities involved.

5A. Private Parcels

A.i. Private Parcels Protected in Perpetuity

A.i.1 Conservation Restrictions

Harriet Lyon Conservation Restriction (CR#1): 13.64 acres. Hazen Rd. Restriction held by the Conservation Commission. Land adjacent to town land at Spruce Swamp. No public access. Parcel 53B5.

Valley Farm Conservation Restriction (CR#2, CR#3, CR#8): 177.57 acres. Restriction held by the New England Forestry Foundation. Center Road. These lands are managed for sustainable tree harvest and as wildlife habitat. There is an extensive trail system, open to the public, which joins with the town's Holden Road Conservation Area to offer a long distance upland and marsh hiking opportunity from Holden Road to Catacunemaug Brook. Parcel 54A3 (4.3 acres), 35A3 (98 acres), and 38A1 (45 and 30.27 acres carved out of the larger parcel)

Farandnear Conservation Restriction (CR#4): 80.908 acres. Restriction held by The Trustees of Reservations. Site of Paradise Gorge on Spruce Swamp Brook, cranberry bogs, and an extensive well-maintained trail system open to the public. Access is from Holden Road (not shown on parcels map) and Center Road. 53A1.1 (1.25 acres), 59A3 (35.48 acres), 59A4 (9.5 acres), 59A5 (3.42 acres), 59A5.1 (6.55 acres) 59A7 (3.2 acres), 59A9.3 (12.322 acres), 59A10 (9.186 acres).

Birchwood Hills Conservation Restriction (CR#5): 92.8 acres. Pond Road. Restriction held by the Conservation Commission. Extensive trail system links with Holden Road Conservation Area and Valley Farm trails. Public access for hiking, nature study, horseback riding, cross-country skiing. Protects water resource values and wildlife habitat along Long Swamp and Catacunemaug Brook. Parcel 36B1.

Benjamin Estates Conservation Restriction (CR#7): 6.3 acres. Hazen Road. Restriction held by the Conservation Commission. Public access by foot, horseback, skis, snowshoes.

Walker Brook runs through property. Parcel 62A12.04.

Hill Lane Conservation Restriction (CR#9): 2.93 acres. Hill Lane off Benjamin Road. Restriction held by the Conservation Commission. Protection of scenic area, brook and a significant wetland area. Affordable housing. No public access. Shirley Conservation Commission holds CR. Easement A- Parcels 32A18, 19, 20 (1.29 acres), Easement B – Parcels 32A16, 17 (1.64 acres).

Colburn Conservation Restriction (CR#10): 6.35 acres. Center Road. Conservation restriction held by Trustees of Reservations. No public access. Wooded upland. Parcel 53B3.

Holdenwood Trust Conservation Restriction (CR#11): 102.35 acres. Various parcels in Shirley and Lunenburg. Both Shirley and Lunenburg Conservation Commissions hold restrictions. Public access with permission. No horseback riding or motorized vehicles. Morse Brook runs through property. 40A7.3 (2.62 acres), 52A14 (12.48 acres), 56A10 (1.4 acres), 60B2 (1.07 acres), 60B3 (9.00 acres), 61A3.1 (7.00 acres), 61A17 (8.25 acres), 64A4.1 (2.25 acres), 65A7 (5.10 acres), 65A9 (45 acres), 82A6 (7.9 acres).

Executive Estates Conservation Restriction (CR#12): 15.3 +/- acres. Lawton Road. Restriction held by the Conservation Commission. Public access by foot, horseback, skis, snowshoes; no motorized vehicles. Contains Squannacook River. Parcel 102B7.2 (15.5 acres), 102B8.08 (1.29 acres), 102B8.09 (1.26 acres).

Longley Trace Conservation Restriction (CR#13): 10 acres. Longley Road. Restriction held by the Conservation Commission. Protects Mulpus Brook and wetlands associated with Squannacook Hill drainage. Connects to adjacent conservation lands. Access to general public. 80A2.9 (9.18 acres) .

Lakeview Subdivision Conservation

Restriction (CR#14): 18.87 acres. Catacunemaug Road. Restriction held by the Conservation Commission. Public access on parcels A and G; parking area on parcel G; by foot, horseback, cross-country skis, snowshoes, no motorized vehicles. Public access to Lake Shirley, 275' lake frontage. Parcels 18A5(13.06 acres), 19A12(4.30 acres), and 19A12.04(1.48 acres).

The Village at Phoenix Pond Subdivision

Conservation Area (CR#16): 13.53 acres. Shaker Road. Public access on 60' wide access easement of lot 2; pedestrian access only. Fifty-unit cluster development.

A.i.2. Other Private Land Permanently Protected

Hospital Road Parcel Conservation

Restriction 4.91 acres. Conservation Restriction held by New England Forestry Foundation on parcel owned by MassDevelopment on a parcel between Hospital Road and Catacunemaug Brook. Managing agency: MassDevelopment. Open to public, no fee. Steeply sloped forested area acting as buffer to brook, not appropriate for ADA trails. Recreation potential: nature observation. Parcel 26A1.1.

Holdenwood Trust: 147.15 acres. This private conservation trust has extensively conserved land parallel to and east of Center Road between Hazen Road and The Great Road (Route 2A). Contains plantings of perennial and annual flowers, as well as views and footpaths in the English landscaping tradition. In addition, there is a corridor that runs to the top of Benjamin Hill and would connect with land that the town has been working to acquire. Open to the public with permission. The Holdenwood Trust also owns two isolated parcels, one on Mulpus Brook (GIS 1321) and the other near Lake Shirley (GIS 1320).

Shirley Rod and Gun Conservation

Restriction: 143.68 acres. Restriction held by MA Division of Fish and Wildlife and Shirley Rod and Gun Club. Kittredge and Lawton Road. This private hunting and fishing club contains extensive Squannacook River frontage, a fresh water estuary, and Squannacook Pond. 5 parcels, 101A2 (39.02 acres), 85A1 (94 acres), 86B1 (4.01 acres), 86B1.5 (2.20 acres), 99A6 (4.45 acres).

Former Rich Tree Farm / Shirley Water

District: 93.193 acres Owned by the Shirley Water District, an entity established by Massachusetts General Laws operating as a private corporation. These lands protect the Patterson Road Well field. Open to the public for hiking and passive recreation.

27C1(20.053 acres), 28A2.2 (3.95 acres), 29A2 (6.163 acres), 29A3(4.567 acres), 30B6.1(4.88 acres), 30B7(1.85 acres), 30B8(5.47 acres), 30B9(0 .00 acres), 42A1 (46.26 acres),

[Jim Farnsworth's CR on Great Rd. - need to confirm]

Partially Protected Open Space

A.ii. Private Land Protected but not in Perpetuity

Woodland Ridge Conservation Restriction

(CR#6): 17.8 acres. Crabtree Lane off Squannacook Road. Contains well field for homes of Woodland Ridge development. No public access, only for homeowners.

Chapter Lands: 1,867.62 acres total. Lands under special taxation programs, Chapter 61 (521.10 acres), 61A (331.58 acres), or 61B (1014.84 acres) are actively managed by private owners for forestry, agricultural, or recreational use. The town has the right of first refusal should owner decide to take them out of Chapter 61 for development. These lands are listed in the Appendix. Many of

these parcels abut currently permanently protected and other open spaces. If acquired by the town they may add to current conservation and recreation land, enhancing their value by providing greater ecological services, and widening corridors for human and wildlife use. The Conservation Commission should be made aware of parcels that become available.

5B. PUBLIC AND NON-PROFIT PARCELS

B.i. Protected in Perpetuity

Spruce Swamp/Shirley Center: 11.62 acres. Access off Center Road and Brown Road. No developed trails. Contiguous to Harriet Lyon Conservation Restriction off Hazen Road. Parcel 60A2.1

Holden Road Conservation Area: Includes "Holden Triangle." 56.23 acres. Access off Holden Road and through Valley Farm Wildlife Sanctuary. Developed trails follow Spruce Swamp Brook and upland ridges. Trails connect with trail system at Valley Farm. Hiking and skiing. Parcels 37A2.1 (15 acres), 38A2 (39 acres), Parcel 54A4 (2.23 acres).

Thompson Conservation Area: 15.7 acres. Access south of Whitney Road at Lunenburg line. Opposite Harriet Lyon Bird Sanctuary. No developed trails but easily traversed. Combines steep eskers and marsh. Small heron rookery. Beaver Pond Brook originates from these marshes. Parcel 57A3.

Harriet Lyon Bird Sanctuary: 7.83 acres. Access along Beaver Pond Brook north of Whitney Road. An initial well-defined trail ends in a wetland tangle. Parcel 68A5.

Squannacook Conservation Area: 12.5 acres. Access off Squannacook Road. A narrow trail

leads to a heavily forested riverfront parcel. Perched atop the esker on the river's edge, you might think you'd dropped into a wilderness. Contiguous to the Division of Fisheries and Wildlife's 800-acre Squannacook Wildlife Management Area in Shirley, Townsend, and Groton. Parcel 115A4.

Crow Island Conservation Area: 2.10 acres. Includes 711 feet of river frontage at the intersection of Squannacook Road and Route 225 and small island opposite the shore. Access to the island is by canoe. Parcel 103B2.

Fredonian Park and Nature Center: 7 acres. Off Fredonian Street. A public park divided in two by Catacunemaug Brook. A restored mill pond, gazebo, and lawn area are on one side of the brook, on the other side is a mature forest containing some of Shirley's largest broadleaf trees. Parcel 16D15.1.

Rust Nature Conservation Area: 38.36 acres. Access off both sides of Garrison Road. No developed trails. A combination of open meadow and upland forest. Parcels 96B1(17.48 acres), 96B2(7.83 acres), and 96C1(13.05 acres).

J&A Conservation Area: 2.5 acres and 1,200 feet of Nashua River Frontage. South of Route 2A at the bridge to Ayer. Contains a mature oak forest and a view of the Oxbow Wildlife Refuge. Parcel 47A2.2

Mitchell Conservation Area: 1.02 acres. Access off Whitney Road. A small clearing bordering forest without trails. Parcel 58A6.1.

Nashua River Frontage/Walker Road: 2.18 acres. Below Ice House Dam; contiguous to Division of Fisheries and Wildlife Nashua River frontage. Parcel 27D1.

Rich Tree Farm Conservation Area: 111.92 acres. Access from Walker and Hazen Roads. Mature mixed forest. Part of Walker and

Morse Brook drainage. Contiguous to Shirley Water District well protection land to the south. Area is crisscrossed with established paths. Parcel 43A91.

Ronchetti Conservation Area: 95.2 acres. This parcel integrates the Holden Road Conservation Area, Valley Farm Conservation Restriction, and Birchwood Hills Conservation Restriction into a 370-acre protected reserve on the town's western border. Access is from Holden Road Conservation Area, Holden Road, and Birchwood Hills. Parcel 37A1.

Hunting Hill Conservation Area: 30.90 acres. Open to the public. A DF&W Wildlife Management Area. Managed in cooperation with Shirley and Lunenburg. Parcel 109A1.

Townsend Road Conservation Area: 54.81 acres. Vacant town-owned land. Forested, rolling upland with wetlands interspersed. Adjacent to active gravel pit. It was reserved for conservation purposes as part of the acquisition of the Hunting Hill parcels. Parcel 117A3.

Pumpkin Brook Link Conservation Area: 140.7 acres. Managed by the Shirley Conservation Commission. Crossing Townsend Road and connecting to Spaulding Road, these parcels provide connection between large protected acres on the Squannacook River and the Hunting Hill area. A cellar hole on the site is all that remains of the homestead of William Bennett, one of the signers of the 1747 petition to separate the land west of the Squannacook from Groton to create Shirley. Parcels 118A1 (31.9 acres), 118A2.3 (2.07 acres), 118B1 (50.3 acres), 121A1 (6.04 acres), 121B2 (30.7 acres) 122A2 (19.7 acres).

Longley Acres Conservation Area: 73.24 acres. Managed by the Shirley Conservation Commission. It was acquired by the Town of Shirley in 2003 with the help of a state grant. Property maintained as active agricultural

open space, is hayed every summer. The fields and trails are open to the public, and educational talks, workshops and events occur regularly. Parcels 58A2(14.2 acres), 67A1(59.04 acres).

Sullivan Donation: 2.42 acres. Catacunemaug Road. Adjacent to other parcels. Forested land near Catacunemaug Brook. Parcel 37A2.

Dow Conservation Area: 16.03 acres. Mulpus Road. Managed by the Shirley Conservation Commission. Acquired in 2000 from Wilfred Dow. Access off Groton Rd./Rt. 225. The southeast gateway to Hunting Hill. Parcel 95A7.14.

Benjamin Hill Conservation Area: 41.20 acres Benjamin Road. Managed by the Shirley Conservation Commission. Parcel 40A1.11

Old Town Line Conservation Area: 16.56 acres. Holden Road. Managed by the Shirley Conservation Commission. Parcel 55A1.

Going Road: 23.29 Acres. Going Road. Donated by J&A Realty. Managed by the Shirley Conservation Commission. Parcel 76B1.1

Benjamin Hill Park: 11.85 acres. Site of Town's swimming pool, elaborate Bob Leathers outdoor playground, sledding slope, ice skating rink, open playing field and tennis courts. Managed by Benjamin Hill Park committee. Parcels 40A1.12 (8.61 acres), 40A1.3 (1.0 acres) .

Lura A. White School Gymnasiums and Playfields: 14.08 acres A complex of outdoor playing fields for structured recreational programs. Two indoor gymnasiums, available for organized school as well as recreation programs. Parcel 12C1 (10.33 acres), 12 C25 (3.75 acres).

Senior Center Playfields: 4.43 acres. Used to supplement the space in Shirley Center for

outdoor activities. Used for organized youth sports. Parcel 65A1.

Whitely Park: 1.54 acres. Village Park containing most of Shirley's commemorative statuary. Donated by a Shirley Shaker of that name. Parcel 23F1.

Shirley Center Common: 2.43 acres. Heart of the Town's Historic District; used for various community functions (Grange Fair, Hoedown, etc.) as well as informal sports. Includes Colonial training ground. (Not assigned a parcel number.)

Highway Department Gravel Pit: 28.09 acres. Added to the Shirley Water District aquifer protection land. Parcels 30B5, 30B6.

Oxbow National Wildlife Refuge /U.S. Fish and Wildlife Service: 38.3 acres. Open to public use, for uses allowed on the Refuge – see <http://www.fws.gov/refuges/profiles/recEdMore.cfm?ID=53512>. No fee.

Uses related to wildlife e.g. fishing, hunting, wildlife observation and photography, interpretation, and environmental education. Federal land transfer from Army to US Dept. of Interior on land within the Devens Enterprise Zone. Parcel 26 A 1.

Squannacook Wildlife Management Area/Massachusetts Division of Fisheries and Wildlife: 393 acres. Together with land in Groton and Townsend, this Wildlife Management Area totals almost 800 acres and encompasses a variety of ecosystems, from wetland to upland. Well-maintained trails. Access at Trap Swamp Brook on Squannacook Road, and through the Pumpkin Brook and Squannacook Woods subdivisions.

Mulpus Brook Wildlife Management Area/Massachusetts Division of Fisheries and Wildlife: acres. Extensive marsh and upland protection on the north and south sides of Mulpus Brook at the Lunenburg town

line. Includes the south side of Deacon Hill as well as Brattle Hill between Townsend Rd & Longley Rd. Canoe access from Townsend Road. Foot access from Route 2A and the end of Pamela Drive. Good location for bird viewing. Parcels 81A4.1, 81A3, 81A3.1, 81A4, 80A2.14, 47A2.1, 48A2.

Lawton Road/Massachusetts Division of Fisheries and Wildlife: 15.21 acres. These two parcels abut Shirley Rod and Gun Club land and contain Squannacook River frontage. Access is from Lawton Road. Very steep eskers and hemlock groves. Parcels 99 B 1, 101 A 1.

Walker Road, Nashua River Frontage/Massachusetts Division of Fisheries and Wildlife: 29.2 acres. Access along railroad tracks. A very interesting poplar succession forest interspersed with small moss covered meadows. Parcels 28B12.4 (18.73 acres), 28C1 (10.47 acres).

Bonney Sheahan Parcel/Massachusetts Division of Fisheries and Wildlife: 75.6 acres. Townsend Rd. Acquired on 1/19/2011. Book 56312 page 207. Mostly wooded but has some small fields. Parcel 91B1.

B.ii. Public and Non-Profit, Protected, but not in Perpetuity

Shirley Center Cemetery: 5.73 acres. The Town's historic burial ground. Parcel 60B1.

Village Cemetery: 7.53 acres. Parcel 16D13.

Groton Road Land: 8.86 acres. Vacant town-owned land. Forested; very high perched groundwater table is characteristic of this area. Parcels 97B14, 97B15.

B.iii. Public and Non-Profit, of Conservation or Recreation Interest, but not Protected

Leominister Road Landfill: 47 acres. Capped Town landfill; formerly part of Tophet Swamp. Wetlands persist in over half the site. It could fill recreational needs in the future, as the permanent cover will need to be maintained as grass. The wetlands area could be integrated into any conservation of Tophet Swamp, Bow Brook, and the Leatherboard Pond. Parcels 10A2 (41.8 acres), 10.2.1 (1.05 acres), 10 A1 (0.58 acres). Not included on Open Space map.

MCI Shirley Greenway: 21 acres. The MCI correctional facility, with 236 acres in Shirley and additional land in Lancaster, contains a protected Greenway along the Nashua River from the Devens boundary to Route 2. The protection is in the form of agreements with the towns of Shirley and Lancaster, and the Nashua River Watershed Association. There is no public access to the Greenway. Agricultural fields, which historically have produced food for the Massachusetts prison system as well as what remains of Shirley Shaker Village, are also at MCI. The Shaker Village has received Historical Landmark designation.

NOTES:

[Parcels not accurately represented on the Open Space Inventory map or otherwise:

Indian Trail- 5.6 acres- land behind Village Cemetery (15 E 12, 15 E 11) not on map or listed above

Holdenwood Trust on western border, N of Mount Henry Road, not on map, needs to be documented.

Downey Gift does not show up in a parcel layer, east of Lunenburg town line, south of Whitney Rd.

Open Space

Level of Protection

Included in this inventory are areas, both public and private, protected in perpetuity (2552.21 acres), areas of limited protection (31.49 acres) and areas of unknown status (22.85 acres). The lands in this inventory are spread relatively evenly throughout Shirley making them accessible for all populations. They are concentrated along the Squannacook and Nashua Rivers, wetlands, and well supply areas, helping to protect those valuable water resources and wildlife habitats.

Public and private recreation and conservation lands are protected in perpetuity if they have been dedicated to such uses by deed. Municipal properties may be protected if specified in funding for acquisition.

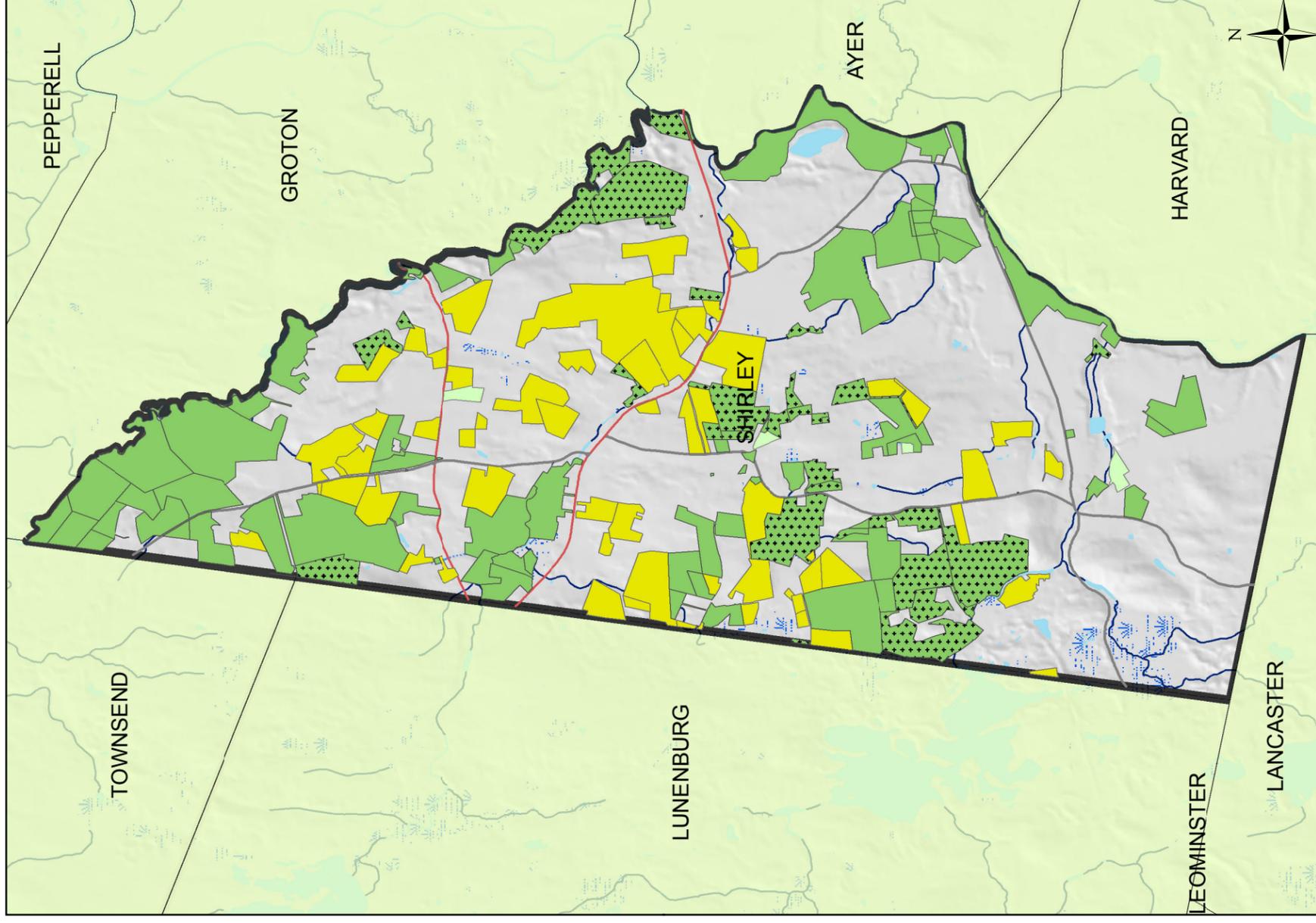
Private land can be protected in perpetuity if there is a conservation restriction placed on the property. The town has sixteen of these parcels (828.31 acres).

Other open space may be protected via Shirley Zoning Regulations, Wetlands Protection Bylaw, and the Massachusetts Wetlands Protection Act, and the Massachusetts River Protection Act (land protected by these laws are not necessarily represented on the map).

Lands under special taxation programs, Chapter 61 (521 acres), 61A (332 acres), or 61B (1014 acres)* are actively managed by their owners for forestry, agricultural, or recreational use and are "protected but not in perpetuity." The town has the right of first refusal should the landowner decide to sell and change use of the land. The Town should assess and prioritize Chapter land for possible future acquisition or other protection measures, such as use of an Agricultural Protection Restriction or a Conservation Restriction. (See Acquisition Assessment in Appendix.) When abutting other conservation areas, such lands may enhance the value of current conservation and recreation land by providing greater ecological services.



Valley Farm Conservation Area



Open Space Protected in Perpetuity

- Fee simple ownership
- Conservation restriction

Open Space Protected, Not in Perpetuity

- Chapter 61A Agriculture
- Other temporarily protected land

(*Note: Chapter 61 acreage from Town of Shirley Assessor for Fiscal Year 2012 not represented on the map.)



Open Space

Ownership of Protected Lands

Protected open space ownership in Shirley is approximately 80 percent public (federal, state, and municipal) and 20 percent private and non-profit.

Conscious efforts have been made by the Town of Shirley to acquire open space in a way which produces larger and contiguous parcels. The aggregation of adjacent parcels enhances protection of natural resources by reducing fragmentation and widening corridors. Connecting parcels also creates opportunity for trail building within the town and region (see Shirley MA 2006 Trail Inventory in Appendix).

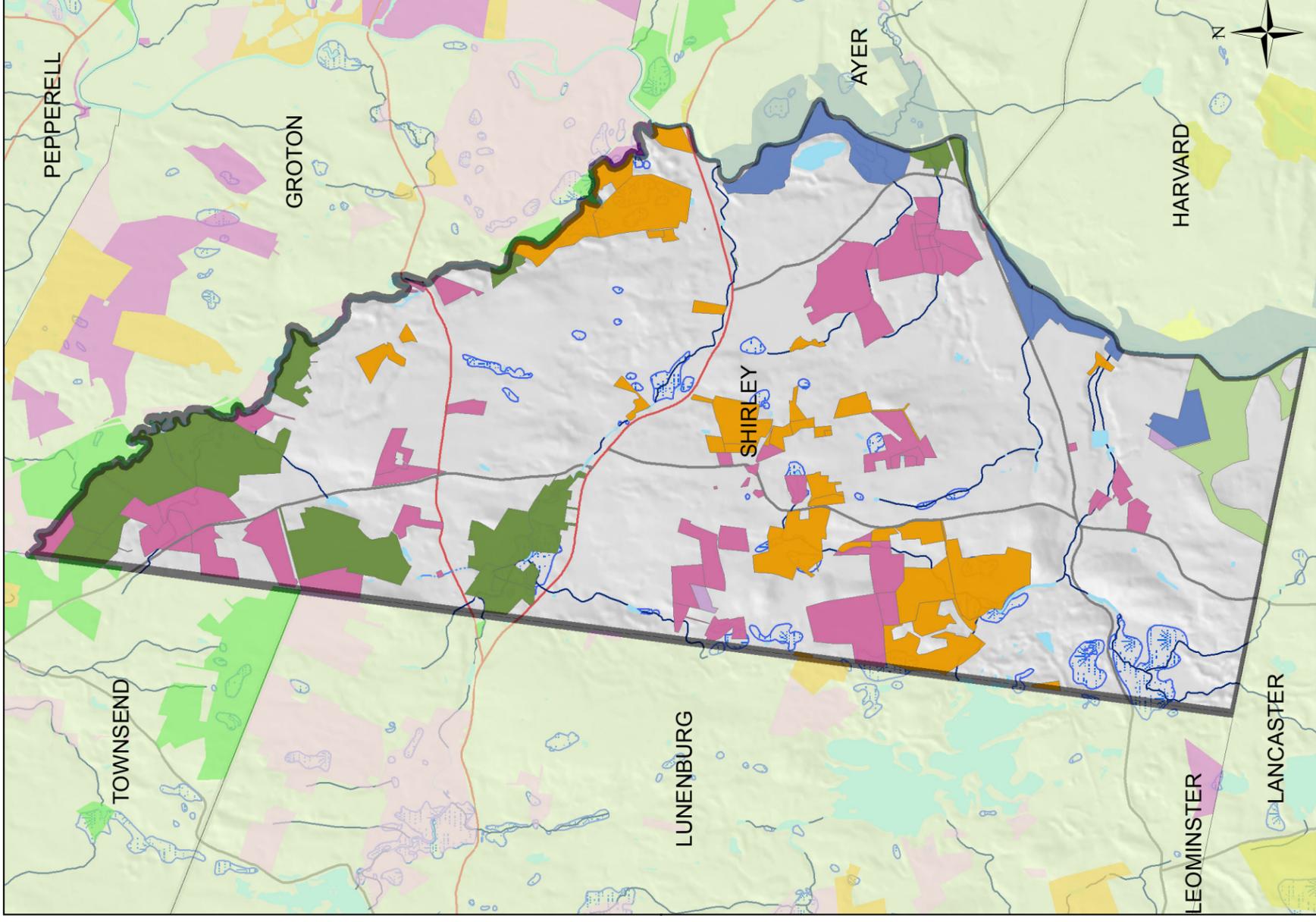
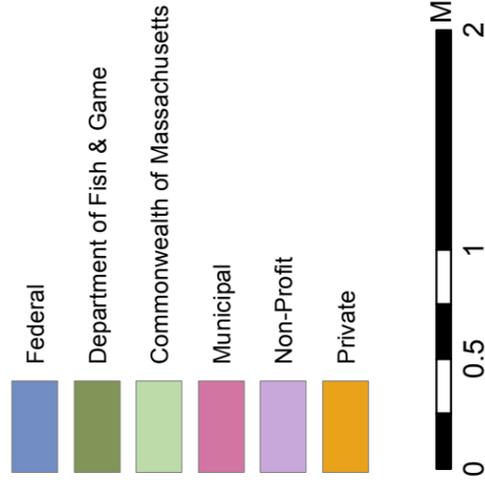
Collaboration between many owners, whether public or private, has resulted in the large protected open space inventory. Municipal protected lands about private lands, and other public lands throughout the town. It will be important to continue to work with various public and private agencies to protect adjacent lands of conservation interest that are not yet permanently protected.



Oxbow National Wildlife Refuge, federally owned and permanently protected.



Benjamin Hill Playground, owned by the Town of Shirley.



SECTION 6



COMMUNITY VISION



“This is the last generation of people that will get to protect land.”

-Resident

Shirley Open Space and Recreation Plan
2014 Draft

6. COMMUNITY VISION

6A. Description of Process

A questionnaire circulated by the Conservation Commission in Fall 2010 was revised by three graduate students from the Conway School of Landscape Design and shared with the residents of Shirley in both paper and web form. A total of 38 people responded to the questionnaire.

The Conservation Commission, with the help of the Conway School graduate students, undertook an extensive and thorough effort to clarify the town's goals for this update. Community input was solicited through a "meet and greet" tabling event, the dissemination of a questionnaire and two public meetings. The meetings were publicized on the local public access television station, in the local newspapers, on flyers posted around town, and through word of mouth.

During the tabling event on February 5, 2011, the Conway students engaged a wide swath of Shirley's citizens to identify favorite outdoor spaces in the town. The residents were notified of the online questionnaire (see Appendix A) and of the upcoming public meeting.

At the initial public meeting on February 9, 2011, fifteen participants helped ascertain important physical resources in the town as well as areas of concern. During the second public meeting on March 2, 2011, nineteen participants examined Shirley's open space and recreational goals and objectives as identified through public input and through the environmental inventory and analysis process. Sections 8 and 9 describe these goals and objectives as well as specific action items generated from the meeting.

Throughout this public planning process, efforts were made to involve as many members as possible from the different constituent groups in Shirley. Despite requests to the Recreation Commission, there was little participation from recreation user groups. Personal conversations with two of the members of the Shirley Recreation Commission, Keith Begun and Linda Cournoyer, constituted the extent of involvement from recreational interests. Most of the attendees at the two public meetings appeared to be more conservation-minded than recreation-minded. This suggests the need for additional outreach efforts to better understand how other citizens of Shirley value recreational spaces within the town.

6B. Open Space and Recreation Goals

Many of Shirley's residents are aware that the town's natural resources and recreational infrastructure are fundamental to the quality of life experienced in their town. The public process helped articulate the following three goals:

1. Improve access, diversity and management of recreation facilities.
2. Protect and preserve natural and community resources.
3. Educate and engage the community by building a strong constituency of open space advocates.

These goals show the residents' desire to retain the unique character of their town into the indefinite future.

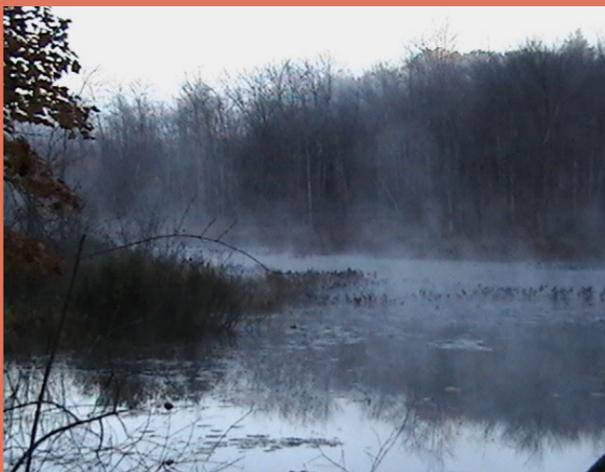
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SECTION 7



ANALYSIS OF NEEDS

*“More trails are needed
at the Esker Loop Trail.”
-Resident*



7. ANALYSIS OF COMMUNITY NEEDS

7A. Summary of Resource Protection Needs

Water Resources: Rivers, streams, wetlands, aquifers, groundwater, and wells are valuable to Shirley and surrounding communities. The Squannacook and Nashua Rivers comprise its border on the east. Streams and brooks crisscross the town, and wetlands are located throughout. Wildlife uses the water and the riparian land as habitat.

For humans these surface water bodies provide recreational opportunities. Beyond that the town draws its drinking water from underground wells and aquifers. The 2004 Town of Shirley Master Plan states that groundwater wells with the highest yields are found within the Nashua River valley. Low yield aquifers are found in smaller valleys, such as in the Squannacook River valley. The Shirley Water District provides water to about 60 percent of the town's population, drawing from three supply sites: the Patterson, Catacunemaug and Walker Road wells. Many homes in the northern end of town rely on private wells and their water quality depends on effective septic design as well as the health of underlying aquifers. Human activities including development close to wetlands and within floodplains need to be monitored to prevent contamination of aquifers. Protection of open space, especially along stream and river banks and in areas of aquifer recharge, should be a very high priority. Attention should be paid to neighboring towns and their use of shared water resources, for both humans and wildlife.

Farmland: As population rises and the threat of subdivision looms there is a concern over loss of prime agricultural soils in Shirley. The dwindling farm community means less

opportunity for local production of food during a time when transportation costs of all goods continues to rise. Preservation of land suitable for agriculture will need to be made a focus of town efforts. [*What are the unprotected farms remaining in Shirley?*]

Meadows: Meadows contribute to the overall character of Shirley. Viewed from the road, they are a welcome respite from the prevalent woodlands. They provide habitat for different creatures within the meadow and for those species that rely on edges. There is a current need for a management plan as the meadows are becoming overgrown and woody. If not consistently mown they will become forests.

Forests: Trees cover over fifty percent of the landscape. Forests provide ecological services by cooling and cleaning the air as well as filtering and slowing the flow of water. They are important habitat for wildlife. Their trees provide a source of income through sustainable harvesting in Valley Farm and could also be harvested from the Rich Tree Farm.

Rare and Endangered Species Habitat: The town of Shirley is home to 16 rare and endangered species. The habitat of these species is at risk of fragmentation, which may decrease biodiversity and may even lead to complete loss of the species. Habitats must be protected from development to help ensure the future of these species.

7B. Summary of Community Needs

Education: Children and adults need to be informed about the various natural resources in the town. Children should learn about the value of the town's ecosystems at a young age in order to foster stewardship of the land and water. An investment in youth may later lead to a more engaged volunteer citizenry who continue to care for their town. An interest in nature would also encourage

physical activity as an alternative to more sedentary activities. School programs could reach all populations, not only those capable of exploring the community by means of automobiles. The natural resources of Shirley could serve as an exceptional outdoor classroom.

Adults also need to learn how to care for their open and recreational spaces. Residents stated during meetings and in questionnaires that they wanted to know where various conservation and recreation areas were located. They also wanted to educate townspeople about respecting town property. Complaints that trash accumulating in the village area is detracting from the charm of Shirley came from questionnaires. Misuse of trails by ATV users was raised repeatedly in public forums and in questionnaire responses.

A quote from the 1996 OSRP nicely expresses the need for education. "Ultimately, only an informed citizenry can provide the political will to adequately protect open space. Informed citizens are the best stewards for protected lands. Adequate communication and cooperation among all land use boards on open space issues is an enduring and critical need. Programmatic efforts with Shirley schools are needed so that a new generation of townspeople will be adequately informed about natural resource protection issues as they relate to life in the town. The school programs (for example, the fourth grade Adopt-a-Stream effort) that already exist should be permanently established and supplemented with other programs and curricula."

Recreation: In order to promote healthier lifestyles, more active and passive recreation opportunities are needed in general. Residents stated that trails of all kinds, such as hiking, biking, and equestrian, require better marking, signs, and maps. More region-wide trail systems would promote connectivity between towns in the region as

well as provide an alternative to the automobile for getting around. ATV use is illegal on conservation land yet no legal ATV trails are available.

There are not enough playgrounds for the current or growing population. Although the newer Benjamin Hill Park is quite an asset, the other playground in the village, at the Lura A. White School is in disrepair, and this is the only playground within walking distance for the Environmental Justice population in Shirley.

Handicap Accessibility: Areas need to be assessed for accessibility to provide opportunity for use of recreation and open spaces by all who desire to use them.

Sidewalks: The town's sidewalk system is concentrated in the village area, leaving the remainder of the town without safe routes to get to open spaces and recreational lands, or to walk around town for exercise. Sidewalks would also improve ADA accessibility for those using wheelchairs.

Town Character: Rapid growth could outpace conservation efforts and overburden recreational facilities. Actions will need to be taken to preserve the unique resources of open space, historical places, and scenic areas. Residents at meetings specifically pointed out that Fredonian Park and the Shaker Village, two valued resources, are not being cared for as the town would hope.

7C. Management Needs, Potential Change of Use

Maintenance: Although Shirley has acquired a fair amount of conservation land, many of these parcels do not have a management plan or budget to maintain them. In addition, the Conservation Commission has not been able to adequately monitor Conservation Restrictions entrusted to the Commission.

Lack of money and manpower has been an ongoing problem for Shirley, as the town's fiscal situation has led to reductions in Conservation funding and staff time. Unless funding can be allocated to maintain these properties they risk being further neglected and misused.

The same applies to recreational fields. There is currently no parks department in Shirley. Playing fields are maintained by the users of the fields and the town Department of Public Works. Management plans and corresponding budgets to maintain playing fields will be necessary to prevent degradation of these places. The Lura A. White School playground is in need of repair as well.

Coordination: A common concern raised by residents at the public meeting was that coordination of regional and town boards and committees in meeting goals and objectives of open space protection needs improvement. Residents frequently cited the difficulty of finding out what is going on in different groups in town and in neighboring towns. Organizations with a stake in Shirley's open space and recreation plan include Town boards and committees in Shirley, Devens' Open Space & Recreation Advisory Committee, the Nashua River Watershed Association, Montachusett Regional Planning Commission, Massachusetts Development Finance Association, US Fish & Wildlife Service, Massachusetts Division of Fisheries & Wildlife, and other entities that own or manage open space within or abutting Shirley. When Chapter 61 lands become available to the Town for purchase or assignment of purchase rights the Conservation Commission needs to be notified. Finally, because of financial constraints the town increasingly relies on work done by volunteers. A volunteer system needs to be developed and maintained to prevent over-using and wearing down this valuable human resource.

Potential Change of Use: State incentives promoting renewable energy have encouraged the development of solar installations in Shirley. The Shirley Water District has allowed a 23-acre photovoltaic array to be installed on their property off Patterson Road. Solar panels have been installed on property at the corner of Hazen and Walker Roads. Future land use changes may also include the landfill on Leominster Road, where the town has put out an RFP to lease the landfill for a solar photovoltaic project.

SECTION 8



GOALS AND OBJECTIVES



“Sponsoring more hikes gets people out. It will generate appreciation and people will start caring more.”

-Resident

8. GOALS AND OBJECTIVES

GOAL A: Improve access, diversity, and maintenance of recreation facilities

- A.1 Enhance connectivity with sidewalks, trails, and bike routes to provide equal access to recreation and open space for the population as a whole
- A.2 Create management plans for existing recreation fields and playgrounds; identify land for remediation and future expansion.
- A.3 Identify, evaluate and inventory all properties, trails, and facilities in Shirley to assess if they meet standards of Americans with Disabilities Act.

GOAL B. Protect and preserve natural and community resources

- B.1 Protect water quality and aquatic habitat, implement stormwater management plans; continue drinking water resource protection, wetland and watershed protections through zoning bylaws.
- B.2 Protect and preserve wildlife habitat to prevent further fragmentation of habitat corridors.
- B.3 Protect agriculture land to prevent further loss from development and encourage local food production.
- B.4 Protect forest land to prevent further fragmentation, generate income, and enhance habitat corridors.
- B.5 Protect historic and archaeologically important sites.
- B.6 Work with local regional organizations and land trusts to prioritize land acquisitions and coordinate and monitor management plans.
- B.7 Encourage best management practices and land reuse and integrate preservation bylaws and ordinances to protect open space and recreation land from being lost to development.

GOAL C. Educate and engage the community by building a strong constituency of open space advocates

- C.1 Inform residents of open space and recreation resources.
- C.2 Engage residents in educational programs in order to highlight Shirley's open space and recreation resources.
- C.3 Unify and engage volunteers by hosting "Clean-up/Fix-up Days" as cost-effective means of maintaining open and recreation space.
- C.4 Educate residents about the impact of human activities on the environment.
- C.5 Establish local and regional partnerships in order to collaborate on common goals and objectives.
- C.6 Use community preservation, restrictions, bylaws and acts to protect the character and land of Shirley.

SECTION 9



FIVE-YEAR ACTION PLAN

“ The natural areas in Shirley are incredible assets that are very important to quality of life and property values. In future years these will become even more valuable and vital to the town's economic health. We need to protect them and increase public understanding, appreciation, and use of these areas now so that their value is better known and they are not lost.”

-Resident



9. FIVE-YEAR ACTION PLAN

This five-year action plan outlines actions and establishes timetables for each open space and recreation goal and objective. The goals should be evaluated and set up with a yearly timeline projection in the timetable. All of the following goals, actions and objectives are subject to funding and appropriation. The actions should be reviewed, updated and reevaluated annually. The 2021 update of the OSRP should be consistent with these goals and objectives and with the previous years' reevaluations. A five-year action map is included at the end of this section.

Goal A: Improve access, diversity, and maintenance of recreation facilities.

A.1 Enhance connectivity with sidewalks, trails, and bike routes to provide equal access to recreation and open space for the population as a whole.

Actions	Timetable
<p>a) Use Montachusett Regional Planning Commission Safe Routes to School Study to shape sidewalk improvements and additions</p> <ul style="list-style-type: none"> - Identify where sidewalks and crosswalks are needed for schools and adult populations. - Create a sidewalk plan designed to meet the needs of pedestrians walking between residential areas, village core, recreation and conservation areas. - Funding for phased construction could be allocated from the Capital Improvements Program. 	Planning
<p>b) Use the MBTA as a collaborative partner to increase ridership while providing funds for connectivity.</p> <ul style="list-style-type: none"> - Promote park and ride, bike and ride, increasing access by maintaining and increasing amount of sidewalks that lead to the station. - Highlight the energy efficiency of this resource, increase ridership and increase civic pride. - Collaborate with MBTA to clean-up the tracks, especially rubber debris and railroad ties near highly visible areas. 	Planning
<p>c) Expand existing trail map to include Oxbow National Wildlife Refuge, neighboring town trails, and other undocumented trails to improve possible connections and access.</p> <ul style="list-style-type: none"> - Apply for DCR Greenways and Trails grants to create, maintain and advertise multi-purpose trails in and around Shirley. - Connect trails to regional trail systems. Collaborate with Montachusett Planning Commission to connect and map local and regional trail systems. - Inventory existing Conservation and CR trails and collect data on their conditions. - Create a recreational trails map of Shirley for public use and post on town website. - Distribute trail maps to the public 	2014-2019
<p>d) Evaluate feasibility of adding trails or bike lanes to arterial town roads and connecting to neighboring towns and trails.</p>	Planning

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<ul style="list-style-type: none"> - Connect the bike lane on Front Street through the village core and to the Nashua River Rail Trail with signs on either side of town lines. - Collaborate with the town of Ayer. - Collaborate with Police Department to enforce speed limits to make bikeways and crosswalks safe for users. <p>e) Create management plans for increased trails, sidewalks and bike routes, identify volunteer opportunities for maintenance.</p> <p>f) Post clear signs at trailheads and designate parking for trail sites and natural areas to improve awareness of access points, especially along roadways.</p> <ul style="list-style-type: none"> - Post town trail logo to identify conservation lands - Post directional signage - Develop written guidance on posting signs 	2014-2019
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A.2 Create management plans for existing recreation fields and playgrounds; identify land for remediation and future expansion.

Actions	Timetable
a) Assess conditions on all recreation fields. Develop management plans in combination with DPW and sports teams to facilitate field maintenance.	ongoing
b) Identify a Parks and Recreation position in town to oversee management plans and improve maintenance.	ongoing
c) Continue to register as a "Playful City USA" to invest in playgrounds through the village core with priority attention to Lura A. White Elementary School playground.	ongoing
d) Identify existing town land as priorities for clean-up: <ul style="list-style-type: none"> - Clean up field near Middle School for safe non-specific recreation. - Clean up site adjacent to Lura A. White School; convert to field site that can be used for habitat viewing, recreation or both. 	ongoing
e) Identify brownfields, including sand pits, and other sites with reclamation potential that could be remediated for immediate and future recreation needs. Work with Regional Environmental Council of Central Massachusetts.	ongoing
f) Engage in the region-wide public discussion regarding ORV use, discourage improper use and enforce 300' setback from dwellings, identify proper areas of use. Collaborate with regional towns, DCR and Environmental Police for engagement and enforcement.	ongoing
g) Evaluate who is using spaces such as Whitely Park and adjust to demographic needs.	ongoing

A.3 Identify, inventory and evaluate all properties, trails, and facilities in Shirley to assess if they meet standards of Americans with Disabilities Act.

Actions	Timetable
a) Complete evaluation using the OSRP Workbook ADA Guidelines and a team of	2014

<p>volunteers.</p> <p>b) Collaborate with school groups or youth groups to fulfill service projects. Inventory the ADA accessible trails and distribute information to increase accessibility.</p>	
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B. Protect and Preserve Natural and Community Resources

B.1 Protect water quality and aquatic habitat, implement stormwater management plans; continue drinking water resource protection, wetland and watershed protections through zoning bylaws

Actions	Timetable
a) Start or revitalize a Stream Team to evaluate shoreline, pond and wetland conditions and implement the EPA’s Phase II stormwater requirements which reduces impacts on aquifers.	2017-2018
b) Integrate innovative storm water management strategies such as rain-gardens and bio-swales on schools and municipal property, where roads cross flood zones, and other problem sites.	Planning
c) Work with state and federal agencies to create a buffer protection zone around Tophet Swamp to prevent development and permanently protect the area.	
d) Use local and regional examples of successful stormwater management. Integrate projects on municipal property to provide examples and encourage business and residential implementation.	Planning
e) Encourage Best Management Practices of municipal resources, local businesses, construction projects, the MCI prison, and residences.	
f) Evaluate wetlands and water resource areas that are not permanently protected; work locally and regionally to protect these valuable resources through zoning bylaws, collaborate with Nashua River Watershed Association, MRPC, and other regional interest groups.	2018-2019
g) Study and identify wildlife corridors, vernal pools, key habitat areas, and possible areas of environmental concern; nominate areas to NHESP and ACEC programs to encourage protection. Use Vernal Pool Association to help with certification process.	2015-2016
h) Whenever the town transfers land ensure that article 97 is applied.	
i) Apply for grants and financial assistance through MassDEP Water, Wastewater & Wetlands division.	
j) Update wellhead protection zones on MassGIS.	

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B.2 Protect and preserve wildlife habitat and wildlife corridors to prevent further fragmentation.

Actions	Timetable
<p>a) Revitalize Greenway Committee to identify gaps, evaluate corridor connections, prioritize acquisitions.</p> <ul style="list-style-type: none"> - Inventory parcels in existing NHESP and ACEC zones that are not protected. - Develop map of current wildlife corridors. - Keep-up-to date on owners, property value, generate and prioritize a list of land acquisitions and acquire when possible. - Work with neighboring and regional Greenway committees to identify common goals. - Work with Vernal Pool Association to certify vernal pools and work towards permanently protecting those already certified. 	Ongoing
<p>b) Sponsor biologists, ecologists or local specialists to perform special inventories. Consider using university or state resources to help conduct a Bioblitz.</p>	2015
<p>c) Monitor increased impervious surfaces, riparian zone alterations, and uncontrolled runoff sources to prevent increased stream temperature, flooding and non-point source pollution.</p>	

B.3 Protect agriculture land to prevent further loss from development and encourage local food production.

Actions	Timetable
<p>a) Start an Agriculture Commission to advocate for farmers and monitor restrictions and bylaws.</p> <ul style="list-style-type: none"> - Educate residents on the benefits of a Right to Farm bylaw, bring to town meetings to adopt. - Educate farmers on the benefits of Agricultural Preservation Restrictions, 61A restrictions and transition plans. 	
<p>b) Inventory current agricultural lands, to identify viable but unprotected or viable but not farmed (Soil and Geology map).</p>	
<p>c) Use Agriculture Conservation Restrictions along with identified prime agricultural soils (Soil and Geology) to inventory and identify where farmland should be preserved.</p>	
<p>d) Investigate possible sites in the Center core for community gardens, using Longley Acres as starting point. Expand community garden locations in the southern portion of town for increased accessibility for environmental justice populations.</p>	
<p>e) Work with Growing Places, Land for Good, New Entry and Glynwood organizations as farm community resources.</p>	ongoing

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B.4 Protect forest land to prevent fragmentation, generate income, and enhance habitat corridors.

Actions	Timetable
<p>a) Inventory prime forest land (Prime Forest Soil map), permanently protected, Chapter 61 land and unprotected forestland. Update information on MassGIS. Create consistent forest stewardship plans for town-owned forest land and acquire land adjacent to increase connectivity.</p> <p>b) Collaborate with local land trusts and Chapter 61 land owners to inform town-owned forest stewardship plans.</p> <ul style="list-style-type: none"> - Use New England Forestry Foundation Management Case Study (see Appendix N). - Collaborate with local foresters to help with management plans. - Work with Shirley Water District to set up a stewardship plan for Rich Tree Farm. <p>c) Pursue Tree City USA status. Register with USDA Forest Legacy Program. Highlight town owned forests and benefits of community forests (see Appendix H).</p> <p>d) Communicate across agencies, committees and departments to ensure health of trees, especially street trees.</p> <p>e) Partner with New England Forestry Foundation, Groton Forest, Massachusetts Woodland Cooperative, Forest Stewardship Council to help fund, foster and maintain sustainable forest management, economic opportunities, recreation opportunities and habitat corridors.</p>	Ongoing

B.5 Protect historic and archaeologically important sites.

Actions	Timetable
<p>a) Inventory historic and archaeological sites that need protection, repair or maintenance.</p> <ul style="list-style-type: none"> - Use the Shirley Master Plan recommendations and update the condition of those sites. - Collaborate with regional and state historic archives and commissions for research and inventory. 	2015-2016
<p>d) Nominate additional significant sites to the Local Historic District to acknowledge and promote their historic significance.</p>	2015-2016
<p>e) Nominate sites to the Shirley and Massachusetts Cultural Council grant programs to provide funding, specifically the Cultural Facilities Fund.</p>	2017-2020

B.6 Work with local and regional organizations and land trusts to prioritize land acquisitions and coordinate and monitor management plans.

Actions	Timetable
<p>a) Start an Open Space Committee to advocate for open space, work with the Conservation Commission on management plans and collaborate with regional conservation and planning organizations, such as Sudsbury Land Trust and Trustees of Reservations.</p> <p>b) Distribute OSRP goals and inventory of priority land acquisition parcels at town, regional and state agencies interested in preserving open space.</p> <ul style="list-style-type: none"> - Contact Open Space Committees in Groton, Pepperell, Devens, Townsend, Lunenburg, Lancaster, Harvard, and Ayer to identify and collaborate on common 	Ongoing

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2014 Draft

<p>projects or goals.</p> <ul style="list-style-type: none"> - Continue to collaborate with Montachusett Regional Planning Commission to identify regional collaborations on common goals. <p>c) Develop and maintain an inventory of priority parcels for possible acquisition.</p> <ul style="list-style-type: none"> - Keep up-to-date information on owners, property value, and possible acquisition or protection methods. - Integrate wildlife corridors into priority criteria <p>d) Catalogue sources of funding for land acquisitions, regional and state wide grants.</p> <ul style="list-style-type: none"> - Research and apply for state grants such as DCR Greenways and Trails. - Encourage Community Preservation Act by educating residents on the CPA and collect feedback on needs and concerns of residents. 	
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B.7 Encourage best management practices and land reuse and integrate preservation bylaws and ordinances to protect open space and recreation land from being lost to development.

Actions	Timetable
<p>a) Protect open space by directing new growth to village areas using existing preservation bylaws and ordinances to increase density where infrastructure is already in place.</p> <p>b) Ensure that Article 97 is used to protect town land transferred into conservation.</p> <p>c) Work with zoning board to revisit bylaws and integrate further protective and open space zoning bylaws and ordinances such as Village Center Zoning and Neighborhood Conservation districts which allow for development to accommodate growth while maintaining community character, goals and values.</p> <p>d) Examine feasibility of establishing Smart Growth principles in the village and potential high density areas and encourage alternative transportation like buses, carpools, and biking in these areas in order to protect open space from greenfield development.</p> <ul style="list-style-type: none"> - Collaborate with the MRPC to revise the parcels map of town in order to develop an updated Zoning Build-out Map. This will help assess feasibility studies of Smart Growth and protective bylaws and ordinances. - Explore options to provide access, buses, bike lines, sidewalks, for all populations. <p>e) Use degraded sites and continue to seek and promote Solar PV Capacity awards in town. Evaluate sites such as the landfill, municipal land or buildings, or power lines for solar arrays; in doing so the town can utilize degraded sites instead of greenfield development.</p> <p>f) Use state initiatives such as Green Communities, Massachusetts Clean Energy Center, and Massachusetts Clean Energy and Climate Plan for 2020. Collaborate with Montachusett Regional Planning Commission to identify ways the town can reduce energy, save money and benefit the air quality throughout town, reducing use of fossil fuels while protecting open space from development and pollution.</p> <p>g) Create a community land trust (CLT) to enhance village core and create a security plan for affordable housing (see Appendix H). A CLT would help provide services and access while planning for future growth.</p>	<p>Planning</p>

C. Educate and engage the community by building a strong constituency of open space advocates.

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C.1 Inform residents of open space and recreation resources.

Actions	Timetable
<p>a) Start an Open Space Committee to advocate for open space, involve residents, and disseminate maps and interpretive material to inform residents of open space resources.</p> <p>b) Map and clearly post signs of existing trails. Include trail maps and listings of open spaces available for recreation on websites, the library, town hall, schools and other public venues.</p> <ul style="list-style-type: none"> - Publicize current trail, recreational, and restoration work and Open Space and other Committee meetings. 	<p>2014-2015</p>
<p>c) Establish cost effective method to keep residents up-to-date on open space activities</p> <ul style="list-style-type: none"> - Recruit journalists to run editorials in the Shirley Oracle and monthly write-ups or editorials in regional publications highlighting open space resources. - Utilize other outreach resources such as television, radio, town website, social media and school fliers. - Publish the Open Space and Recreation Plan on the town website. 	<p>Ongoing</p>
<p>d) Update parcels, trails, protection, and anything relating to open space with MassGIS to make information accessible locally, regionally (collaborate with MRPC), and statewide.</p>	

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2014 Draft

C.2 Celebrate Shirley, engage residents in educational programs in order to highlight Shirley’s open space and recreation resources.

Actions	Timetable
<ul style="list-style-type: none"> a) Perform outreach activities and help keep residents informed (nature walks, bike rides, work parties, naturalist outings, seminars). b) Sponsor historical and archaeological tours of Shirley, collaborate with Shirley Historical Society and Historical Commission c) Encourage use of open space land as living laboratories, outdoor classes, and curriculum development in Shirley schools. d) Host biodiversity days with schools and the community to evaluate natural resources, habitat conditions and install enhancements to habitat, such as continuing bluebird house installation and maintenance. e) Host and collaborate on annual events, such as the Hoe Down, to celebrate Shirley’s natural and open space resources. f) Publicize existing tax incentive programs such as conservation restrictions for property owners on the town website. Market the benefits and successes of open space conservation initiatives and the economics of agriculture and open space as informational inserts for inclusion in tax bills. 	Ongoing

C.3 Engage and train volunteers to maintain open and recreation space.

Actions	Timetable
<ul style="list-style-type: none"> a) Organize events to clean-up school fields, blaze or maintain trails, invasive removal, Stream Team and community garden projects. <ul style="list-style-type: none"> - Involve youth groups such as 4H, Girl and Boy Scouts, and service organizations. b) Highlight events such as Ayer-Shirley Recycle Day and clean-up days. c) Request support from the MCI prison for trash pick, building stormwater management features, or field maintenance. d) Establish an adopt a park/playground/trail program. 	Ongoing

C.4 Educate residents about the impact of human activities on the environment.

Actions	Timetable
<ul style="list-style-type: none"> a) Educate children through school curriculum about environmental science and sustainable natural resources. b) Educate residents on safe household waste disposal methods, maintaining septic systems and the importance of water quality. c) Increase availability of recycling, composting and household waste disposal opportunities. d) Educate residents about the benefits of landscaping with native plants, stormwater management, water conservation, and habitat corridors. 	Ongoing

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C.5 Establish local and regional partnerships to collaborate on common goals and objectives.

Actions	Timetable
<ul style="list-style-type: none"> a) Develop protocols for dealing with inter-board communication, public education, and integration of conservation and protection bylaw and ordinance implementations. b) Get projects and initiatives into town meeting agendas, host occasional interdepartmental committee meetings to collaborate on common goals, specific parcels and acquisitions. c) Continue to collaborate with Montachusett Regional Planning Commission to identify regional opportunities. d) Establish and/or continue alliances with The Trustees of Reservations, Nashua River Watershed Association, American Farmland Trust, Rails to Trails Conservancy, Mass Audubon, Massachusetts Riverways, Groton Land Trust, Regional Environmental Council of Central Massachusetts, Massachusetts Division of Environment Management and other local and regional organizations listed in Appendix . 	

C.6 Use community preservation, restrictions, bylaws and ordinances to protect the character and land of Shirley.

Actions	Timetable
<ul style="list-style-type: none"> A) Educate residents by holding public forums regarding Community Preservation Act (CPA), preservation bylaws and ordinances, and Community Land Trusts, generating public interest, feedback of needs and building committees to implement the actions. b) Build off successful regional examples models such as Groton Town Forest, The Doyle Center, Fitchburg for Neighborhood Conservation Districts and Downtown Revitalization Zoning bylaws/ordinances, Pepperell for Right to Farm Bylaws, and Groton and Harvard for Community Preservation Acts. c) Expand collaboration with Shirley agencies and regional town commissions and agencies (such as MRPC, Community Works and ACE) to work on similar projects and goals. Make Open Space and Recreation Plan available on Shirley website and MRPC website. 	

Action Plan

PROTECTION and **CONNECTION** are the priorities for Shirley's Open Space and Recreation Plan Update 2011. Establish an Open Space Committee to educate residents about Shirley's open space assets and advocate for their conservation.

The health of its residents relies on safe drinking water supplied by **aquifers**. **Aquifer** discharge areas also provide rich wildlife habitat and are home to endangered species. The **aquifer** underlying Mulpus Brook supplies 70% of Shirley's drinking water. Permanently protect the lands around Tophet Swamp to protect the wildlife and habitat and underlying **aquifer**. Protect lands south of Mulpus Brook, east and west of the Shirley Water District.

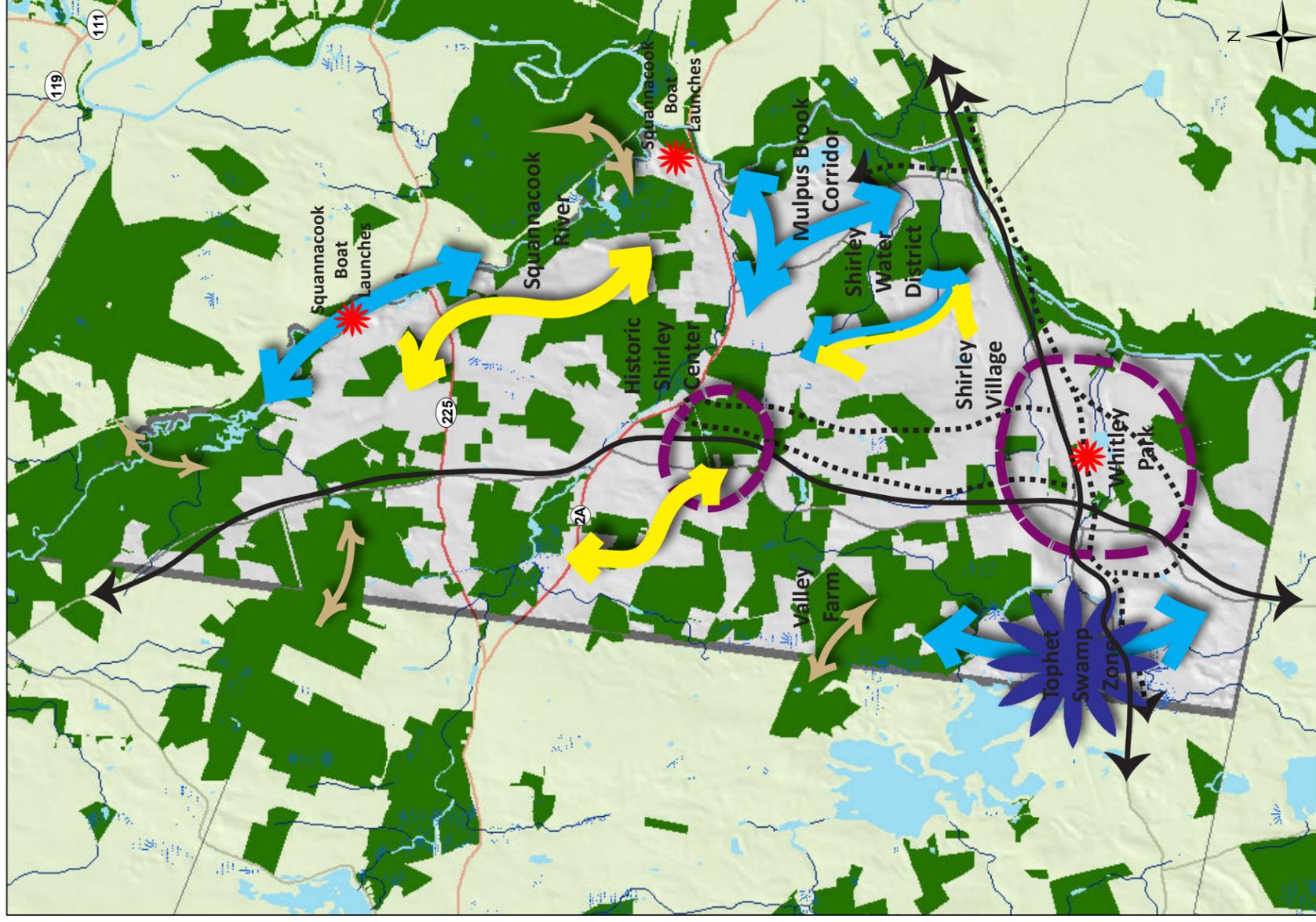
Productive lands are essential for community resilience, whether growing food or wood products. **Forests** provide ecological services, revenue, human recreation and are important for wildlife habitat. For **farms** to be economically viable they need a supportive infrastructure as well as sufficient acreage and proximity to each other. Prioritize **forest** lands that provide links between existing protected woodlands to reduce fragmentation. Target unprotected **forest** and **farms** with prime soils, west of the Shirley Water District, between Route 2 and Valley Farm, and west of the Squannacook River.

Active use of outdoor lands promotes individual and community well-being. Facilities need to keep pace with town growth. Protect and revitalize **parks** in the village core and **boat launches** along the Nashua and Squannacook Rivers to enhance gathering places and recreational activities available in Shirley.

Shirley Village and **Shirley Historic Center** embody a rich historic heritage and sense of place. Each has played a distinct role in Shirley's long history, need to be protected and well interpreted. Identify specific properties that would benefit from the Community Preservation Act. In Shirley Village, distribute funds to protect affordable housing and **recreation** facilities. Distribute funds in the Historic Center to preserve and maintain open space and historic sites.

Fragmentation of **habitat** diminishes the health and viability of natural communities and fauna. Protection of wildlife **habitat** is enhanced when the protected lands are contiguous. Identify and limit human interference along **wildlife** corridors in Tophet Swamp, Squannacook River and Mulpus Brook. Educate the public about the location and value of these places.

Access to recreational lands, both active and passive, needs to be equitable for all residents and neighborhoods. Multimodal **trails** provide links and reduce vehicular use. **Trails** in Shirley can connect with a larger regional system. Provide additional bike and pedestrian **access** within the village and between recreational sites. Create a loop system between Shirley Center and the Village. Enhance east-west **trails** along the arterial roads. Create and maintain regional multi-use and conservation **trail networks**.



Zones of Protection Using Public Policy

Permanently Protect Tophet Swamp

Recreation Sites to Protect/Acquire/Reuse/Enhance

Habitat Connections/Water Resource Protections

Agriculture and Forest Protection and Connection

Bike Route Connections

Pedestrian Route Connections

Regional Trail System Connections

Pond, Lake, Ocean

Wetland

Perennial Stream

Intermittent Stream

Protected Open Space and Recreation Land



SECTION 10



PUBLIC COMMENTS



10. PUBLIC COMMENTS

This section is reserved for future public comments and letters of review about this draft plan. The Town of Shirley will need to review the draft plan, distribute it for comment within the town, and make any necessary revisions.

Letters of review from the Planning Board, Select Board, Conservation Commission and Montachusett Regional Planning Commission must be included before the plan is submitted to the State of Massachusetts Division of Conservation Services.

The Plan is currently under review from the following town boards and organizations:

- Board of Health
- Economic Development Committee
- Recreation
- Open Space Committee
- Shirley Historical Society
- Nashua River Watershed Association
- Department of Fish and Wildlife

Approval of this plan is required from the Massachusetts Executive Office of Environmental Affairs, Division of Conservation Services (DCR), and will make Shirley eligible for DCR grant assistance programs, for up to five years. Once the plan is approved by DCR, a final copy should be provided to all Town boards and agencies and the local library, and should be posted on the Town's website.

One copy of the draft may be submitted to DCR while other municipal boards review the report; the required approval letters must be provided to DCR with the final plan.

Town of Shirley

BOARD OF SELECTMEN



7 KEADY WAY – SHIRLEY, MASSACHUSETTS - 01464-2812

David N. Swain, Chair

Kendra J. Dumont, Vice Chair

Robert E. Prescott, Jr., Clerk

TEL: (978) 425-2600, x200

Fax: (978) 425-2602

August 25, 2014

To the Shirley Conservation Commission:

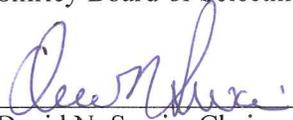
At the Town of Shirley Board of Selectmen's Meeting of July 29th, 2014, the Board of Selectmen reviewed the Shirley Open Space and Recreation Plan 2014 Update (Draft). We made the following recommendations to improve the draft as it currently stands.

- The Economic Development Committee should be engaged to review the plan, as there are many synergies between Shirley's open space planning and economic development goals.
- Section 3C: Population growth estimates may not be up to date, and should be reviewed for accuracy.
- Section 3C: Please check with the Water Department to see if population growth is a concern for available water supplies.
- Section 5: Consider summarizing total acreage of open space and its effects on the towns tax base.
- Section 7B: Conditions at the Lura White School and Apple Orchards have been remediated.
- Section 9: Goal A.2 "Provide increased access to waterways" should be eliminated, as there is no committee in town that holds jurisdiction over waterway access or the associated actions.

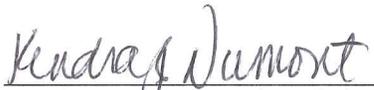
We are pleased to see the Open Space and Recreation Plan Update approaching completion, and look forward to reading the final copy as well.

Sincerely,

Shirley Board of Selectmen



David N. Swain, Chair



Kendra J. Dumont, Vice Chair

Robert E. Prescott, Clerk



July 28, 2014

Nadia Madden
Conservation Agent
Shirley Conservation Commission
7 Keady Way, Shirley, MA 01464

Re: Town of Shirley Open Space and Recreation Plan

Dear Ms. Madden,

The Montachusett Regional Planning Commission (MRPC) staff completed a review of Shirley's Open Space and Recreation Plan. Staff used the Open Space Guidebook published by the Executive Office of Energy and Environmental Affairs (EEOEA), Division of Conservation Services (DCS) "Open Space and Recreation Plan Requirements" to determine if the local planning document contained the required sections. While all required sections are contained within the document, the Table of Contents should reflect this since Section 3: Community Setting was omitted in the Table of Contents.

Shirley's Plan is an excellent document, thorough and put together very well. We would like to take this opportunity to congratulate all local residents and officials for completing a well prepared document.

Sincerely,

John Hume
Planning and Development Director



TOWN OF SHIRLEY PLANNING BOARD

7 KEADY WAY • SHIRLEY, MA 01464

Telephone (978) 425-2600 Ext. 240

Facsimile (978) 425-2627

August 21, 2014

Nadia Madden
Conservation Agent
Town of Shirley
7 Keady Way
Shirley, MA 01464

Re: Shirley Open Space and Recreation Plan

Dear Ms. Madden,

Please be advised the Planning Board will not meet until Wednesday, September 3, 2014. We request an extension of 5 business days after that time to provide comments to your office regarding the Shirley Open Space and Recreation Plan. We will forward comments to your office no later than September 10, 2014.

Thank you very much for your cooperation and understanding in the matter.

Sincerely,

JONATHAN GREENO
Chair

SECTION 11



REFERENCES



11. REFERENCES

This plan was prepared using the following resources:

US Census. 2005-2009 American Community Survey 5-Year Estimates.
<http://www.census.gov/acs/www/>. Accessed on 17 March 2011.

Baxter, Ward. Resident of Shirley, MA. Personal communication.

Begun, Keith. Town of Shirley Recreation Commission, Recreation Fields Committee.

Caldbeck, Rebecca. Principal Assessor, Town of Shirley Board of Assessors.

Campbell C.J., 1997, "The Coming Oil Crisis." Multi-Science Publishing Co. & Petroconsultants.

City of Arcata, California. "Arcata City Forests."
<http://www.cityofarcata.org/departments/environmental-services/city-forests> Accessed on 14 January 2011.

Community Preservation Coalition. "Massachusetts Community Preservation Act."
<<http://www.communitypreservation.org>>. Accessed February 2011.

Community Preservation Committee. Belchertown Historical Commission.
<<http://www.belchertown.org/committees/cpc>>. Accessed February 2011.

Conway School of Landscape Design. "Multi-Use Trail Planning." Town of Marshfield DRAFT OSRP 2010.

Department of Conservation and Recreation. <<http://www.state.ma.us/dcr>>.

Department of Environmental Protection. <<http://www.state.ma.us/dep>>

Devens Open Space and Recreation Plan, 2008-13. MassDevelopment, NRWA, and MRPC, 2008.

Executive Office of Environmental Affairs. <<http://www.state.ma.us/envir>>

Final Economic Development Chapter to the Master Plan, 2010, Montachusett Regional Planning Commission (MRPC)

Franklin Regional Council of Governments. <<http://www.frcog.org>>

Gagnon, Anne. Past Conservation Commissioner. Town of Shirley Conservation Commission.

Hyla Ecological Services. "Draft Rare Species Habitat Assessment and Vernal Pool Questionnaire."

Hyla Ecological Services. 2006 Rare Species Questionnaire and Habitat Assessment, MacPherson Road Corridor, EBZ, and Moore Airfield, Ayer and Shirley, MA, NHESP Tracking No: 00-7674, 2007.

Shirley Open Space and Recreation Plan
2014 Draft

Jordan, Sharon. Member, Town of Lunenburg Open Space Committee. Member, OHV State Advisory Committee.

Kerlinger, Paul. "Economics of Open Space Conservation." 1999.

Massachusetts Department of Conservation and Recreation. Shirley Reconnaissance Report. Freedom's Way Landscape Inventory. Massachusetts Heritage Landscape Inventory Program, June, 2006, 2-3.

Massachusetts Department of Environmental Protection, Source Water Assessment and Protection (SWAP) Report for Shirley Water District. 26 February, 2003.

Massachusetts Natural Heritage and Endangered Species Program (NHESP).
<www.mass.gov/dfwele/dfw/nhesp>

Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP). <www.state.ma.us/envir>

MassDevelopment North Post Parcel Shirley, MA, NHESP File. 00-7674, August, 2005.

McCall, Dawn. Resident, Town of Shirley. Member, Town of Shirley Recycle Committee.

Montachusett Regional Planning Commission, Shirley Safe Routes to School – 2008-2009.
<<http://www.mrpc.org/Documents/Reports/2009TransStudies/ShirleyMiddleSchoolFINALreport92009.pdf>>

Montachusett Regional Planning Commission. <www.mrpc.org>

Nashua River Watershed Association and the Massachusetts Watershed Initiative – Nashua Team.

Nashua River Watershed Five-Year Action Plan, 2003-2009.

Nashua River Watershed Association. <www.nashuariverwatershed.org>

Natural Resources Conservation Service. Plymouth County Soil Questionnaire: www.nesoil.com

New England Forestry Foundation: www.newenglandforestryfoundation.org

Open Space Planner's Workbook: www.state.ma.us/envir

Ricci, Heidi. Senior Policy Analyst, MassAudubon.

Shirley Historical Society: <http://www.shirleyhistory.org/>.

Town of Shirley Recreation Commission. Personal communication.

Skelly, Christopher. Massachusetts Historical Commission. "Preservation through Bylaws and Ordinances."

Shirley Open Space and Recreation Plan
2014 Draft

State of Massachusetts, Executive Office of Energy and Environmental Affairs. Massachusetts Geographic Information Systems. <www.mass.gov/mgis>

State of Massachusetts, Executive Office of Environmental Affairs. Environmental Justice Policy. Available for download at: http://www.mass.gov/Eoeea/docs/eea/ej/ej_policy_english.pdf

The Lowell Sun, July 20, 2010

Town Forest Committee. Town of Groton, Massachusetts. <http://www.townofgroton.org> Accessed on 14 January 2011.

Town of Lancaster, Massachusetts. A Brief History of Lancaster's Town Forest. <http://www.ci.lancaster.ma.us/Pages/LancasterMA_BComm/brief> Accessed on 14 January 2011.

Town of Shirley Conservation Commission.

Town of Shirley Master Plan, 2004.

Town of Shirley Open Space and Recreation Plan 1996.

Town of Shirley Open Space and Recreation Plan 2003-2008.

Town of Shirley Open Space and Recreation Plan, 2001 (draft, not completed).

Town of Shirley. Conservation Commission map.<<http://www.shirley-ma.gov/conservation/sopensp/shirley/htm>>

Town of Shirley. Conservation Commission.

Town of Shirley. Protective Zoning Bylaws 2005.

Transition US. "Why Transition?" <www.transitionus.org/why-transition>. Accessed on 17 March 2011.

Trustees of Reservations, Massachusetts. www.thetrustees.org

Union of Concerned Scientists. "Global Warming Science." http://www.ucsusa.org/global_warming/science_and_impacts/science/. Accessed on 17 March 2011.

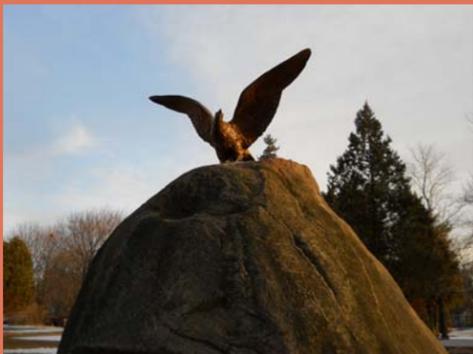
United States Department of Agriculture: www.usda.org

University of New Hampshire. "Topo Map of Shirley, MA." <docs.unh.edu/MA/shr151se/jpg> Accessed January 2011

US Army Corps of Engineers. Final Environmental Impact Statement: Fort Devens Disposal and Reuse. 1995, 2-21 to 2-23, 4-5 to 4-25, passim.

Vernal Pool Association www.vernalpool.org. Accessed on 17 March 2011.

APPENDICES



Appendix A: 2011 Open Space and Recreation Questionnaire and Results

The following pages contain the Open Space and Recreation Questionnaire that was based on the fall 2010 questionnaire done by the Conservation Commission. This questionnaire was set-up online and distributed via the public meetings, listed on the town website, and through brochures and emails over the course of six weeks. The results influenced the content of the second public meeting where the OSPR action plan was reviewed. The combined results of the public meeting and the survey influenced Section 8-9, the Goals, Objectives and the Action Plan.

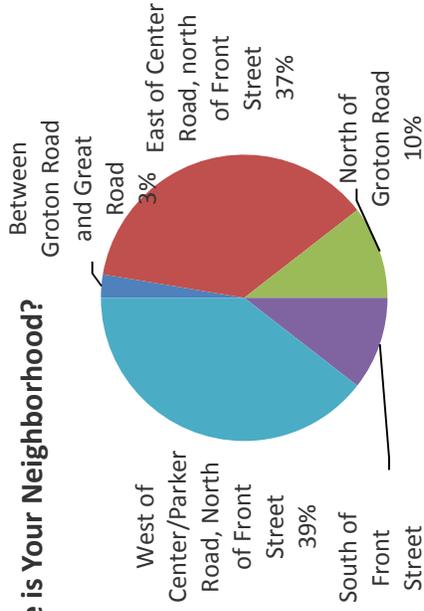
APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 1: Neighborhood

Please check the area of town in which you live:

	# of responses
West of Center/Parker Road, North of Front Street	15
East of Center Road, north of Front Street	14
North of Groton Road	4
South of Front Street	4
Between Groton Road and Great Road	1
TOTAL	38

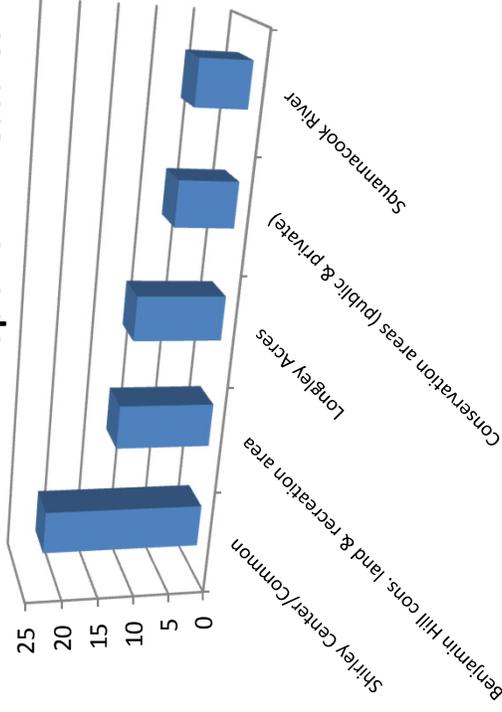
Where is Your Neighborhood?



NOTE: The 38 respondents listed more than 110 responses to Question 2. The top seven most mentioned survey responses are listed in the chart to the right.

Question 2: Town Treasures and Character 3 "town treasures", parks, trails, historic buildings, destinations, for example.	# of responses
Shirley Center/Common	22
Benjamin Hill cons. land & recreation area	13
Longley Acres	12
Conservation areas (public & private)	8
Squannacook River	7
Holdenwood Trust	4
Bull Run Restaurant	3
Whitley Park	3
Historic Shirley Meeting House	3
Hunting Hill	3
Lura A White School	3
Oxbow National Wildlife Refuge	3
trails in general	3
Far and Near	3
Catacunemaug River	2

Top 6 Town Treasures



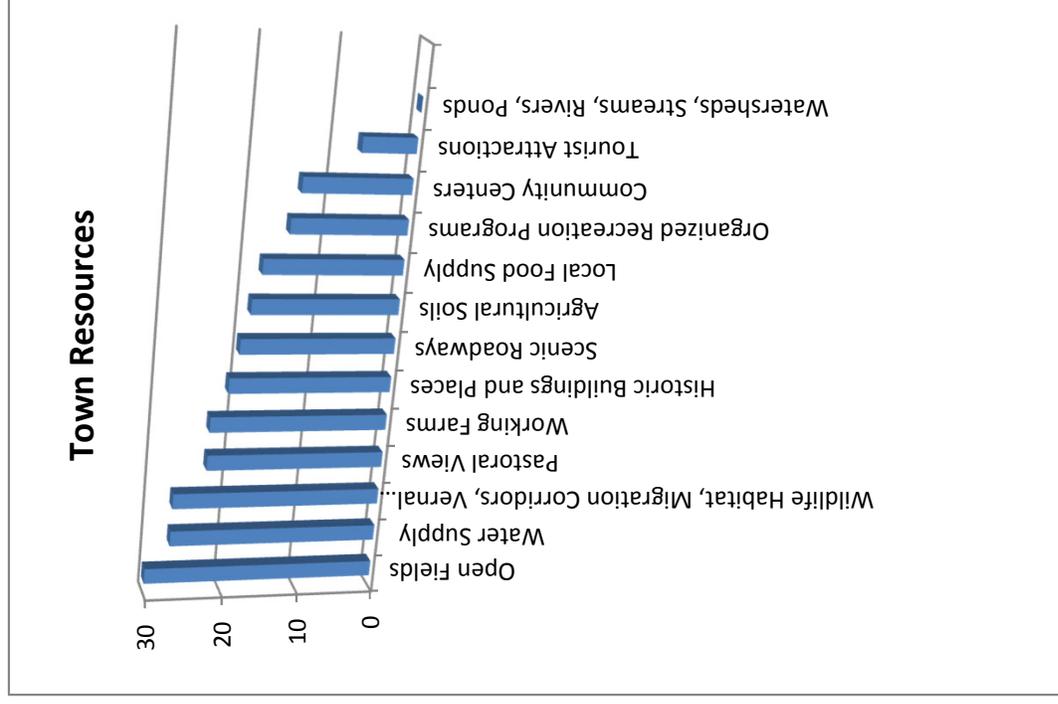
APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 2: Town Treasures and Character (cont.:d)

conservation area (marshland, vernal pools and wildlife) at end of Horse pond road	2
Valley Farm	2
quiet streets	2
Fredonian Park	2
War Memorial Building	1
Spruce Swamp	1
Wilde Road Fields	1
Ayer-Shirley Middle School	1
baseball/softball fields	1
Catacunemaug Mill, old factory buildings	1
Other historic areas and buildings (Shaker site near MCI)	1
public land	1
historic buildings	1
little traffic	1
Mulpus Brook area	1
Old Fire Station	1
Mulpus Brook area	1
Phoenix Park	1
Old Fire Station	1
Pumpkin brook conservation area.	1
Town Library	1
Town Forest/Walker Brook	1
Rural "feel"	1
Shaker Village	1
Historic Districts	1
Trails off of Burrage Road	1
Trails off of Park Steet	1
town and MassWildlife Land	1
Summer Concert series	1
Holden Farms	1

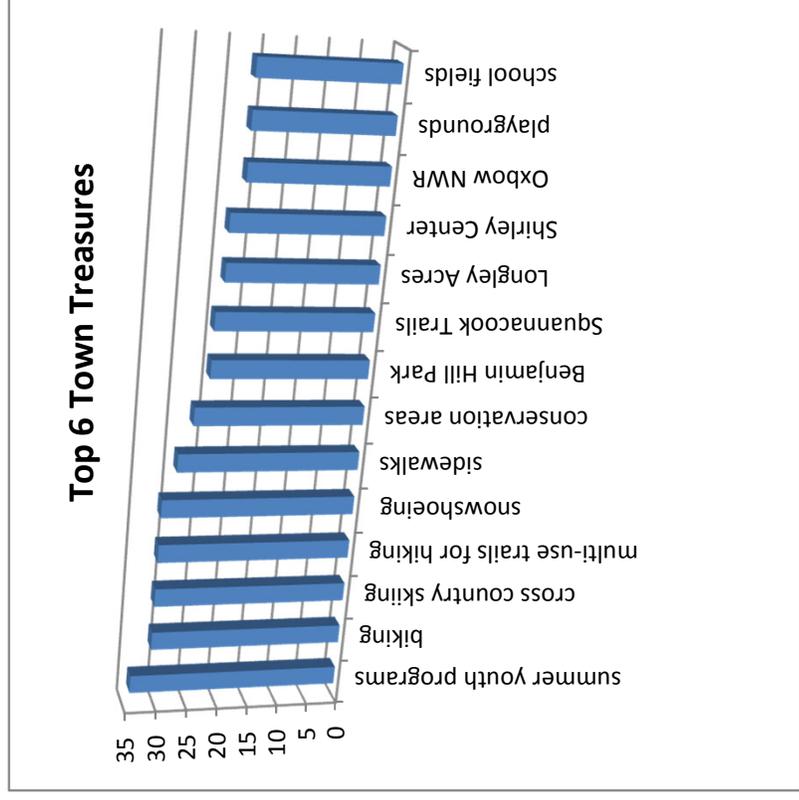
APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 3: Town Resources <i>From the list below, please check the resources in Shirley you consider critical to protect.</i>	# of responses
Forests	33
Open Fields	30
Water Supply	27
Wildlife Habitat, Migration Corridors, Vernal Pools	27
Pastoral Views	23
Working Farms	23
Historic Buildings and Places	21
Scenic Roadways	20
Agricultural Soils	19
Local Food Supply	18
Organized Recreation Programs	15
Community Centers	14
Tourist Attractions	7
Watersheds, Streams, Rivers, Ponds	0



APPENDIX A: Open Space and Recreation Plan Questionnaire Results

4. Recreational Activities	# of responses
<i>From the list below, please check the recreational activities and places you feel should be protected and maintained. Or areas and activities that you would like to see in the community.</i>	
summer youth programs	34
biking	31
cross country skiing	31
multi-use trails for hiking	31
snowshoeing	31
sidewalks	29
conservation areas	27
Benjamin Hill Park	25
Squannacook Trails	25
Longley Acres	24
Shirley Center	24
Oxbow NWR	22
playgrounds	22
school fields	22
baseball	19
boat/canoe launches	19
football	19
frisbee	19
frisbee golf	19
horseback riding trails	19
local parks	19
recreation fields	19
soccer	19
softball	19
Leatherboard Pond	17
Shaker Village	15
Bull Run Tavern	14
birdwatching areas	12
fishing areas	12
nature centers	12
swimming pools	12
community gardens	11



APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 4: Recreational Activities (cont.'d)	
camping	10
indoor recreation centers	9
family picnic areas	8
dog parks	7
recreational activities	4
hunting areas	3
skateboard parks	3

Question 5. Town Open Space Problems	
1. Illegal ATV riding. Lack of knowledge/appreciation/use of many special areas by large numbers of public. Fragmentation due to development.	
2. ATV and dirt bike damage on trails is destroying the trails in perpetuity and the cost to repair them is too much for the town to pay nor should it. The noise and illegal use of these vehicles also destroys the peace and tranquility so necessary for wildlife -- and people. The loss of open space due to development is a disaster. The economic benefits of saving open should be analysed and presented to the town so financing can be obtained thru such tools as the Community Reinvestment Act.	
3. ATV damage on trails	
4. Traffic volume	
5. Pollution and trash on the side of the roads. Quality of road conditions	
6. Not enough parking especially for horse trailres	
7. I am very concerned how many abutters of watersheds do not maintain their septic systems and further pollute by chemical and dog feces run off. We have a serious atv problem.	
8. ATVs chewing up and destroying conservation land/trails I see as one of the biggest open space issues where I live though there are signs up stating 'No Motorized Vehicles'. I don't believe the 'No ATVs' rule is adhered to by many ATV users. Not only are they noisy and destroy trails but they also bring in a lot of litter and spoil natural areas. I have seen tires empty oil containers appliances and other debris dumped out by ATVs on to town conservation trails. I love our trails but unfortunately a few irresponsible townsfolk ruin open spaces for the rest of us.	
9. I hike the trails and walk the streets of North Shirley and Shirley Center regularly. Over the past 10 years I have noticed a steep increase in trash everywhere. I used to bring a large trash bag & would pick up trash along my walks but it is now at the point where one bag in a 3 - 4 mile walk is overflowing. All of the garbage falls into 3 categories: fast food containers soda cans and liquor nips.	
10. I am concerned about balancing the need for more business tax revenue with keeping the pastoral feel and look of Shirley and protecting its historic landmarks.	

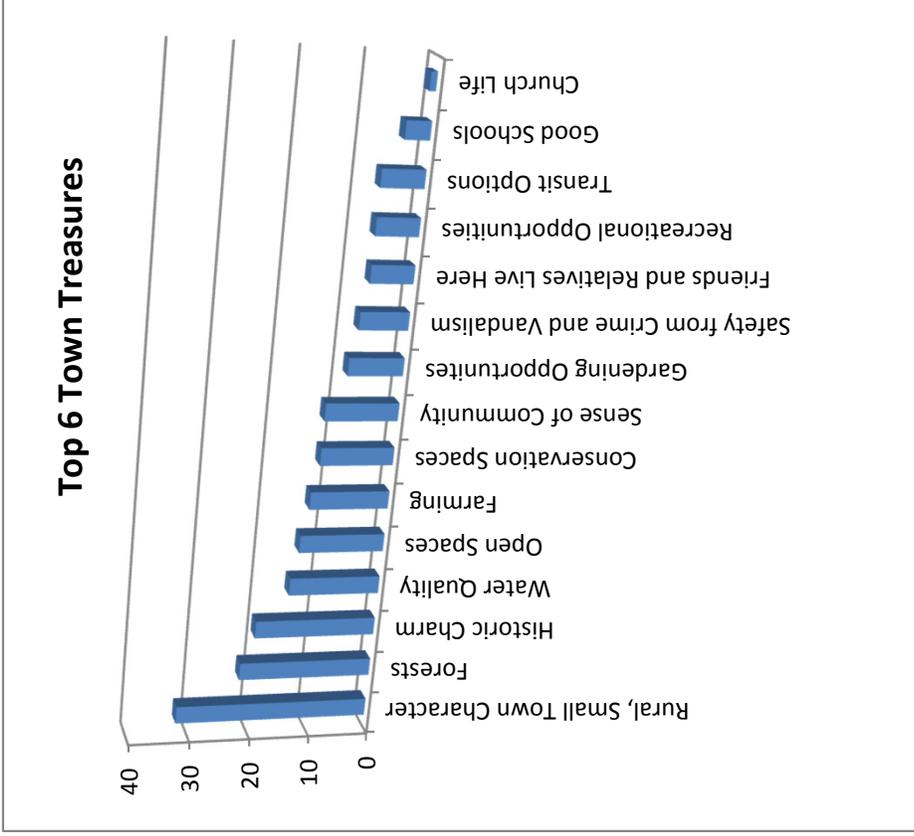
APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 5. Town Open Space Problems (cont'd)
11. A great deal of the open space is being cleared which is destroying habitat for much of the wildlife. There is clearing of low growth and in some cases all growth in the name of conservation and recreation that I find disturbing. The clearing of old growth should be of special concern. There are many wild life species that need this to survive. I also think when towns consider expansion of open space use they also need to consider how it affects nearby residents. Added traffic and noise to a previously quiet neighborhood does have a negative impact on the quality of life for people who have enjoyed their peaceful homes and will also impact real estate values. One person's quality of life should never be sacrificed for another. This is not what communities should be about.
12. residents lack of knowledge of these areas, & money to support this issues
13. Access to conservation areas. maps of trail systems etc...
16. The main problem for use of conservation land is labeling where it is and what it is good for and how to get in and out without getting lost.
17. ATV's damaging conservation paths and forested areas.
18. Abuse of posted land by ATVs and to a lesser degree snowmobiles. This land may be public or private often under conservation easements. This abuse tends to do damage on the ground and discourages pedestrian use of trails.
19. Need for all town open space land to be legally excluded from possible future sale or development.
20. safe hiking trails that are marked 2 stroke snowmobiles on town land. They are causing a lot of both air and noise pollution and ruin the trails (which get all icy) for xc skiing and Snowshoeing.
21. The exhaust from these large 2 strokes engines which contains a lot of unburned gas and oil is typically blown into the snow near the front of the machine and can be smelled for hours after they pass. What condenses and remains in the snow contaminates runoff when the snow melts and often can be seen as a slick on the water behind my house.
22. Maintenance and cost
23. The pollution in the village area of town is too much for my taste. I wish it was a bit neater down there and do we really need that many liquor stores in a row? - Just sayin'
24. Right now I don't see any of these as acute problems but I might worry that they become a problem if the town loses sight of the value of open space.
25. Money; Economic pressures forcing land sales discouraging conservation
27. Maintenance of existing protected parcels
28. Parking
29. Draw to go - people don't go. Need more things that even people outside of town want to come to.
30. Lack of communication & organization between all entities working with them ie. Shirley Recreation, Benjamin Hill Pool, Conservation Recreational Fields Committee, DPW. There is no central planning. It is almost each entity on its own.
31. Lack of Money;Over building of McMansions; lack of services

APPENDIX A: Open Space and Recreation Plan Questionnaire Results

32. I believe that children need to be taught very early and very often about the positive impact that a non-littering attitude can have in a town and a world. I see too much 'stuff' in all areas on the roadways and in the edge of woods around downtown buildings etc. Is it possible to have tasteful rubbish containers placed in strategic spots where litter is most prevalent. I believe that plenty of the road litter is from out-of-towners who pass through but we can at least make it

Question 6: Reasons to Live in Shirley	# of responses
Rural, Small Town Character	32
Forests	22
Historic Charm	20
Water Quality	15
Open Spaces	14
Farming	13
Conservation Spaces	12
Sense of Community	12
Gardening Opportunities	9
Safety from Crime and Vandalism	8
Friends and Relatives Live Here	7
Recreational Opportunities	7
Transit Options	7
Good Schools	4
Church Life	1



APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 7: Town Projects	# of responses
Developing and Maintaining Multi-use Trails for Hiking, Snowshoeing, Cross Country Skiing	25
Developing and Maintaining Multi-use Trails for Horseback Riding	16
Developing and Maintaining Multi-use Trails for ORV's/ATV's/Snowmobilers	9
Protecting Open Space such as Forests, Wetlands, Wildlife Habitat	31
Protecting/Maintaining Recreation Spaces such as Play Fields or Hunting Areas	27
Protecting/Maintaining Historic Buildings and Places	20
Upgrading/Maintaining Sidewalks and Pedestrian Paths	13
Protecting Neighborhoods from Over-development and Excessive Traffic	17
Building Bike Trails or Paths	22
Monitoring and Protecting Streams, Rivers, Ponds	23
Planning the Future of Fort Devens North Post	15
Village Improvement Projects	11
Town Festivals and Events	19
Greenway Initiatives	14
Tree Planting Projects	16
Farmland Protection Initiatives	23
Creating a Town Land Trust or Partnering with Neighboring	18

APPENDIX A: Open Space and Recreation Plan Questionnaire Results

Question 8: Comments

<p>1. The natural areas in Shirley are incredible assets that is very important to quality of life and property values. In future years these will become even more valuable and vital to the town's economic health. We need to protect them and increase public understanding, appreciation, and use of these areas now so that their value is better known and they are not lost.</p>
<p>2. When the final disposition of Devens is decided, it is vital that Shirley regain full jurisdiction of all land west of the Nashua River.</p>
<p>3. I am the physical education teacher at the Lura A. White school and if this field were addressed, it would be a great help to us.</p>
<p>4. Longley Farm is underutilized and should truly be a working farm. Bike trails are a good way to bring tourism. Shirley is considered one of the last "horse friendly" towns in Central Mass. All of my friends & I had horses growing up in Shirley with plenty of places to ride; it seems the trails are shrinking and need protection. A Land Trust is an excellent idea.</p>
<p>5 Thank you very much for doing this survey and the projects in general. It sounds promising and I am a supporter.</p>
<p>6. The current and most recent town open space projects should be looked at to see if they are successful. See what works and what doesn't before plunging into another. Does everybody have equal access and time? Are the areas being used? How often? By what age group etc....</p>
<p>7. Need control of ATV's which are damaging walking paths near power lines and within conservation areas. Almost impossible to take the beautiful walks I have been taking for almost 50 years in this town!</p>
<p>8. I checked developing ATV trails not because I want them but because if such an outlet is provided in Shirley, it might be easier to exclude such vehicles from other areas.</p>
<p>9. I feel the town should promote donations of land to the town.</p>
<p>10. I really would love to see a new playground for the children. The school playground - oh wait is there one? I have looked for a place to swing with my daughter and end up driving to Devens. We should have a newer playground.</p>
<p>11. Rural roads need more sidewalks - for example Center Road, it stops less than a half mile up from downtown.</p>
<p>12. Shirley has been one of my 2 favorite places to live; I will probably die here. I see great potential from the schools as advocates for teaching the youngest to appreciate the total value of their town and community. This is the place to start in order to instill understanding and positive practices that will become 2nd nature to them as adult citizens who will become the next generation of stewards of the open space and land management in town.</p>
<p>13. I would like the town's public land to remain pristine and undeveloped.</p>
<p>14. I have been disappointed in the board of selectmen's attitude toward conservation efforts, such as the wild river protection program. I would like to see more people involved in these issues in town so we could have an impact on the direction of the town.</p>

APPENDIX A: Open Space and Recreation Plan Questionnaire Results

15. I think the main point here is to KEEP open spaces open. It is what makes us what we are. I don't think we should ever build upon these spaces.

Appendix B: Public Participation Publicity & Meeting Agendas

The following pages contain the agendas and notes for the two public meetings that were conducted during the writing of the Open Space and Recreation Plan. The promotional fliers and brochures following the meeting notes. The first meeting was cancelled due to snow, and thus the dates are inconsistent in the flier and the notes. The meeting was ultimately held on February 9 and the second public meeting was held on March 2. Accompanying the meetings the Conway team also set up a table in the town offices during during a town vote to engage community members in the process, distribute brochures, and find out what people love about Shirley. Passers-by put a sticker on their favorite place in Shirley.



Fredonian Nature Center
Recreation Fields
Conservation Land



Shirley has great places!

What are some of your favorite places?



Hiking Trails
Historic Centers
Wildlife Habitat



How can you help?

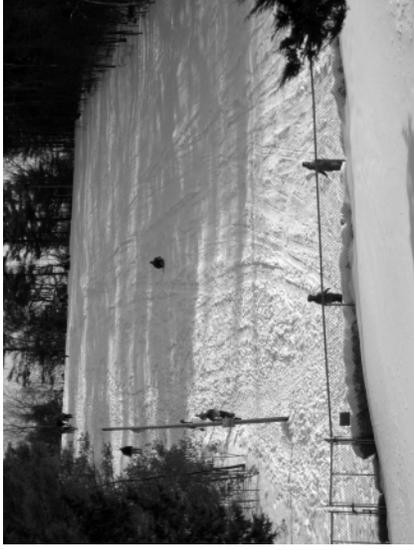
- Come to the meetings
- Send us your input
- Contact us
- Send us your photos

Contact information:
Emily Lubahn
Zachary Mermel
Elaine Williamson
413-537-7173(cell)
email: 2011shirley@cslid.edu

Questionnaire Link:
http://tiny.cc/shirley_osrp

Input Meeting
February 9, 2011, 6:30pm
at the Town Offices
Recommendations Meeting
March 2, 2011, 6:30pm
at the Town Offices

Conway School of
Landscape Design
332 South Deerfield Rd.
Conway, Massachusetts 01341
413-369-4044 x7



Please send us your photos.!

Shirley's Open Space and Recreation Plan

An OSRP "allows a municipality to maintain and enhance all the benefits of open space that together make up much of the character of the community and protect the green infrastructure of the community.

Planning this green infrastructure of...
water supply,
land,
working farms and
forests,
viable wildlife habitats,
parks,
recreation areas,
trails, and
greenways

...is as important to the economic future of a community as planning for schools, roads, water, and wastewater infrastructure."

Shirley's Open Space and Recreation Plan inventories the natural areas that define Shirley's rural character and is a requirement for participation in some Massachusetts grant programs.

Why is it important to you?

An OSRP is available to the entire community and can be used to plan ways in which the town uses its land now and in the future.

What's Important to Your Town?



Neighborhood Parks



Recreation Fields



Working Farms



Water Supply



Multi-use Trails



Habitat



Land Conservation



Historic Preservation

Wednesday, January 26th at 6:30pm at the Town Hall (7 Keady Way)

The Town of Shirley is seeking public input on the use and value of open spaces and recreational resources in town.

Shirley's Open Space and Recreation Plan inventories the natural areas that define Shirley's rural character and is a requirement for participation in some Massachusetts grant programs.

The information from surveys completed this past fall is being incorporated into the plan and additional input is needed and welcome.

The Conway School of Landscape Design is helping the Conservation Commission to update the plan and will be making a presentation on Wednesday January 26th at 6:30pm at the Town Offices (7 Keady Way). The public is invited to help guide the future of our town.

Your input is critical, please take some time to give us your input on these important public resources.

Open Space and Recreation Plan

Developing a plan for your town can protect and preserve what's important to your community.

Shirley Open Space and Recreation Plan
2014 Draft

Public Meeting
Shirley Open Space and Recreation Plan
Town Offices, 7 Keady Way, Shirley, MA.
February 9, 2011
Agenda

Sign in- Use the map to designate your favorite spot in Shirley.

6:40- 7:00

Informal Discussion

7:00-7:05

Introductions
What is an OSRP and why it is important to you and your town
Schedule for the evening
Ground Rules

7:05-7:30

Breakout Session Part 1 and Part 2

7:30-7:40

Break

7:40-8:00

Breakout Session Part 3

8:00-8:05

Wrap up
Summarize major themes
Contact information
Survey web link
Send us your photos
Next meeting: March 2, 2011, 6:30 p.m. Town Offices 7 Keady Way, Shirley, MA

Notes taken during meeting on the board.

Best of Shirley

- Lura White School – Best School in Shirley
- Foot of Phoenix Strt – Natural aspects, birds
- Enviro Business Zone – future? Vernal Pools
- 72 Acres Malpus Bowl – Wildlife, runs up Townsend Road
- Along the Squannacook River – Wildlife, trees over river
- Holden Road – 500+acres linked, Arthur banks, valley farm; connections to Lunenburg & Longely Acres
- Beaver Pond Brook – 2A Conservation Areas; trails; Range of features: uplands, rocky, sandy, wetlands
- Lunenburg, Lancaster, Shirley – old sand pits areas
- General, wetlands and floodplains
- Connections over many miles
- Fredonian Nature Center – go beyond the beaten path and see much more!
- Walker Road sand pits
- Hiking, walking, snow-skiing
- Corridor along Nashua, runs north
- Hunting Hill – 80 acres in Shirley +Townsend and Lunenburg +147acres Fish & Wildlife
- Land owned by Rod & Gun Club, near Nashua River
- Historical Sites, mills
- Great Brook

Shirley Open Space and Recreation Plan
2014 Draft

Concerns

- Lura White School –contaminated area where kids can't play, becoming wild
- Children and lack of outdoor education and involvement
- Awareness of outdoor/open space as assets, what is there
- Balancing open space with development
- Unprotected meadows and agriculture and how to protect it? – Merkowich's, Hamson's (at Warren & Hazen), Ray on Benjamin Rd
- Awareness of Opportunities to Protect land and take action & support – encourage proper use
- This is the last generation of people that will get to protect land – ConComm has protected 6-8 new parcels since the '90's
- Maintaining existing properties – start a greenway committee
- Concerns about ATV use
- Unmowed Meadows: Garrison Rd, Mulpus Rd, Adel Parcel, Goshen (Hunting Hill) – maintenance requires equipment, expertise and access
- Land use- commercial use on resource land on a Regional basis
- Resentment over preservation, using resources to preserve land when it could be developed for tax base (in this kind of economic climate)
- Corridor fragmentation
- Foster relationships between towns to protect in perpetuity
- Right to Farm! Bylaw/framework that can be adopted by any town. Lunenburg's goal is to adopt this in 5 years
- Over-use of trails: ATV's Maintenance, legality, ATV vs. Equestrians – Lunenburg/Shirley
- Shaker Village
- Aquifer Recharge
- Development in the area between the Middle School and Nashua River

Favorites, Priorities, Solutions

- F) Squannacook – flyfishing, swimming, canoeing
- P) Finalize status of the North Post of Devens – there is amazing wildlife, rare species habitat, passive recreation, state protection
- Protecting agriculture land, agriculture &viewshed
 - o S. Agriculture Protection Restriction
- P) Add to Benjamin Hill Rec area
- P) Recharge Protection: wells in town – Aquifers: Commercial, private wells being tapped from Shirley aquifers, no recharge. Commerce in Lancaster& adjacent towns are using Shirley for water districts
- P) Invasives: Fredonian Nature Center & near Middle School (purple loosestrife, bittersweet, buckthorn, Russian olive)
- S) Enforcement of state law – fines for illegal use, part of the revenue can go to municipality of offense (Enviro police or any police force)
 - o Create partnerships (per woman from Lunenburg?) park rangers, DCR, local police. Start a rational dialogue. There are only 4-5 (45?) legal places in MA. Register ATV, purchase legal areas for using.
- S) Community Preservation Act – why did work before die, more awareness/edu
- S) Sponsoring more hikes, gets people out, generate appreciation/start caring

Shirley Open Space and Recreation Plan
2014 Draft

- S) Advertise this meeting on SPACO and to selectmen, get more people on board
- P) Generate a plan to maintain current OSRP plan and continue towards future
- P) Space by Lura A. White School – toxic, convert to natural area?
- P) Fredonian Nature Center, invasives, connectivity (bridge disappeared)
 - o Only 2 bridges in town to get over Catacunemaug...
- P) Longely Acres, more agriculture
- P) Recover Meadows
- P) Federal Lands – more trails

*What is missing: Minority groups and recreation space users

What is Important to Shirley's Open Space & Recreation?

PROVIDE CONNECTIONS



Multi-use Trails

PRESERVE & PROTECT



Land Conservation

TOWN RESOURCES



Historic Preservation

MAINTAIN INFRASTRUCTURE



Recreation Fields



Neighborhood Parks



Working Farms



Habitat



Water Supply

Wednesday, March 2nd at 6:30pm at the Town Offices (7 Keady Way)

Shirley's Open Space and Recreation Plan inventories the natural and recreation areas that define Shirley's character, it unites the community by combining common goals towards future planning, preservation and development.

The Town of Shirley is seeking public input on the use and value of open spaces and recreational resources in town. The information from surveys completed this past fall is being incorporated into the plan and additional input is needed and welcome. You can contribute to this process online at: http://tiny.cc/shirley_osrp and come to the meeting!

The Conway School of Landscape Design is helping the Conservation Commission to update the plan and will be facilitating a meeting on Wednesday March 2nd at 6:30pm at the Town Offices (7 Keady Way) to address community goals for the future of Open Space and Recreation in Shirley. Please come to the meeting to provide your input for a plan that can enrich the future of Shirley.

Your input is critical, please join us to provide your input on these important public resources.

Shirley Open Space and Recreation Plan
Developing a plan for your town can protect, preserve, and maintain what's important to your community.

Shirley Open Space and Recreation Plan
2014 Draft

Public Meeting #2
Shirley Open Space and Recreation Plan
Town Offices, 7 Keady Way, Shirley, MA.
March 2, 2011
Agenda

Sign in- 6:30-6:40

Informal Discussion. Review the open space map on the table...

6:40-7:00

Introductions

What is an OSRP and why it is important to you and your town

Schedule for the evening

Ground Rules

Review of last meeting (Feb. 9th)

Summary of Town Needs

7:00-7:55

Recommendations

Prioritize

Plan

7:55-8:00

Wrap up

Next steps in the OSRP update process

Contact information

Send us your photos

Thank you all for your input!

Notes take from meeting:

The following is a record of a list of items distributed during the March 2nd meeting, attendees were asked to prioritize the items with red and yellow stickers. Red for most important, yellow for easiest to implement. Underlined are the attendees comments.

ACTION ITEMS

Recreational Connections and Infrastructure: These ideas are generated from an evaluation of town needs regarding open field management, conservation lands, trails, passive and active recreation, accessibility and use. Below is a list of a number of ideas generated from the previous Open Space and Recreation Plan, the town Master Plan, community ideas, feedback and responses. Please assess each point regarding the viability of each and add further ideas.

- Implement Montachusett Regional Planning Commission Sidewalk Study recommendations to create new sidewalks-2 Red
-What side of road?
- Utilize Conservation Commission and land trusts (in town and neighboring land trusts) to acquire land adjacent to existing land to expand and connect land for trails and fields- 2 Red
- Create a maintenance plan for existing rec fields and playgrounds, raise funds through grants and fundraisers, look to neighboring towns to collaborate on field uses and maintenance- 1 Red
- Distribute trail maps, provide signs and add parking for existing trails and natural areas- 3 Yellow
- Use existing town owned land to develop passive recreation fields (e.g. school fields, Fort Devens land, empty lots)- 2 Yellow

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2014 Draft

- Engage in the public discussion of ATV trail use, collaborate with neighboring towns and DCR to provide a trail through town that ATV's could use, discourage use on passive trails
"Not trail"
- Use neighboring and national models for creating a bike-friendly atmosphere for Shirley- no votes

Notes from group feedback- Develop recreational fields- enough but need use. Have to get permission. Access? Maintenance? Who decides usage? Lack of communication. Policy on this? Rec Fields Committee
New sidewalks. Roads too narrow for them. Costly, invasive (would mean moving in on people's property)
"Safe Routes", free infrastructure
ATV trails- need a place. Lower priority financially. More bike trails would be a better way to spend the money.
See Lunenburg Brochure.
Check on DCR trails
Longely Acres increases community involvement. They have kids field trips. See their website.
Playgrounds at school are problematic.
Residents take their kids to other towns to play.
Canoe Launching ramp on the Nashua River is desired by the group!

ACTION ITEMS

Protect & Preserve Natural and Community Resources: These resources are generated from an evaluation of wildlife habitat communities; water resources, local and regional; and land-uses, development, agriculture and conservation.

Below is a list of a number of ideas generated from the previous Open Space and Recreation Plan, the town Master Plan, community ideas, feedback and responses. Please assess each point regarding the viability of each and add further ideas.

- Encourage village development, clustered development using preservation by-laws and ordinances, work with zoning board and use neighboring town examples to update and implement bylaws that allow for continued development and continued preservation 3-Red, 1 Yellow
- Implement storm water management strategies such as rain gardens and bio-swales, using local and national examples- 3 Red
-Mass Watershed Coalition, NRWA, New development covered by law. Retrofit around roads?
- Identify sensitive habitat, wetlands, land outside current permanently protected zones, add additional protections or create a plan (fundraisers, grant money) to acquire land in these zones 2 Red, 1 Yellow
-Identify vernal pools
- Expand existing town owned sustainable forest land, advertise these resources to promote land stewardship-1 Red, 1 Yellow
-Expansion doesn't sound viable; need to effectively manage Rich Tree Farm- needs harvesting. Rod and Gun club has a management plan; other conservation parcels could probably use management plan.
- Collaborate with regional and local land trusts for meadows, wetlands and corridor management plans – 3 Yellow
-To link protected parcels where feasible.
- Adopt Agriculture Protection Restrictions and Right to Farm Bylaw, using neighboring and state-wide towns as examples- 2 yellow
- Added at meeting... Trail Guide, Trail Network /Greenway- 2 yellow
-Other notes, Add a walking trail on Nashua River, Oxbow, MCI
-Implementation strategy- how to get people and groups to own the various action items.

Notes from group feedback- Storm water management
Encourage village development/keep it green
Identify sensitive habitats – Tophet Swamp and vernal pools
Collaborate Regionally- an easy priority

ACTION ITEMS

Celebrate Cultural and Community Resources: These resources are generated from an evaluation of community and cultural resources; historic places, the village corridor, land-uses, community events and community stewardship.

Below is a list of a number of ideas generated from the previous Open Space and Recreation Plan, the town Master Plan, community ideas, feedback and responses. Please assess each point regarding the viability of each and add further ideas.

- Integrate Educational programs through schools and community to encourage awareness and land stewardship, use school projects, litter clean-up days, nature walks, and engage community in the outdoors- 4 Red, 3 Yellow
-Yes, top priority
- Highlight community events such as Recycling Day or the Hoe Down, continue to collaborate regionally to generate interest and foster community pride- 5 Red
-Yes w/volunteers. Need a way to advertise and communication for town
- Expand existing town owned sustainable forest land, advertise these resources to promote land stewardship- 1 Red
-Yes. Repair the missing links. Land and waterway. Restore passage ways- dirt, bridges.
- Distribute a town map that highlights historic, recreation, waterway, trailhead and park resources, use local and regional press to disseminate information- 6 Yellow
-Yes
- Educate the community on the benefits of a Community Preservation Act to protect viewsheds, historic sites and parks; create a strategic plan to educate and pass the act
-Yes, with volunteers. Viable but need a lot of volunteers, a means to communicate
- Look into models such as Community Land Trusts to protect affordable housing, add services and recreation resources to the village corridor, use neighboring, state and national examples
-Low priority
- Use Agriculture Protection Restrictions and Right to Farm Bylaw, using neighboring and state-wide towns as examples
-Yes
- Encourage village development, clustered development using preservation by-laws and ordinances, work with zoning board and use neighboring town examples to update and implement bylaws that allow for continued development and continued preservation
-Yes, confusing to us. Cluster by laws already exist.

Notes from group feedback... Highlight events- Word is hard to get out.

Educate Community- CPA- Good idea but not sure how to do it.

*Repair and linkage are priorities

Community Land Trust- Viable but lower priority

Economic Dev. Group- recently formed- join forces

Educational programs are a popular priority in the group

Appendix C: Inventory of Lands of Conservation and Recreation Interest

See attached PDF.

APPENDIX C: Inventory of Lands of Conservation and Recreation Interest

Parcel ID	Property Name	Acres	Private, Public or Nonprofit	Ownership	Managing Agency	Current Use	Condition	Public Access	Recreation Potential	ADA Access	Grant Rec'd	Deed Restrict.	Zoning
Permanently Protected, Publically Owned Parcels													
60A2.1	Spruce Swamp/Shirley Center	11.62	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Residential
37A2.1	Holden Road Conservation Area	15	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Rural Residential
38A2	Holden Road Conservation Area	39	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Rural Residential
54A4	Holden Road Conservation Area	2.23	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Rural Residential
57A3	Thompson Conservation Area	15.7	public	Town of Shirley	Shirley Conservation Commission	Recreation & Conservation		Yes			Self-Help Grant		Rural Residential
68A5	Harriet Lyon Bird Sanctuary	7.83	public	Town of Shirley	Shirley Conservation Commission	Conservation		No			Self-Help Grant		Residential
115A4	Squannacook Conservation Area	12.5	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Residential
103B2	Crow Island Conservation	2.1	public	Town of Shirley	Shirley Conservation	Conservation		Yes					Residential
16D15.1	Fredonian Park and Nature	7	public	Town of Shirley	Parks Department	Conservation		Yes		Yes			Residential
96B2, 96C1	Rust Nature Conservation	20.88	public	Town of Shirley	Shirley Conservation	Conservation		Yes					Residential
47 A2.2	J&A Conservation Area	2.5	public	Town of Shirley	Shirley Conservation	Conservation							Residential
58A6.1	Mitchell Conservation	1.02	public	Town of Shirley	Shirley Conservation	Conservation		Yes					Residential
27D1	Nashua River Frontage/Walker	2.18	public	Town of Shirley	Shirley Conservation	Conservation							Residential
43A91	Rich Tree Farm Conservation Area	109	public	Town of Shirley	Shirley Conservation Commission	Cons., Water Supply Prot.		Yes			Self-Help Grant		Rural Residential
37A1	Ronchetti Conservation Area	95	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Rural Residential
109A1	Hunting Hill Conservation Area	31.2	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Residential
117A3	Townsend Road Conservation	55.91	public	Town of Shirley	Shirley Conservation	Conservation		Yes					Residential

APPENDIX C: Inventory of Lands of Conservation and Recreation Interest

Parcel ID	Property Name	Acres	Private, Public or Nonprofit	Ownership	Managing Agency	Current Use	Condition	Public Access	Recreation Potential	ADA Access	Grant Rec'd	Deed Restrict.	Zoning
118A1	Pumpkin Brook Link Conservation Area	31.9	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
118A2.3	Pumpkin Brook Link Conservation Area	2.07	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
118B1	Pumpkin Brook Link Conservation Area	50.3	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
121A1	Pumpkin Brook Link Conservation Area	6.04	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
121B2	Pumpkin Brook Link Conservation Area	30.7	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
122A2	Pumpkin Brook Link Conservation Area	19.7	public	Town of Shirley	Shirley Conservation Commission	Conservation					Self-Help Grant		Residential
58A2, 67A1, 68A4	Longley Acres Conservation Area	73.24	public	Town of Shirley	Shirley Conservation Commission	Conservation		Yes			Self-Help Grant		Residential
37A2	Sullivan Donation	2.42	public	Town of Shirley	Shirley Conservation Commission	Conservation							Rural Residential
95A7.14	Dow Conservation	16.03	public	Town of Shirley	Shirley Conservation Commission	Conservation							Residential
40A1.11	Benjamin Hill Conservation	41.2	public	Town of Shirley	Shirley Conservation Commission	Conservation							Residential
12 C1	Lura A. White School	10.33	public	Town of Shirley	Shirley RecComm, DPW, Fields	Conservation		Yes					Residential
12 C25	Lura A. White School	3.75	public	Town of Shirley	Shirley RecComm, DPW, Fields	Conservation		Yes					Residential
65A1	Center School Playfields	4.43	public	Town of Shirley	Shirley RecComm, DPW, Fields	Conservation		Yes					Residential
23F1	Whitley Park	1.54	public	Town of Shirley	Parks Department	Conservation		Yes					Shirley Village Business District
N/A	Shirley Center Common	2.43	public	Town of Shirley	Parks Department	Conservation		Yes					Residential

APPENDIX C: Inventory of Lands of Conservation and Recreation Interest

Parcel ID	Property Name	Acres	Public or Nonprofit	Ownership	Managing Agency	Current Use	Condition	Public Access	Recreation Potential	ADA Access	Grant Rec'd	Deed Restrict.	Zoning
?	Pumpkin Brook Subdivision	13.63	public	Division of Fisheries & Wildlife		Conservation		Yes					
68A4	Longley Farm		public	Town of Shirley	Shirley Conservation	Conservation		Yes					Historical/Cultural
58A10	?		public	Town of Shirley	Town of Shirley Historical	Historic		Yes					
30B9	?		public	Town of Shirley	Town of Shirley Water Department	Water Supply Protection		No					
28A2	?		public	Town of Shirley		Water Supply Protection		No					
27-1	?		public	Town of Shirley	Shirley Conservation Commission	Recreation & Conservation		Yes					
66A6	?		public	Town of Shirley	Town of Shirley Water Department	Water Supply Protection		No					
29A3	?		public	Town of Shirley	Town of Shirley Water Department	Water Supply Protection		No					
Permanently Protected, Privately Owned Parcels													
101A2	Shirley Rod and Gun	39.02	private	Shirley Rod & Gun	Shirley Rod & Gun	Recreation & Conservation							Residential
85A1	Shirley Rod and Gun	94	private	Shirley Rod & Gun	Shirley Rod & Gun	Recreation & Conservation							Residential
86B1	Shirley Rod and Gun	4.01	private	Shirley Rod & Gun	Shirley Rod & Gun	Recreation & Conservation							Residential
86B1.5	Shirley Rod and Gun	2.2	private	Shirley Rod & Gun	Shirley Rod & Gun	Recreation & Conservation							Residential
99A6	Shirley Rod and Gun	4.45	private	Shirley Rod & Gun	Shirley Rod & Gun	Recreation & Conservation		No					Residential
80A2.9	Longley Trace Cons. Restr. (CR#13)	10	private	Hayes Development Corporation	Shirley Conservation Commission	Conservation		Yes				Yes	Residential
40A7.3	Holdenwood Trust Cons. Restr. (CR#11)	2.62	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
52A14	Holdenwood Trust Cons. Restr. (CR#11)	12.48	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
56A10	Holdenwood Trust Cons. Restr. (CR#11)	1.4	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
60B2	Holdenwood Trust Cons. Restr. (CR#11)	1.07	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential

APPENDIX C: Inventory of Lands of Conservation and Recreation Interest

Parcel ID	Property Name	Acres	Private, Public or Nonprofit	Ownership	Managing Agency	Current Use	Condition	Public Access	Recreation Potential	ADA Access	Grant Rec'd	Deed Restrict.	Zoning
60B3	Holdenwood Trust Cons. Restr. (CR#11)	9	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
61A3.1	Holdenwood Trust Cons. Restr. (CR#11)	7	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
61A17	Holdenwood Trust Cons. Restr. (CR#11)	8.25	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
64A4.1	Holdenwood Trust Cons. Restr. (CR#11)	2.25	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
65A7	Holdenwood Trust Cons. Restr. (CR#11)	5.1	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
65A9	Holdenwood Trust Cons. Restr. (CR#11)	45	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
82A6	Holdenwood Trust Cons. Restr. (CR#11)	7.9	private	Towns of Shirley and Lunenburg	Shirley & Lunenburg Cons. Commissions	Conservation		limited				Yes	Residential
?	Holdenwood Trust Cons. Restr. (CR#11)	147.15	private	Holdenwood Limited Partnership	Shirley Conservation Commission	Recreation		limited				Yes	Residential
40A1.12	Benjamin Hill Park	8.61	public	Town of Shirley	Shirley RecComm, DPW, Fields Committee	Recreation		Yes					Residential
40A1.3	Benjamin Hill Park	1	public	Town of Shirley	Shirley RecComm, DPW, Fields Committee	Recreation		Yes					Residential
32A18, 19, 20	Hill Lane Conservation Restriction (CR#9 - Easement A)	1.29				Conservation		No				Yes	Residential
32A16, 17	Hill Lane Conservation Restriction (CR#9 - Easement B)	1.64				Conservation		No				Yes	Residential
53B3	Colburn Conservation Restriction (CR#10)	6.35			Trustees of Reservations	Conservation		No				Yes	Residential

APPENDIX C: Inventory of Lands of Conservation and Recreation Interest

Inventory of Chapter 61 Lands

Chapter 61A: Agriculture Lands			Acreage in Chapter 61A
Parcel ID	GIS Acreage		
117A2	11.07		11.07
54A1	13.59		11.59
63A1	58.53		56.69
22A2	18.00		16.17
22A8	8.84		8.84
106A13	40.40		38.56
106A13.6	17.10		15.27
106B4	12.90		12.90
110A4	0.96		0.96
107A1.1	22.06		17.06
61A3	26.24		24.40
96C5	10.16		8.00
64A2	19.50		19.50
71B3	17.00		15.16
58A10	33.00		31.16
68A2	5.14		5.14
95A2.1	17.09		17.09
TOTAL ACRES	331.56		309.55

Chapter 61B: Recreation Lands			Acreage in Chapter 61B
Parcel ID	GIS Acreage		
53A1.1	1.25		1.25
59A3	35.48		35.48
59A4	9.5		9.50
59A5	3.42		3.42
59A5.1	6.55		6.55
59A7	3.2		1.36
59A9.2	1.5		1.50
59A9.3	12.32		12.32
59A10	9.187		9.19
17B5	18.24		18.24
81A2	6		4.16
86A1	39.157		39.16
48B2	10		8.16
48C3	8.46		6.62
102A3	34		30.00
80A2.13	27.23		27.23
73A1	17.74		17.74
75A2	22		22.00
69A2	5.18		5.18
92A1	39		39.00
38A1	109.997		13.57
57B9.1	28		28.00
57A7	6.86		5.02
35A2	10		10.00
18A1	5		5.00
40A7.3	2.62		2.62
52A14	12.47		12.47
56A10	1.4		1.40
60B2	1.07		1.07
TOTAL ACRES	1014.84		898.71

Chapter 61B: Recreation Lands			Acreage in Chapter 61B
Parcel ID	GIS Acreage		
60B3	9		9.00
61A17	8.25		8.25
61A17.2	0.92		0.92
61A3.1	7.00		7.00
61A4.1	2.52		2.52
65A7	5.10		5.10
65A8	5.51		5.51
65A9	45.00		45.00
82A6	7.90		7.90
52A14.2	1.41		1.41
52A14.3	1.55		1.55
55A1	16.56		16.56
74A18.3	23.32		23.32
75A3	5.14		5.14
81A3	18.10		18.10
81A4.1	9.70		9.70
86A3.1	5.70		5.70
90A1	23.00		23.00
90A2	34.50		34.50
112B7	27.00		27.00
53A1	9.75		7.91
69A1	52.00		52.00
95A3	7.74		5.90
41A1.2	29.37		29.37
101A2	39.02		39.02
86B1	4.01		4.01
86B1.5	2.20		2.20
85A1	94.00		93.00
85A1	3381.1		30.90
TOTAL ACRES	1014.84		898.71

Chapter 61: Forest Lands			Acreage in Chapter 61C
Parcel ID	GIS Acreage		
35A3	98.00		98.00
38A1	110.00		94.59
54A3	4.26		4.26
107A2.11	26.96		25.12
104A4	17.50		12.70
80A2.10	199.00		199.00
82A2.11	12.02		18.77
82A2.12	53.47		42.67
TOTAL ACRES	521.20		495.11

Chapter 61		Acreage in Chapter 61
GIS Acreage		
TOTAL CHAPTER 61	1867.62	1703.37
ACREAGE:		

NOTE: None of these parcels are included in the other parcel sheets.

Appendix D: Acquisition Assessment

Historically, development in Shirley has occurred along established roads. There have been exceptions, however; as frontage becomes scarce and as land prices rise, builders will be increasingly interested in backland development. Shirley still has large interior areas that are undeveloped. Often they reveal themselves only to the hiker or the hunter. These areas invariably have water resources, either in the form of wetlands or waterways. They are the town's most active habitats; if they are fragmented or isolated, they will cease to function as habitats. However, it is not possible to protect all these areas. When considering future land use it's important to remember that land development underlies a wide range of economic activity. So, where should efforts be focused? What criteria should be used to evaluate a parcel for protection? Based on sound conservation land management principles and goals established during the 1996 Shirley Open Space Planning process, the following criteria for evaluation were established and continue to apply:

- Does a parcel add to an already protected area, or does it provide linkage between such areas? Isolated plant and animal communities typically do not thrive.
- Is a parcel related to waterways or wetlands? These are our most productive habitats. Land conservation related to water resources directly impacts water quality issues, helping protect a critical resource.
- Does a parcel have significant value as wildlife habitat?
- Does a parcel have significant potential for active or passive recreation?
- Is a parcel in a Chapter 61 program (forestry, agriculture, or recreation)? This might indicate an owner's interest in protection, and it provides the town with a tool for acquisition by right of first refusal or assignment to a conservation group.
- Is a parcel threatened by development? If a parcel has been identified as being of conservation or recreation importance, is there an opportunity to work with a landowner or developer to design for maximum resource protection? Does a landowner or estate faced with the necessity of generating income from the property know about alternatives to development that might conserve the resource as well as generate income?
- Does a parcel have significant scenic or historic value? Is it part of an important roadside view?
- Is there a realistic chance of protection or acquisition?
- Are there technical issues, such as degree of slope, depth of soil to bedrock, zoning bylaw limitations, wetland protection, etc., that might make building difficult and conservation a more likely option?

Appendix E: Shirley's Major Watersheds & Opportunities for Best Protection

Below are the town's major watersheds along with opportunities for their protection.

1. The Squannacook River Watershed (includes Trap Swamp Brook, Pumpkin Brook, Hunting Hill, and Kezar Hill)

A largely open corridor of upland woods (and some wetlands) that connects the Squannacook River area of Shirley's northeastern border with the Mulpus Brook area. North of Route 225, streams flow northerly and easterly toward the Squannacook River; south of Route 225, most flow is toward Mulpus Brook. For the most part, this section of North Shirley is a rolling, forested highland of poor to moderately drained soils. Gravel deposits near the Squannacook River are an exception. There is little remaining agricultural activity in this area, and the fields have grown up to, or are evolving toward, hemlock-mixed deciduous woods with extensive understories of laurel, witch hazel and other shrubs. Along Townsend Road, valuable wetlands, forested land, and frontage have been protected by Pumpkin Brook Link (140 acres), contiguous to DF&W Squannacook Wildlife Management Area (393 acres)
Opportunities:

- (a) (Kezar Hill and its slopes (bounded by Townsend, Squannacook, and Groton Roads) contain a conserved area (the 20.88-acre Hurd Conservation Area off Garrison Road) that might serve as a core to further protect the Kezar Hill interior as well as provide corridor links with DF&W land at Trap Swamp Brook and as yet undeveloped land across Townsend Road to the west.
- (b) A chain of narrow, connected meadows west of Lawton Road, under one ownership, forms an important space feature on an otherwise built-out section of that road.

2. Mulpus Brook Watershed (includes Beaver Pond Brook, Brattle Hill, Deacon Hill, and Squannacook Hill)

The Mulpus is characterized by alternating sections with steeply rising banks and sections with hardly any gradient adjacent. As it crosses Route 225, the Mulpus is fast flowing and confined to rocky banks; it then enters a large marsh at the southern foot of Deacon Hill and narrows again as it passes over a dam and is again relatively confined as it passes under Townsend Road and Longley Road. East of Longley Road the Brook receives drainage from Squannacook Hill and opens again into a spacious marsh behind Farnsworth Lumber. Once again it narrows as it parallels Great Road. There is ponding at the Mill Stream Trailer Park. From there, it is a narrow stream through the breached dam behind the last house on the south of Route 2A until it meets the Nashua in a silty little delta.

Beaver Pond Brook is part of the Chaplin Hill - Flat Hill (Lunenburg) drainage. It rises in the wetland straddling the Lunenburg-Shirley town line south of Whitney Road and flows north through Beaver Pond (just south of Little Turnpike), emptying into Mulpus Brook south of Deacon Hill. In the marsh from which the stream rises (partly the town-owned Thompson Conservation Area), there is a small heron rookery. Adjacent to this wetland, there is a wonderful jumble of eskers that rim the marsh. Frontage development on Whitney Road ignore the terrain, making progress along a conserved strip (Harriet Lyon Conservation Area) difficult. The Lyon Area is largely low-lying and in times of high water would likely be impassable; there is a very nice mature stand of hemlock and upland red oak here.

Opportunities:

- (a) Squannacook Hill backlands represent the largest roadless area in Shirley. At present, only a 10-acre cluster development set aside at Longley Trace and a 4.51-acre Holdenwood Trust parcel on the north bank of the Mulpus are permanently protected. There is a 199-acre parcel in

Chapter 61a [80 A 2.10] that is being managed for sustainable timber harvest, wildlife habitat, and hiking trails. This would be an excellent core for further protection, along with surrounding undeveloped properties along Longley and Lawton Roads that could provide an entrance to this core, which is contiguous to the Mulpus Brook corridor.

- (b) The Mulpus Brook corridor itself, from Deacon Hill to the Nashua River, presents several opportunities for further protection. Because water quality in the Mulpus is negatively impacted by a number of substandard septic systems and the proximity of Route 2A, conservation protection should be pursued for as yet unbuilt parcels directly on the river. DF&W has indicated an interest in further protection in the Mulpus corridor; they should be made aware of parcel availability.
- (c) Much of the immediate watershed of Beaver Pond Brook on the western edge of town is undeveloped; recent activity suggests, however, that this may not long be the case. There are two conserved parcels (Thompson Conservation Area, 15.7 acres, and Harriet Lyon Bird Sanctuary, 7.83 acres) that might serve as a core to further protect land to the north and south. South of Burrage Road there is land that will be difficult to build because of access problems that could become part of a conserved corridor to already protected lands below (Holden Road Conservation Area and Valley Farm).
- (d) The Brattle Hill area (bounded by Townsend Road, Route 225, Longley Road, and Route 2A) contains a great many poorly drained acres and a couple of outstanding vernal pools from which wood frogs quack in mighty chorus each spring. Although it has been heavily logged, it continues to sustain a varied wildlife population. The town owns a 8.86-acre parcel on Groton Road for which there is no specified use. Because of a very high water table, it should be set aside as conservation land; as such it would serve a corridor function to allow wildlife passage to the Kezar Hill area. The majority of this interior land has recently been protected by DF&W. Further protection should be considered.
- (e) Mulpus Brook is a focus area for DF&W acquisition. To date, DF&W has acquired 156 acres to the south of Deacon Hill. There are important areas to the west of Townsend Road, as well as a number of backland parcels that should be added to this project either through DF&W acquisitions or other means.

3. Nashua River Watershed (includes Walker, Morse, and Trout Brook drainages and Benjamin Hill)

The main branch of Walker Brook arises in a wetland just south of Route 2A and north of Horsepond Road. This wetland receives flow from a second wetland fed by the runoff from the hill west of the Center School and a small hill east of it. The stream flows under Horsepond Road and Hazen Road and across the New England Power right-of-way into publicly owned conservation land (Rich Tree Farm off Hazen Road) and eventually under Walker Road and into wetlands bordering the Nashua River. In addition to the main stream, the headwaters include small streams that originate on the east slope of Pound Hill (east side of Brown Road) and make their way through mixed woods, wet meadows, and shrubby wetlands, pass in several small channels under Hazen Road, coalesce and flow through wet meadow and shrub swamp under the N.E. Power right-of-way and join the main stream just south of the right-of-way. The area supports a variety of wildlife, including white-tailed deer, grouse, great blue herons, spring peepers, green frogs, wood frogs, and spotted and Jefferson salamanders. A population of native brook trout persists in Walker Brook, and spawning behavior has been observed in the stream.

Morse Brook flows just south of Walker Brook. It arises in wetlands on the north side of Benjamin Hill behind Scots Glen, flowing under Clark Road in a narrow shrub-bordered channel, and parallels Patterson Road along much of its length. Notable here is a sandy section flowing through a dark hemlock grove. Excavation at the town gravel pit is beginning to encroach on this area. From here the stream flows east through sands and gravel that contribute to the aquifer supplying the Patterson and Walker Road wells of the Shirley Water District, then across Walker Road into wetlands adjacent to the Nashua River.

Trout Brook originates in wooded wetlands and a large vernal pool located between Benjamin and Center Roads just south of Hazen Road. The stream flows south parallel to Center and Benjamin Roads and then heads east shortly before reaching the N.E. Power right-of-way. Widening into wetlands on either side of Benjamin Road, the stream then flows south, paralleling the east side of Benjamin Road and passing through farm ponds and shrubby wetlands. A tributary that originates just west of Center Road, north of the power line corridor, and flows into a pond west of Benjamin Road, joins the stream here. Trout Brook then flows east through wetlands behind Bemis Associates, through the proposed Meadows development, crosses Clark Road, and disappears into underground culverts for a distance before re-emerging to pass under Ayer Road, the railroad, and Front Street, flowing into Devens before joining the Nashua. There are a good variety of habitats in this watershed, particularly in open or old fields. There are wonderful sweeps of open space with great views and a sense of wildness and distance from crowds.

Opportunities:

(a) Vernal pools exist in all three watersheds. Notable examples are found north and south of Horsepond Road and at the headwaters of Trout Brook. Vernal pools also occur at other locations throughout town, particularly in the Brattle Hill drainage. Only 13 pools have been formally identified and certified in Shirley to date, and more should be certified. It is particularly important to obtain the interest and involvement of people who own land with vernal pools, since protection of the habitat involves not only the pool itself, but also adequate amounts of forest habitat for the amphibians and to provide food for vernal pool animals.

(b) In the Trout Brook drainage, several landowners of headwater properties may be interested in options for protecting backland by conservation restrictions or other measures. They should be contacted. In addition, owners of agricultural lands in the lower watershed should be approached and their interest in maintaining their land in open space discussed.

(c) Shirley Water District land (133.45 acres) adjoins the 97-acre Conservation Commission administered Rich Tree Farm; the District should work aggressively to obtain title to the remaining key parcels in the lower Walker and Morse Brook watershed. There is industrial land on Walker Road for sale; the cost may be high, but the benefits of protection would be long lasting. The gravel pit along Walker Road has been acquired by the Water District and converted into a solar farm. An ecological study conducted by MassDevelopment on adjoining Devens land in 2006 found that the state-listed Wood Turtle is present in this area and is likely nesting in the gravel pits.

(d) Devens Environmental Business Zone east of Walker Road. 108 acres of land have been conveyed to MassWildlife as mitigation under the Massachusetts Endangered Species Act with NHESP permitting development of two other parts of the Environmental Business Zone. . The parcel contains mixed woodlands as well as an open area that is an important turtle nesting site. There are over a dozen vernal pools on the property. This area and nearby lands including town land are mapped as Priority

Habitat for state-listed rare species including the Blanding's Turtle, Blue-Spotted Salamander, and Wood Turtle. The land is zoned for Environmental Business, although its use is constrained by the need to protect rare species under the Massachusetts Endangered Species Act. There is also another 20 acre parcel that is going to the US Fish and Wildlife Service in exchange for an access easement for MassDevelopment to be able to access the wastewater treatment plant.

4. Catacunemaug Brook Watershed (includes Spruce Swamp Brook, Bow Brook and Leatherboard Pond, Tophet Swamp, Chaplin Hill, The Major Hills, and Dead Pond)

Catacunemaug Brook originates at the eastern end of Lake Shirley, where its flow is regulated by a privately owned dam. It soon passes under Catacunemaug Road, where it opens out into an extensive wetland, receiving drainage from Spruce Swamp Brook in the area of a former mill pond. The Shirley Water District has a well site and pumping station here. The mill pond then narrows as it passes under the B&M railroad bridge, at which time it turns sharply to the east, flowing alternately wide and narrow behind residential and commercial development. The Brook is then contained between steep banks as it passes under Main Street on its way to the Fredonian Nature Center off Fredonian Street. The Center hosts amazing examples of huge hardwoods and evergreens. The Brook enters Phoenix Pond, divided by Shaker Road. From here it is a managed flow through the old Samson Cordage. Two outflows run parallel and join before the Hospital Bridge on Fort Devens as the Brook meets the Nashua.

Dead Pond, located in the angle formed by the railroad tracks and Catacunemaug Road, is a highly unusual feature. It has no apparent inlet or outlet. Indeed, this area generally, with its steep eskers and depressions containing small ponds, is of considerable conservation value.

The Spruce Swamp Brook sub-watershed is extensive and contains much protected open space. The Brook originates in Spruce Swamp, the western half of which is conserved open space. The stream flows west through a narrow channel under Center Road, crossing a field that is part of Farandnear before entering a beautiful hemlock-lined ravine aptly called "Paradise." This open field, combined with that behind Longley Homestead, forms one of Shirley's most valued landscapes.

After passing through Paradise, the brook joins a broad wetland that borders a tributary entering from the north. This tributary is fed by a number of small intermittent streams that originate north of Whitney Road and join in a broad swale south of the road. Longley Farm, consisting of approximately 45 acres of mostly open meadow on both sides of Whitney Road, is another scenic agricultural area, important to the town's character. The wetland broadens even more to the south as drainage off the southern side of Chaplin Hill joins the Brook. An historic cranberry bog once occupied this portion of the stream; its restoration is being pursued. An extensive trail system surrounds the bogs as well as the adjacent uplands to the east and Chalpin Hill to the northwest. Most of this area is part of Farandnear and is protected by a conservation restriction given to Trustees of Reservations.

Immediately south of Holden Road lies the 58.23-acre Holden Road Conservation Area, which protects a section of the Brook as well as the hills rising to its west. Continuing southwest, the stream crosses the fields at Valley Farm before reentering the forest; it then passes through a beautiful hemlock-lined ravine. Most of this area is subject to a conservation restriction given to the New England Forestry Foundation. The Brook then enters a large wetland at the northwestern end of the Catacunemaug mill pond. The long narrow mill pond, lying at the western edge of The Major Hills, is a beautiful autumn sight. To the west of Valley Farm and north of the Birchwood Hills development, lies Ronchetti and the Old Town Line Conservation parcels (about 110 acres), that contain a wonderful mix of wetland (Long Swamp on the town border), perched wetland, pond, and rolling upland habitats. To the west, this land attaches to Robb's Hill and other conservation land in Lunenburg.

Bow Brook flows north into the southwestern corner of Shirley from Lancaster and enters an extensive wetland known as Tophet Swamp. As it flows out of the Swamp, it enters Leatherboard Pond, which has for years served as a swimming and fishing site. The outflow from the Pond enters the Catacunemaug under the railroad bridge.

Tophet Swamp is also fed by an unnamed stream that flows northwest, crossing Lancaster Road at the Shirley Airport. A third stream flows into the Swamp from a pond on the southeastern side of Hazen Hill, looping around its south side. (Another outlet from this pond flows east, crossing Lancaster Road at the Lura A. White School.) The Swamp is an intact ecosystem, consisting of a small area of open water surrounded by large areas of vegetated swamp. Islands and eskers of a slightly higher elevation increase the edge zones most valuable for wildlife habitat. An extensive hemlock grove extends to the south from the swamp, eventually mixing with mountain laurel and hardwoods on reaching the steep eskers that form a natural boundary of the lowland area. To the east, Hazen Hill rises steeply out of the swamp to a forest of mixed hardwoods.

Opportunities:

- (a) Steps should be taken to facilitate the permanent protection of the open meadows behind Longley Homestead on Center Road and those around Longley Farm on Whitney Road.
- (b) The trail system at Valley Farm and Holden Road Conservation Area could be connected to the trail system at Farandnear through protection of an as yet undeveloped parcel with poor soils and vegetated wetlands on Holden Road. Additional acquisitions might also provide an opportunity for a parking area, which the trail system sorely needs.
- (c) Dead Pond and its environs is such an unusual geological feature that its protection should be investigated. Land ownership is fragmented but there are several large parcels.
- (d) Tophet Swamp is generally protected in that it is not suitable for development. However, peninsulas of higher elevation protrude south from Leominster Road into the Swamp and may be developable. The old Fitchburg and Leominster Railroad right-of-way is also a continuous elevated feature.
- (e) Leatherboard Pond and the Hazen Hill uplands adjacent to it are obvious conservation targets, as are the open meadows on the western slopes of Hazen Hill.

Appendix F: Community-Based Forestry

Historical records show that extensive agricultural activity in the 1700-1800s resulted in 80% deforestation in New England. As agriculture in Massachusetts declined through the 1990s, forests readily regenerated from old fields and pasture lands. According to the MassWoods Forest Conservation Program at the University of Massachusetts, Massachusetts is currently the eighth most forested state in the country, with approximately 60% forest cover. Evidence of past agricultural activities in Shirley's forests include stone walls, cellar holes, and cart paths. Logging activities during the mid to late 1990s are reflected in forest characteristics, which are predominantly poletimber (4-10" diameter-at-breast height or dbh) and sawtimber stands (wider than 11" dbh). The average age of woodland trees in these forests appear to be 40-80 years.

Shirley is taking steps to development Forest Management Plans for parcels under the care and custody of the Conservation Commission. At the June 2014 town meeting, residents voted to create a Conservation Forestry Fund for income from logging. These funds will be vital to sustaining regular open space management, such as mowing, invasive plant control, public education, and future Forest Management plans. As of this OSRP, the Commission applied for two Forest Stewardship Cost-Share grants through the Massachusetts Department of Conservation and Recreation. A forester has been engaged to update Forest Management Plans for Pumpkin Brook Link Conservation Area and Rich Tree Farm.

Important forest stewardship goals for the Conservation Commission are to promote biological diversity and enhance wildlife habitat. The Commission recognizes that timber harvesting can improve the health of retained trees, enhance the vertical structure of the forest (canopy, understory, shrub and ground vegetation layers), and increase the number of bird species by creating habitat for birds reliant on early-successional forests.

Conservation forestry strategies can readily be utilized to sustain forest health and diversity. Leaving snags (dead trees), downed logs, and slash (wood debris) provides nesting and cover for birds and mammals, supports the health of the woodland soil, and decreases the influx of invasive plant species. Retaining trees with high-wildlife value, such as oaks and cherries (hard- and soft-mast trees), provides food for all types of wildlife. Thinning out less healthy trees allows desirable trees to grow faster and creates gaps in the forest canopy that support seedling and saplings. An increase in groups of shrubs, tree seedlings and saplings (1"-4" dbh) provides an important forest layer for wildlife cover, food, and perch sites.

The Conservation Commission has been working with the Massachusetts Division of Fisheries and Wildlife, which owns a number of parcels abutting Shirley conservation areas. According to DFW forester John Scanlon, certain species of songbirds are decreasing by 2% each year due to loss of early successional habitat. Many grassland birds require a minimum of 5 acres of grass and shrub habitat (the Savannah Sparrow and Eastern Meadowlark require a minimum of 15-20 acres). Pumpkin Brook Link has a large field which could be increased in size to encourage grassland birds. Enlarging the field would also support nesting habitat of Blanding's turtles, an endangered species that lives on abutting DFW land along the Squannacook River.

The town continues to evaluate its wildlife parcels for conservation management strategies. Creating a mosaic of varying forest succession can support a greater diversity of wildlife. Forest management considerations focus on evaluating uneven-aged versus even-aged trees, maintaining varying successional growth stages, and protecting biodiversity, rare and endangered species, and riparian and wetland resources.

Resources:

http://masswoodlandsinstitute.org/MA_Silviculture.pdf

<http://harvardforest.fas.harvard.edu/diorama-series/landscape-history-central-new-england>

<http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/upland-game-bird-habitat-management-in-massachusetts.html>

Appendix F: Multi-Use Trail Planning

Shirley residents love their trails. There is a long history of horseback riding and hiking in the community and a growing cadre of mountain bikers who cooperatively use the existing trails.

According to attendees at the two OSRP public meetings, many of Shirley's well-established trails are being degraded by misuse. One of the action items the residents of Shirley have identified is designated trails for off-road vehicles (ORV's), and for ATV's in particular. According to town residents who attended the OSRP public meetings and completed the questionnaire, ATV riders are intruding on private and public property to recreate, which increases erosion and sedimentation into surrounding watercourses and hampers the ability of other user groups to enjoy these trails.

There are only four or five legal ATV riding areas in the entire state of Massachusetts. The creation of dedicated trails for ATV users in and around Shirley would provide a designated area for this type of recreation, with the potential for minimizing the impacts on existing trails in the area.

In August of 2010, legislation was signed (Ch. 202 of the Acts of 2010) that overhauled the Massachusetts Recreation Vehicle Laws. Young riders are now required to attend educational classes prior to being eligible for their licenses. Other new provisions include larger penalties for illegal use of OHV's and the creation of an OHV program fund to enhance riding opportunities and law enforcement. For more information, visit: <http://www.mass.gov/dfwele/dle/ohvpamphlet.pdf>



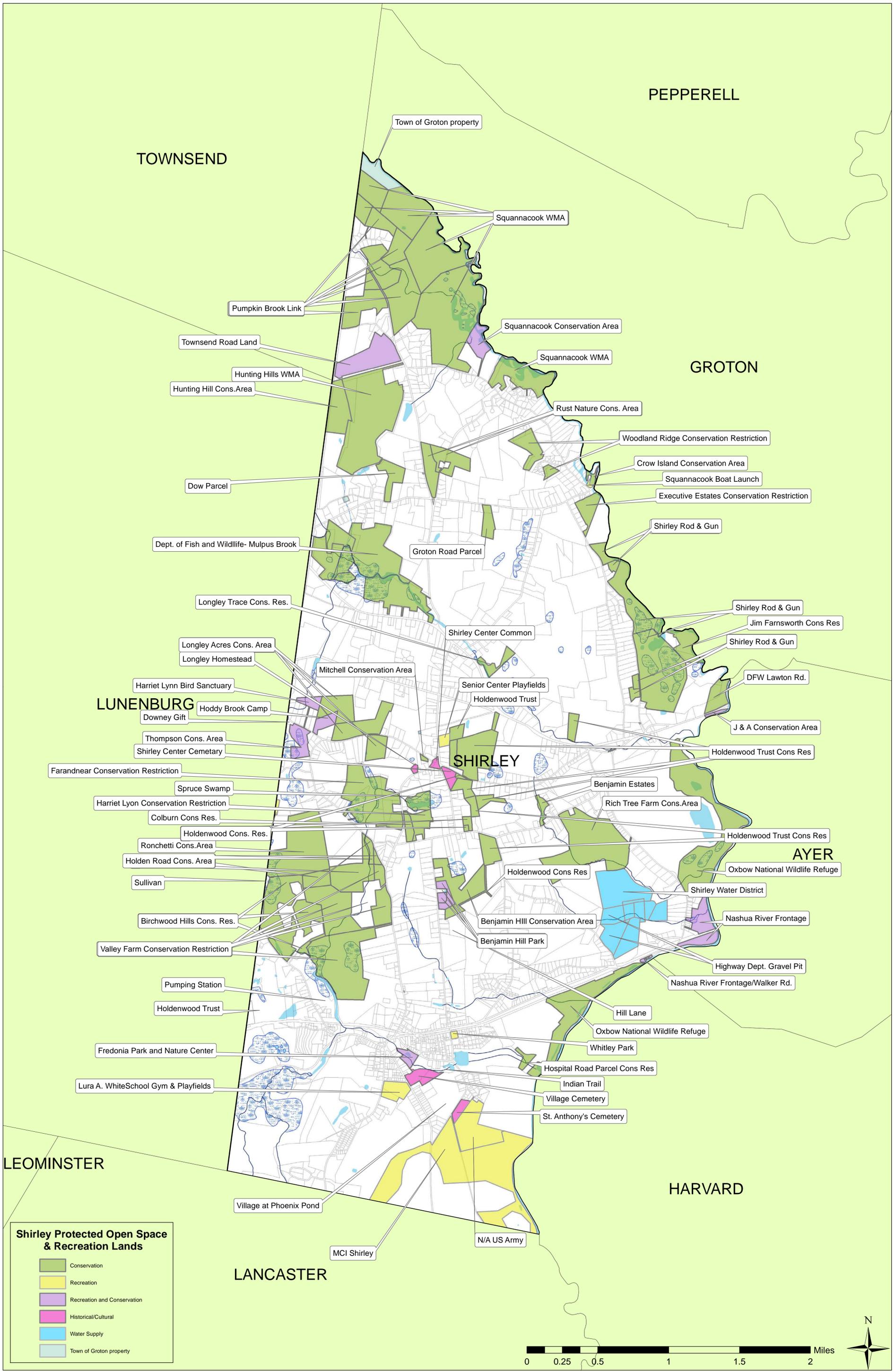
Following are trail-related resources that may prove useful in Shirley's trail planning efforts:

1. American Trails: www.americantrails.org
2. National Recreation and Park Association: www.nrpa.org
3. New England Mountain Biking Association: www.nemba.org
4. Massachusetts Forest and Park Friends Network:

www.networkingfriends.net

The following towns and organizations within Massachusetts have developed multi-use trail systems:

1. Town of Amherst: www.amherstma.gov
2. Town of Northampton: www.northamptonma.gov
3. Mass Department of Conservation Vision of Greenways:
Mass.gov/dcr/stewardship/stewardship/greenway/pdfs/boston
4. Mass Bicycle Association: www.massbike.org
5. Boston Harbor Association: www.bostonharborwalk.com



TOWNSEND

PEPPERRELL

Town of Groton property

Squannacook WMA

Pumpkin Brook Link

Squannacook Conservation Area

Townsend Road Land

Squannacook WMA

GROTON

Hunting Hills WMA

Rust Nature Cons. Area

Hunting Hill Cons.Area

Woodland Ridge Conservation Restriction

Dow Parcel

Crow Island Conservation Area

Squannacook Boat Launch

Executive Estates Conservation Restriction

Dept. of Fish and Wildlife- Mulpus Brook

Groton Road Parcel

Shirley Rod & Gun

Longley Trace Cons. Res.

Shirley Center Common

Shirley Rod & Gun

Jim Farnsworth Cons Res

Shirley Rod & Gun

LUNENBURG

Harriet Lynn Bird Sanctuary

Mitchell Conservation Area

Senior Center Playfields

DFW Lawton Rd.

Hoddy Brook Camp

Holdenwood Trust

J & A Conservation Area

Downey Gift

Thompson Cons. Area

Shirley Center Cemetary

Holdenwood Trust Cons Res

Farandnear Conservation Restriction

Spruce Swamp

Benjamin Estates

Harriet Lyon Conservation Restriction

Rich Tree Farm Cons.Area

Colburn Cons Res.

Holdenwood Trust Cons Res

Holdenwood Cons. Res.

Ronchetti Cons.Area

Holden Road Cons. Area

Sullivan

Holdenwood Cons Res

Oxbow National Wildlife Refuge

Birchwood Hills Cons. Res.

Benjamin Hill Conservation Area

Shirley Water District

Valley Farm Conservation Restriction

Benjamin Hill Park

Nashua River Frontage

Pumping Station

Highway Dept. Gravel Pit

Nashua River Frontage/Walker Rd.

Holdenwood Trust

Hill Lane

Oxbow National Wildlife Refuge

Fredonia Park and Nature Center

Whitley Park

Hospital Road Parcel Cons Res

Lura A. WhiteSchool Gym & Playfields

Indian Trail

Village Cemetery

St. Anthony's Cemetery

LEOMINSTER

HARVARD

LANCASTER

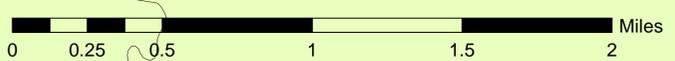
Village at Phoenix Pond

MCI Shirley

N/A US Army

Shirley Protected Open Space & Recreation Lands

- Conservation
- Recreation
- Recreation and Conservation
- Historical/Cultural
- Water Supply
- Town of Groton property



Source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts Information Technology Division, March 2011

Appendix G ADA Access Self-Evaluation

PART I: ADMINISTRATIVE REQUIREMENTS

1. Designation of an ADA Coordinator

See attached memorandum.

2. Grievance Procedure

A. A "grievance/complaint" is defined as a request by an individual or group of individuals for personal relief in any matter of concern or dissatisfaction which is subject to the control of Town management. The grievance/complaint procedure is subject to the provisions of this manual or federal and state statutes. This section shall not apply to grievances or complaints that are otherwise governed by any applicable collective bargaining agreement. Procedure for seeking redress is as follows:

(1) Step 1: Any grievance will first be presented to the immediate supervisor or Board member, within the time frame set forth in Subsection B below. That supervisor will make whatever investigation he/she deems necessary to clarify the matter in question and to resolve the problem or misunderstanding if possible. The immediate supervisor or board member should notify the Town Administrator of the grievance and the steps the immediate supervisor is taking to address the grievance. The Town Administrator shall advise the immediate supervisor or board on how best to resolve the grievance. The immediate supervisor's/board member's decision will be made as soon as practicable after full discussion by the parties concerned but not later than five business days from the date of the presentation of the grievance. Every attempt should be made by both parties to resolve the grievance at this step. If the grievance cannot be resolved at this Step 1, the grievant may proceed to Step 2A (if the grievant's immediate supervisor is not the Town Administrator) or to Step 2B (if the grievant's immediate supervisor is the Town Administrator).

(2) Step 2A: Formal Procedure. (if the Grievant's immediate supervisor is not the Town Administrator) If the grievant is dissatisfied with the decision at Step 1, he/she may take up the matter in writing with the Town Administrator within five business days of the decision. Within 14 business days after receipt of the written grievance, the Town Administrator will meet with the grievant and/or grievant's immediate supervisor. An investigation or inquiry into the grievance by the Town Administrator, including discussion with principal parties concerned, may take place. The Town Administrator will render a decision in writing within 30 calendar days from the date of the meeting with the grievant and/or grievant's immediate supervisor, a copy of which will be provided to the grievant. The Town Administrator shall keep a separate record of his/her proceedings which shall not be open to public inspection, except as may otherwise be required by law.

(2B) Step 2B: Formal Procedure (if the Grievant's immediate supervisor is the Town Administrator): The Town Administrator will render a decision in writing within 30 calendar days from the date of the meeting with the grievant and/or grievant's immediate

supervisor, a copy of which will be provided to the grievant. The Town Administrator shall keep a separate record of his/her proceedings which shall not be open to public inspection, except as may otherwise be required by law.

(3) If the grievant is dissatisfied with the decision at Step 2, he/she may, prior to bringing the grievance to Step 3, request an opinion from the Personnel Board on the validity of the grievance and request that the Personnel Board file said opinion with the Board of Selectmen at Step 3. The Board of Selectmen may, at their discretion, utilize said opinion when ruling on the grievance at Step 3. Said request to the Personnel Board for an advisory opinion shall be made within five business days of the Town Administrator's decision. The Personnel Board's opinion will be rendered in writing and filed with the Board of Selectmen within 30 calendar days from receipt of the request. The Personnel Board shall keep a separate record of its proceedings which shall not be open to public inspection, except as may otherwise be required by law.

(4) Step 3: If a grievant is dissatisfied with the Town Administrator's Decision at Step 2, the grievant may appeal that decision their Elected Board, or to the Board of Selectmen. The appeal shall be in writing and submitted within five business days after the date on which the grievant received the Step 2 decision, or within 35 business days of the request to the Personnel Board of an opinion. A decision will be issued to the grievant in writing by the Elected Board or Board of Selectmen within 20 business days from the receipt of the appeal.

B. Any grievance which is not taken up by the grievant with their immediate supervisor at Step 1 within 15 calendar days after the last occurrence of the action or event out of which the grievance arose shall not be presented or considered at a later date.

C. All time limits provided for herein may be extended by mutual agreement between the grievant and the Town Administrator or the Board of Selectmen. Failure of the Town to observe the time limits with respect to any step in the grievance procedure shall entitle the grievant to advance the grievance to the next step. Failure of the grievant to observe the time limits provided shall constitute withdrawal of the grievance.

D. Any grievance that has not been processed through the informal step (Step 1) may not be processed through the formal step(s). Any grievance not processed through Step 2 may not be processed to the Board of Selectmen.

E. Unless mutually agreed otherwise, identical grievances to which this order applies will be processed under the procedures of the order by having one grievance processed, the result of which will be binding on the other grievance(s). Identical grievances herein referred to are those where the dissatisfaction expressed and relief requested are the same.

Notice:

This handbook and its contents do not constitute an employment contract and are provided for informational purposes only. All information contained herein is subject to change without notice. References to state and Federal laws are merely summaries and some provisions of the information as they affect conditions of employment are subject to change

as interpreted by the courts. In addition, specific cases may require a different approach. Applicable collective bargaining agreements supersede provisions of this handbook.

(Excerpted from Chapter 13, Town of Shirley Personnel Policy & Procedures Manual, January 2014)

3. Public Notification Requirements

A copy of the Public Notification providing citizens information regarding the town's ADA policy pertaining to hiring practices follows.

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

Participation of the disabled community was solicited formally through advertisement in the Shirley Council on Aging newsletter and informally through personal networks of Conservation Commission members. One member of the disabled community was available to assist with the facility inventory of Fredonian Pond.

PART II: PROGRAM ACCESSIBILITY

1. Facility Inventory and Transition Plan

This evaluation covers open space and recreation properties that are under the jurisdiction of the Conservation Commission. Maintenance on most of these properties is minimal and/or occasional, relying primarily on volunteer efforts. Factors such as uneven terrain and primitive trail conditions preclude the use and enjoyment of many conservation properties by individuals with disabilities. Such factors also render it practically infeasible to devise and implement a transition plan for greater accessibility on these properties.

Fredonian Park and Nature Center: 7 acres. Off Fredonian Street. Facilities include a gazebo, a loop trail around the small pond, and one signed handicap parking space in gravel lot with overall capacity for approximately 10 vehicles. No restrooms. The gazebo is not fully accessible, as it has two steps that are not over 32" in rise but lacks handrails or grips. The gazebo stairs are cracked and not level, and seating and tables are not provided. The path around Fredonian pond is grassy and is mowed regularly by the town, but also has protruding roots, is not slip resistant, and has some areas with brush where the path is narrower than 3 feet in width. Invasive plants including multiflora rose, autumn olive, honeysuckle, bittersweet) block views of the pond from the path. A 1:12 slope was noted on the path entrance from the field. The parking lot is constructed from hardpack, with holes that retain water.

This lot shows some potential for improvement. The crack in the gazebo steps should be repaired for safety and a bench could be installed. The path around the pond will require considerable work to become ADA compliant. Accessibility can be improved at the park entrance by adding a stone dust path, installing handicapped accessible picnic tables, and improving views of the pond through invasive cutting and maintenance. The parking lot could use additional hardpack to improve accessibility.

Slater's Mill/Birchwood Hills Conservation Restriction (CR#5): 92.8 acres. Pond Road. Extensive trail system links with Holden Road Conservation Area and (private) Valley Farm trails. Public access for hiking, nature study, horseback riding, cross-country skiing. Protects water resource values and wildlife

habitat along Long Swamp and Catacunemaug Brook. Shirley Conservation Commission holds CR. There is a small parking area on Pond Road. Disability access from the parking area is prohibitive due to the steep slope leading to the trailhead.

Benjamin Estates Conservation Restriction (CR#7): 6.3 acres. Robertson Road. Hazen Road. No parking area; no trails. Public access by foot, horseback, skis, snowshoes. Walker Brook runs through property. Shirley Conservation Commission holds CR. Disability access is prohibitive due to lack of designated trails.

Executive Estates Conservation Restriction (CR#12): 15.3 +/- acres. Lawton Road. Public access by foot, horseback, skis, snowshoes; no motorized vehicles. Contains frontage along Squannacook River. Shirley Conservation Commission holds CR. There is a grassy pulloff area after Moore Drive with room for a small number of vehicles. A gated, gravel access road services the utility easement that parallels Moore Drive, and provides a semblance of a trail. However, there is no trail beyond the access road.

Holden Road Conservation Area: 56.23 acres. Public access off Holden Road. There is no parking area. There is a sign near the trailhead, but the trail is not actively maintained and difficult to see. Potential for disability access is limited.

Rich Tree Farm Conservation Area: 109 acres. Access from Walker and Hazen Roads. Mature mixed forest. Part of Walker and Morse Brook drainage. Contiguous to Shirley Water District well protection land to the south. Area is crisscrossed with established paths. Parcel 43A91.

Hunting Hill Conservation Area: 31.2 acres. Open to the public. A DF&W Wildlife Management Area. Managed in cooperation with Shirley and Lunenburg. Parcel 109A1.

Pumpkin Brook Link Conservation Area: 140.7 acres. Managed by the Shirley Conservation Commission. Crossing Townsend Road and connecting to Spaulding Road, these parcels provide connection between large protected acres on the Squannacook River and the Hunting Hill area. A cellar hole on the site is all that remains of the homestead of William Bennett, one of the signers of the 1747 petition to separate the land west of the Squannacook from Groton to create Shirley. Pulloff parking space for 1-2 vehicles off Townsend Road.

Longley Acres Conservation Area: 73.24 acres. Managed by caretakers under the supervision of the Shirley Conservation Commission. It was acquired by the Town of Shirley in 2003 with the help of a state grant. Property maintained as active agricultural open space, is hayed every summer. The fields and trails are open to the public, and educational talks, workshops and events occur regularly. Programs include seasonal community garden plots, although plots are not currently wheelchair accessible. Facilities include a signed handicapped parking space with a hard-packed and even surface. Fields and trails are not accessible. Potential exists for one accessible trail on a level, former cart path to the community gardens, which has a gradual slope under 5%. No objects protrude in the grass; the lawn has slight undulations but no distinctive holes or dips. There is one handicapped parking sign located on the [west] side of the house heading towards the Community Gardens and to the back of the house. One parking spot in this area has a hard-packed and even surface; the other parking areas are lawn. Parking is available in the circle driveway on the other side of the house; there is no accessibility parking sign. The surface is hard-packed dirt and slightly sloped. There are no curbs, ramps or handrails. A picnic table is located approximately 20 feet from the circle driveway by the east side of the house. The

grade from the disembarking area to the table is a sloped, grass surface. The picnic table is not handicapped accessible, and has no arm or back rests.

Benjamin Hill Park: 11.85 acres. Benjamin Hill is managed by the Benjamin Hill Park Committee. The Mytical Maze, a Bob Leathers playground installed in the early 1990's, is partly accessible. The entrance ramp, as well as the tot lot and sitting area, comply. The latter is fitted with a ring apparatus and bar pull which can be operated from a wheelchair. Two parking spots have been designated as handicapped. The Benjamin Hill Pool, is accessible, with access ramp, handicap lift into the pool, accessible toilets and showers, and two parking spots designated as handicapped. The access ramp slope is less than 5%, but it has no handrails. A one acre playing field and ¼ mile running track are fully accessible

PART III: EMPLOYMENT PRACTICES

The Town of Shirley is an equal opportunity employer. This means that it pledges that all candidates for positions and all officials and employees in Town will be equally treated in all actions affecting them. It also means that the Town has a policy of non-discrimination which guarantees that all applicants for employment and all employees are not to be discriminated against because of their race, color, religion, sex, creed, national origin, age, veteran status, disability, sexual orientation, or any other characteristics protected by law.

(Excerpted from Section 1-3, Town of Shirley Personnel Policy & Procedures Manual, January 2014)



Town of Shirley

7 KEADY WAY, SHIRLEY, MASSACHUSETTS 01464
(978) 425-2600 Ext. 245 FAX (978) 425-2627

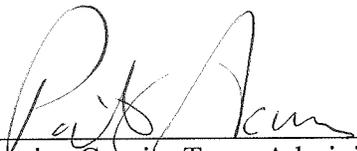
MEMORANDUM

From: Patrice Garvin
Town Administrator

Date: November 14, 2013

Subject: Designation of ADA Coordinator

This is to certify that the Town Administrator has been officially designated as the Town employee responsible for ADA coordination.



Patrice Garvin, Town Administrator

Appendix H: Multi-Use Trail Planning

Shirley residents love their trails. There is a long history of horseback riding and hiking in the community and a growing cadre of mountain bikers who cooperatively use the existing trails.

According to attendees at the two OSRP public meetings, many of Shirley's well-established trails are being degraded by misuse. One of the action items the residents of Shirley have identified is designated trails for Off-Highway Vehicles (OHV), and for All-Terrain Vehicles (ATV) in particular. According to town residents who attended the OSRP public meetings and completed the questionnaire, ATV riders are intruding on private and public property to recreate, which increases erosion and sedimentation into surrounding watercourses and hampers the ability of other user groups to enjoy these trails.

There are only four or five legal OHV riding areas in the entire state of Massachusetts. The creation of dedicated trails for OHV users in and around Shirley would provide a designated area for this type of recreation, with the potential for minimizing the impacts on existing trails in the area.

In August of 2010, legislation was signed (Ch. 202 of the Acts of 2010) that overhauled the Massachusetts Recreation Vehicle Laws. Young riders are now required to attend educational classes prior to being eligible for their licenses. Other new provisions include larger penalties for illegal use of OHV's and the creation of an OHV program fund to enhance riding opportunities and law enforcement. For more information, visit: <http://www.mass.gov/dfwele/dle/ohvpamphlet.pdf>



Following are trail-related resources that may prove useful in Shirley's trail planning efforts:

1. American Trails: www.americantrails.org
2. National Recreation and Park Association: www.nrpa.org
3. New England Mountain Biking Association: www.nemba.org
4. Massachusetts Forest and Park Friends Network:

www.networkingfriends.net

The following towns and organizations within Massachusetts have developed multi-use trail systems:

1. Town of Amherst: www.amherstma.gov
2. Town of Northampton: www.northamptonma.gov
3. Mass Department of Conservation Vision of Greenways:
Mass.gov/dcr/stewardship/stewardship/greenway/pdfs/boston
4. Mass Bicycle Association: www.massbike.org
5. Boston Harbor Association: www.bostonharborwalk.com



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

Rare Species and Natural Communities Documented in the Town of Shirley

AS OF August 1, 2014

<u>Scientific Name</u>	<u>Common Name</u>	<u>MESA Status</u>	<u>Most recent Year</u>
VERTEBRATES			
<i>Ambystoma laterale</i>	Blue-spotted Salamander	SC	2006
<i>Clemmys guttata</i>	Spotted Turtle	Delisted	2000
<i>Emydoidea blandingii</i>	Blanding's Turtle	T	2010
<i>Glyptemys insculpta</i>	Wood Turtle	SC	2007
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T	2011
<i>Hemidactylium scutatum</i>	Four-toed Salamander	Delisted	2007
<i>Notropis bifrenatus</i>	Bridle Shiner	SC	1954
INVERTEBRATES			
<i>Alasmidonta undulata</i>	Triangle Floater	Delisted	2006
<i>Anax longipes</i>	Comet Darner	SC	2010
<i>Neurocordulia obsoleta</i>	Umber Shadowdragon	SC	2004
<i>Ophiogomphus aspersus</i>	Brook Snaketail	SC	2006
<i>Rhionaeschna mutata</i>	Spatterdock Darner	SC	1997
<i>Somatochlora kennedyi</i>	Kennedy's Emerald	E	1939
<i>Strophitus undulatus</i>	Creepers	SC	2006
<i>Stylurus scudderii</i>	Zebra Clubtail	Delisted	2010
<i>Stylurus spiniceps</i>	Arrow Clubtail	Delisted	2010
VASCULAR PLANTS			
<i>Asclepias purpurascens</i>	Purple Milkweed	E	1916
<i>Cyperus houghtonii</i>	Houghton's Flatsedge	E	2006
<i>Lupinus perennis</i>	Wild Lupine	WL	1997
<i>Lygodium palmatum</i>	Climbing Fern	SC	Historic
<i>Senna hebecarpa</i>	Wild Senna	E	1882
CERTIFIED VERNAL POOLS			
Certified Vernal Pool (15)			2010

Most Recent Year means the year of the most recent record in the NHESP database.
Some Watch List or Historic dates are not available.

KEY TO MESA STATUS: E = Endangered. T = Threatened. SC = Special Concern. FE = Federally Endangered. FT = Federally Threatened. WL = unofficial Plant Watch List, not regulated. Delisted – species no longer protected under MESA. Occurrences that are more than 25 years old are not regulated; most very old observations have been searched for and are no longer present at the site. Full definitions are available at <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/list-of-rare-species-in-massachusetts.html>



Natural Heritage & Endangered Species Program

Field Headquarters, Westborough, MA 01581 Tel: (508) 389-6360 Fax: (508) 389-7890

An Agency of the Department of Fish & Game

<http://www.mass.gov/nhesp>



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

August 4, 2014

Nadia Madden
Conservation Agent
Shirley Conservation Commission
7 Keady Way
Shirley, MA 01464

Via E-mail

Re: Open Space Plan, **11-29360**, 2014 update Town of Shirley

Dear Ms Madden and the Shirley Conservation Commission:

Thank you for contacting the Natural Heritage and Endangered Species Program regarding the Open Space and Recreation Plan for the Town of Shirley. Enclosed is information on the rare species, priority natural communities, vernal pools, and other aspects of biodiversity that we have documented in Shirley. The town is encouraged to include this letter, species list, appropriate maps, and the BioMap2 in the Open Space and Recreation Plan.

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

This list and the list in BioMap2 differ because this list and discussion include all of the uncommon aspects of biodiversity in Shirley that NHESP has documented and BioMap2 focused on occurrences with state-wide significance and included non-MESA listed species of conservation interest from the State Wildlife Action Plan. In addition, the NHESP database is constantly updated and the enclosed list may include species of conservation interest identified in town since the data analysis for BioMap2 in 2010.

In early 2013 we sent each town copies of its *BioMap2* Town Report that were developed to provide local biodiversity information to assist in conservation efforts at the town or regional level. We encourage inclusion of the town BioMap2 report and fact sheets on its components in the OSRP: as we discussed earlier, the town report is available from <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/biomap2-town-reports.html>. The BioMap2 components relevant to Shirley are BioMap2 Core Habitats for Species of Conservation Concern, and Forest, Aquatic, Wetland, and Vernal Pool Cores, and, in Critical Natural Landscape (CNL), a Landscape Block and Upland Buffers of Aquatic and Wetland Cores. The components are described in full in the BioMap2 summary report and each description is available as a fact sheet, all available from our website at: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/biomap2-overview-and-summary.html>

[Please note that all of NHESP's web addresses changed last year; web addresses in publications from before June 2013, including inside the BioMap2 report, will not work properly.]

I encourage you to download species fact sheets from our website to include in the OSRP with the species list and BioMap2 discussion. <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/list-of-rare-species-in-massachusetts.html> and for some of the delisted species including four-toed salamander, the two clubtails (dragonflies), and triangle floater, <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/non-listed-species-of-conservation-interest.html>



Natural Heritage & Endangered Species Program

Route 135, Westborough, MA 01581 **Tel:** (508) 792-7270, ext 200 **Fax:** (508) 792-7821

An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

<http://www.state.ma.us/dfwele/dfw/nhesp>

Bald Eagles (T) have been nesting for several years in the Shirley-Lunenburg line area. Their habitat includes Lake Shirley and surrounding forest lands. Bald Eagles require a large amount of shoreline habitat containing forest for nesting and trees projecting above the forest canopy for perching, an adequate supply of moderate to large fish, an unimpeded view, and reasonable freedom from human disturbance. The return of Bald Eagles to many ponds in Massachusetts has resulted in an expected change in their rank under the Massachusetts Endangered Species Act (MESA) from Endangered to Threatened. Successfully raised chicks from Shirley are contributing to the resurgence of the region's Bald Eagle population.

The best Blandings Turtle (T) populations in Massachusetts are in the towns around the Nashua River valley. Shirley provides important Blandings habitat in the wetlands along the Squannacook and Nashua Rivers and across the center of town in a variety of habitats. Some of the land is protected, including as Shirley Conservation and Water Department lands (according to MassGIS), as well as federal and state lands. Nearby unprotected lands would be prime targets for conservation. Blandings Turtles use a wide range of wetland and terrestrial environments, needing uplands around wetlands for summer foraging and resting, and for travel between wetlands. The many reports from Shirley in the NHESP database reflect this diversity of habitat use. Because of their travel as adults, they are susceptible to becoming road kill when their routes cross roads. Loss of even a few adults a year can have strong negative effects on the viability of the populations; from a conservation perspective, this means that unfragmented habitats are particularly important to maintaining Blandings Turtle populations. Wood Turtles (SC) spend most of their time in streams and associated uplands in some of the same areas as the Blandings in BioMap2 Core BC2887 in east central Shirley. (Wood Turtle populations in some other parts of the state are better than those in Shirley, and were not used to define BioMap2 Cores in Shirley. Their incidental capture within BioMap2 Core habitat is actually a demonstration of the strengths of the Cores as tools for biodiversity protection.) Blue-spotted Salamanders (SC) breed in vernal pools, but use the surrounding upland forests for most of their adult lives. For salamander species, clusters of vernal pools provide important habitat options. There is a BioMap2 Vernal Pool Cluster in northern Shirley, mostly on the Squannacook River WMA and Pumpkin Brook town conservation lands in the extensive BioMap2 Core2887. There are also clusters of Certified Vernal Pools between Mulpus and Walker Brooks. Some of these pools are in the OxBow National Wildlife Refuge, Mulpus Brook WMA, and on town conservation land, but some are not protected and both as vernal pools and areas adjacent to protected open space, would make good targets for conservation acquisition.

Several species that are no longer listed under MESA (the Massachusetts Endangered Species Act) remain of conservation concern. Spotted Turtles (delisted) use a mix of habitats – dry open uplands for nesting, and forested and non-forested wetlands and their edges for basking, foraging, mating, and overwintering. Vernal pools and larger wetlands are important for Spotted Turtles. Shirley has several locations for Spotted Turtles, so provides important habitat for maintaining core populations of the species. Where populations occur on conservation land, maintaining habitat on those lands is important for preserving the species. There is an excellent breeding population of Four-toed Salamanders (delisted) in Cores BC2887/CNL1276 with another population along the Nashua in CNL1112. Four-toed salamanders build nests in sphagnum or sedge hummocks above streams or other open water that the young can drop into after hatching. When not breeding, adults are in surrounding forests. Northern Leopard Frogs are species whose habitat was identified as being of conservation concern in the State Wildlife Action Plan (SWAP). Along the Squannacook and Nashua Rivers are areas of good habitat, although interspersed with development, with populations of Northern Leopard Frog.

The Squannacook and Nashua Rivers support populations of multiple aquatic species. Two species of uncommon mussels (Triangle Floater (delisted) and Creeper (SC)) known from Shirley require clear water in streams and ponds. Rare dragonfly species occur in similar areas along the Squannacook and parts of the Nashua. The nymphs of dragonflies spend a year or two developing in the bottoms of clear sandy bottomed streams, larger rivers, or ponds, depending on species. Clean water is critical for their survival. Adult dragonflies generally use riverside (riparian) areas and nearby forests for final development. Eggs are deposited back in the aquatic environments. Protected uplands then provide habitat as well as helping to keep the waters clean.

Of the rare plant species in Shirley, several are known only from historic records, probably due to loss of habitat as open, abandoned farm land has succeeded to forest. Purple Milkweed (E), Climbing Fern (SC), Wild Senna (E), and Lupine (WL) are all species that grow in the sun in areas without trees or shrubs. Houghton's Flatsedge (E) is also a plant of open sun, growing in sandy, disturbed or rocky sites; this species continues to be found in Shirley. Ovate Spike-sedge (E), a grass-like annual plant of river marshes, is known from marshes along the Nashua in Harvard, and is assumed to occur on both sides of the river, although it has been neither surveyed for in Shirley nor reported from town.

The NHESP database has no examples of Priority Natural Communities in Shirley.

DFW's Fisheries section has identified environmentally sensitive streams throughout Massachusetts that provide important habitat for native cold water fisheries (CFR, Coldwater Fisheries Resources). Buffers along these streams that maintain shade and filter inflowing sediments are important for maintaining their water – and habitat – quality. Culverts in the streams should be maintained to allow movement of fish, turtles, and other aquatic species. Identification of CFRs is based on fish samples collected by staff biologists and technicians with new streams sampled and evaluated yearly. Shirley has six currently identified, shown on the enclosed map with vernal pools:

SARIS	Waterbody Name	Watershed	Towns
8143950	Squannacook River	Nashua,	Groton, Shirley, Townsend
8144275	Mulpus Brook	Nashua	Shirley, Lunenburg
8144450	Walker Brook	Nashua,	Shirley
8144475	Morse Brook	Nashua,	Shirley
8144525	Catacoonamug Brook	Nashua	Shirley, Lunenburg
8144550	Bow Brook	Nashua,	Shirley, Lancaster

More information on describing the CFRs is available from <http://www.mass.gov/eea/agencies/dfg/dfw/wildlife-habitat-conservation/coldwater-fish-resources-cfr.html>

The NHESP datalayers are available from MassGIS by selecting MassGIS Datalayers, then on the new page under Vector Data, selecting Conservation/Recreation or at <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/layerlist.html#ConservationRecreation>

Shirley has 15 Certified Vernal Pools (CVPs) and 94 Potential Vernal Pools (PVPs) (identified from aerial photographs, needing verification on the ground). In addition, areas of swamps will provide habitat for vernal pool species. As discussed above, clusters of vernal pools provide particularly good habitat for species that depend on vernal pools for habitat. The clusters mean that there are alternate habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species including many of the rare species known from Shirley. Visiting and evaluating PVPs for certification would provide more protection to these wetlands and the species that use them. One cluster of PVPs is in BioMap2 Core 2887.

The BioMap2 core areas and Contributing Natural Landscape are particularly valuable in ecological terms, and important to the conservation of a variety of species. Completing conservation protection of unprotected land in those areas would enhance the viability of these special areas - size and continuity of open space is particularly important for supporting wildlife populations. Preventing habitat fragmentation is vital in protecting the ecosystem, for the rare species on the enclosed list, as well as for additional common species. Some polygons of both aspects of BioMap2 extend into other municipalities which then provide opportunities to protect large unfragmented areas that will provide the best opportunities to limit further species loss from the Town and region. The BioMap2 Core and CNL polygons are available from MassGIS through the same links as above. There is also an interactive application to see the broad outlines of the polygons in each Town that is linked from the NHESP website. BioMap2 is more up-to-date than BioMap and Living Waters, which it replaces.

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

Estimated Habitat maps are created for use under the Wetlands Protection Act and Priority Habitat maps for use under the Massachusetts Endangered Species Act. These two sets of maps are created for regulatory use, shown in the *Natural Heritage Atlas* (the 2008 Atlas, the 13th edition is the current version; a 14th edition is planned to be released early in 2015). Note that Estimated Habitat is a complete subset of Priority Habitat: that is, Estimated Habitat shows a subset of the species' habitats shown in Priority Habitat. These data layers are available from MassGIS at the URL given above, requiring access to some form of GIS to view them.

Town commissions and boards are encouraged to request the assistance of the Natural Heritage and Endangered Species Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps in the *Natural Heritage Atlas*.

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

otherwise use. We strongly recommend monitoring conservation land, and removing non-native species before they become a problem and impact native species.

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

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

Yours sincerely,

Patricia C. Swain, Ph.D.
Ecologist

cc: Melissa Cryan, EOEEA, DCS

Appendix I: BioMap 2

Letter from NHESP and Biomap 2 Report for the Town of Shirley attached.

Appendix J: Open Space & Recreation Community Resources

Conservation & Community Organizations & Agencies

Nashua River Watershed Association
592 Main Street
Groton, MA 01450
Phone: (978) 448-0299
Email:
alfutterman@nashuariverwatershed.org
Website:
www.nashuariverwatershed.org

Dept. of Fish and Game -
Division of Fisheries and Wildlife
Anne Gagnon
85 Fitchburg Road
Ayer, MA 01432
Phone: (978) 772-2145 x223
Email:
Anne.Gagnon@state.ma.us
Website:
www.mass.gov/dfwele/com/cohmp1.htm

MA Dept of Conservation and Recreation
Christine Berry
Asbury St.
Topsfield, MA 01983
Phone: (978) 887-5931 ext. 5
Email:
christine.berry@state.ma.us
Website:
www.mass.gov/dcr/stewardship/landacq/

Rails-to-Trails Conservancy
The Duke Ellington Building
2121 Ward Ct., NW
5th Floor
Washington, DC 20037
202-331-9696
Website: www.railstotrails.org

Regional Environmental Council of Central Massachusetts
P.O. Box 255
Worcester, MA 01613
Tel: 508-799-9139
Fax: 508-799-9147
Email: info@recworchester.org
Website: www.reworchester.org

Alternatives for Community & Environment (ACE)
2181 Washington Street,
Boston, MA 02119
617-442-3343
Website: www.ac-ej.org

Community Works
25 West Street, Boston, MA
02111
617.423.9555
Website:
www.communityworks.com

Agriculture

Massachusetts Department of Agricultural Resources
www.mass.gov/agr/

Agriculture Preservation Restrictions
Melissa Adams
Program Coordinator
Melissa.AdamsAIP@gmail.com
413-268-8269

Right to Farm Bylaw
Legal Services – 617-626-1700

Glynwood Farm
PO Box 157, Cold Spring, NY
10516
(845) 265-3338
www.glynwood.org

Land For Good
29 Center Street
Keene, NH 03431
Phone: 603-357-1600
info@landforgood.org

Land for Good
P.O. Box 11
Belchertown, MA 01007
Phone/fax 413-323-9878
www.landforgood.org

New Entry Sustainable Farming Project
155 Merrimack St., 3rd Floor,
Lowell MA 01850
New Entry Tufts University
Friedman School of Nutrition
150 Harrison Ave, Boston MA
02111
<http://nesfp.nutrition.tufts.edu/>

Center Farmland Information Center
www.farmlandinfo.org/massachusetts/
800.370.4879

American Farmland Trust –
www.farmland.org
New England
1 Short St., Suite 2
Northampton, MA 01060
(413) 586-4593, ext. 29

Energy

Massachusetts Clean Energy Center
55 Summer Street, 9th Floor
Boston, MA 02110
Phone: 617-315-9355
Info@MASSCEC.com

Forestry

MassWoods Forest Conservation Program
Paul Catanzaro
413-454-4839
www.masswoods.net

Laura Dooley – Service Forester
Northeast Regional Headquarters
PO Box 1095

Shirley Open Space and Recreation Plan
2014 Draft

Lowell, MA 01853
Phone: 978-937-2092 ext 112
Email:
laura.dooley@state.ma.us
Website:
www.mass.gov/dcr/stewardship/forestry/service/index.htm

New England Forestry
Foundation
PO Box 1346, 32 Foster Street,
Littleton, MA 01460
978.952.6856
info@newenglandforestry.org
Forest Management Case Study:
<http://www.newenglandforestry.org/sustainable/NEFF%20Forest%20Management%20Case%20Study.pdf>

Land Trusts

The Groton Conservation Trust
Box 395
Groton, MA 01450
www.gctrust.org

Massachusetts Land Trust
Coalition – www.massland.org
Massachusetts Audubon Society
208 South Great Road
Lincoln, MA 01773
Phone: (781) 259-9500
Website:
www.massaudubon.org/index.php

New England Forestry
Foundation
PO Box 1346
Littleton, MA 01460
Phone: (978) 952-6856
Website: www.neforestry.org

North County Land Trust
325 Lindell Avenue
Leominster, MA 01453
Phone: (978) 466-3900
Email: jmorrison@northcountylاندtrust.org
Website: www.northcountylandtrust.org/

The Nature Conservancy
205 Portland Street, Suite 400
Boston, MA 02114
Phone: (617) 227-7017
Email: massachusetts@tnc.org
Website:
nature.org/wherewework/northamerica/states/massachusetts/

Sudbury Valley Trustees
18 Wolbach Road
Sudbury MA 01776
978-443-5588
Website:
www.sudburyvalleytrustees.org

The Trustees of Reservations
572 Essex Street
Beverly, MA 01915-1530
Phone: (978) 921-1944
Website: www.thetrustees.org

Public Policy

Community Preservation Act
Community Preservation
Coalition
33 Union Street, 4th Floor
Boston, MA 02108
(617) 367-8998 phone

Community Land Trust
www.clnetwork.org
503.493.1000

Massachusetts Historical
Commission
Massachusetts Historical
Society
1154 Boylston Street
Boston, MA 02215-3695
Tel: 617.536.1608
Fax: 617.859.0074
Preservation through Bylaws
and Ordinances:
<http://commpres.env.state.ma.us/publications/PTBylaws/PTBO-6.pdf>

Open Space Zoning:
<http://commpres.env.state.ma.us/publications/PTBylaws/PTBO-3.pdf>

Recreation

Mass. Dept. of Fish and Game
Office of Fishing and Boating
Access
1440 Soldier's Field Rd.
Boston, MA 02135
(617) 727-1843

Wildlife and Vegetation

Vernal Pools Association
vernal@vernalpool.org
Vernal Pool Association
PO Box 2295
Peabody, MA 01960
www.vernalpool.org

New England Wildflower
Society – www.newfs.org
180 Hemenway Road
Framingham, MA 01701-2699
508.877.7630

Shirley Open Space and Recreation Plan
2014 Draft

APPENDIX K: Photo Credits

Front Cover: Topographical map from the University of New Hampshire
First page of document: Student photo
Section 1 page divider: Dawn McCall (upper right), Joyce Prescott (lower right)
Section 2 page divider: Student photo (upper right and lower left)
Section 3 page divider: Student photo (upper right), Gaynor Bigelbach (lower left)
Section 4 page divider: Dawn McCall (upper right), Gaynor Bigelbach (lower left)
Section 5 page divider: Gaynor Bigelbach
Section 6 page divider: Gaynor Bigelbach (upper right), Dina Samfield (lower left)
Section 7 page divider: Dina Samfield (upper right), Gaynor Bigelbach (upper right)
Section 8 page divider: Joyce Prescott (upper right), Susan Baxter (lower left)
Section 9 page divider: Kim Hampson (upper right), Jeannette Fox (lower left)
Section 10 page divider: Student photo (upper right)
Section 11 page divider: Joyce Prescott (upper right), Susan Baxter (lower left)
Appendices page divider, Student photo (upper right, lower left)
Map, Location: Student photos (top and bottom), Kim Hampson (bottom right)
Map, Zoning: Student photos (top and bottom)
Map, Flood Hazard: Dawn McCall (top), Gaynor Bigelbach (bottom)
Map, Existing Infrastructure: Student photo
Map, Prime Forest Soils: Jeff and Susan Barbaro
Map, Unique Features: Hugh Field
Map, Plant and Wildlife: Gaynor Bigelbach (top), Vernal Pool Association (bottom)
Map, Environmental Challenges: Student photos
Map, Open Space Level of Protection: Rae Price
Map, Open Space Ownership: Student photos
Map, 2006 Trail Inventory: Sketches by Kathy Lewin (center), Joyce Prescott (bottom)
Back Cover: Shirley Historical Society

Student Photos are credited to Emily Lubahn, Zach Mermel, and Elaine Williamson from the Conway School of Landscape Design



Benton MacKaye
(March 6, 1879 – Dec. 11, 1975)

Benton MacKaye, co-founder of The Wilderness Society and originator of the Appalachian Trail, called Shirley Center his home from the age of eight until his passing at the age of 96. MacKaye was an early proponent of land conservation that balances human needs with the rest of nature. Future efforts to conserve recreational and open space in Shirley can benefit from MacKaye's vision.

CONWAY

The Conway School of Landscape Design is the only institution of its kind in North America. Its focus is sustainable landscape planning and design. Each year, through its accredited, ten-month graduate program, just eighteen to nineteen graduate students from diverse backgrounds are immersed in a range of applied landscape studies, ranging in scale from residences to regions. Graduates go on to play significant professional roles in various aspects of landscape planning and design with an eye to sustainability.