



Town of Sterling

Open Space and Recreation Plan

2019 Update



STERLING OPEN SPACE IMPLEMENTATION COMMITTEE

ACKNOWLEDGEMENTS



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SECTION 1 – EXECUTIVE SUMMARY

This document updates the town's state approved 2010 Open Space and Recreation Plan. The revisions were derived from a broad variety of sources, which included an analysis of growth trends, a survey of the town's natural resources, updated maps of the town, and an assessment of compliance with requirements of the Americans with Disabilities Act. In addition, we gathered public perspectives from surveys, an OSIC-hosted public forum, Master Plan-facilitated sessions, and conversations with town officials, land trust directors, and relevant state environmental agencies such as the Department of Conservation and Recreation and Mass Wildlife.

Both the previous OSRP of 2010 and the new, updated plan include a description of the community's needs for recreational opportunities, suggestions for conserving land for open space and recreation, and outline of community goals and objectives for preserving open space and preserving Sterling's rural landscape character. These goals and objectives are once again structured into an action plan intended to be completed within seven years.

The 2019 revised Plan presents the following major goals:

1. Encourage responsible protection and stewardship of publicly accessible lands and waters for natural resource conservation, recreation and water supply protection.
2. Enhance athletic fields and other recreation facilities.
3. Improve transparency and communication among town boards, committees, and departments with the community concerning open space and recreation issues.
4. Identify and consider new approaches to Sterling zoning and planning and other protective bylaws that affect Sterling's open space and recreation needs.

These goals are intended to consolidate and expand the town's previous efforts to preserve what is special about Sterling—its rural and historic character, with ample open space and working farms— and to enable its citizens to continue to make active use of the many opportunities the town provides to enjoy the out of doors.

SECTION 2 – INTRODUCTION

A. STATEMENT OF PURPOSE

The purpose of this plan is to update the previous approved 2010 Sterling Open Space and Recreation Plan. It is the latest step in the town's continuing active interest in conserving land for open space and recreation, providing information about the natural and cultural resources of the town and identifying environmental and recreation challenges that face the town. Notable accomplishments since the 2010 Plan Update included:

- Trails Initiative--Development of trail brochures and maintenance of current trails on open lands with permission of landowners, guided hikes for the public
- Additional 210 acres acquired as protected open space -- DCR-DWSP (158 acres), and Sterling Land Trust (52 acres)
- Forest management plan developed for several Conservation Commission properties
- Initiating Master Plan development for the Town (2018) and All Boards meetings held in the past 2 years
- Hiring Town Planner (2018)

The primary purpose for protecting open space is to retain the rural character of Sterling. This reflects both residents expressed desires and escalating regional growth and development. Another purpose is to keep some land available for future unanticipated uses. Recreation opportunities are also of interest to residents and visitors to the area. This is the other purpose of the OSRP Plan Update. The OSRP Plan Update will help the town to identify critical resources in need of protection and direct growth to areas that are most appropriate for it. Hopefully, this plan will inspire residents to play an active role in determining an appropriate path for Sterling's future in upcoming Master Plan activities.

B. PLANNING PROCESS AND PUBLIC PARTICIPATION

Development of this Open Space and Recreation Plan Update was built upon the past 2010 approved OSRP Update. Goals in the plan were derived from analysis of growth trends, the natural resources, maps of the town, an assessment of compliance with the requirements of the Americans with Disabilities Act, and public perspectives gathered from surveys, an OSIC hosted public forum, Master Plan facilitated sessions and conversations with town officials, land trust directors and relevant state environmental agencies such as DCR, DCS, and MassWildlife.

For this Plan Update, a public survey was developed and made available from August 2017 - February 2018. Surveys were available both on line in Survey Monkey as hard copies in left in

key sites where citizens tend to gather such as the Butterick Building, Senior Center and Town Library. Availability of survey was announced in the Sterling Meetinghouse News and Holden Landmark newspapers. OSIC members circulated the survey link and hard copies including but not limited to the Garden Club, Sportsman's Club, Wachusett Greenways, Sterling Land Trust, all Town Departments, Boards and Committees, and neighborhood groups. (Total number of respondents--81).

In the surveys, the respondents expressed strong interest in protecting open space for a variety of reasons. Protecting water resources was most highly ranked closely followed by maintaining Sterling's rural and historic character. They strongly supported efforts to preserve farms and active agriculture and as well as access to open lands and trails. Sterling residents also expressed strong interest in safe pedestrian environments particularly to and from the Town Center and on existing roads. Overuse of developed recreational facilities was a high concern expressed. Finally, residents also expressed a need for reviewing zoning and planning bylaws and exploring new ways of looking at development related bylaws. (*See Appendix B, Public Participation*)

A public forum was advertised locally and Town Boards and Committees were invited in a joint email from OSIC and the Select Board to attend. Forum was held in April of 2018 and was attended by 25 people (Planning Board, Select Board, Sterling Land Trust members included.) The agenda focused on the results of the public survey and facilitated small group conversations. Feedback was solicited on conservation and recreation needs in town. Comments made by participants in a series of facilitated Town Master Plan sessions in 2018 were also noted and incorporated in to the plan.



Open Space Plan Public Forum participants

From 2017-2019, members of the Open Space Implementation Committee also spoke with various town officials to gather some of the data needed for the update. Members met with the Conservation Commission and the Planning Board members to learn about environmental

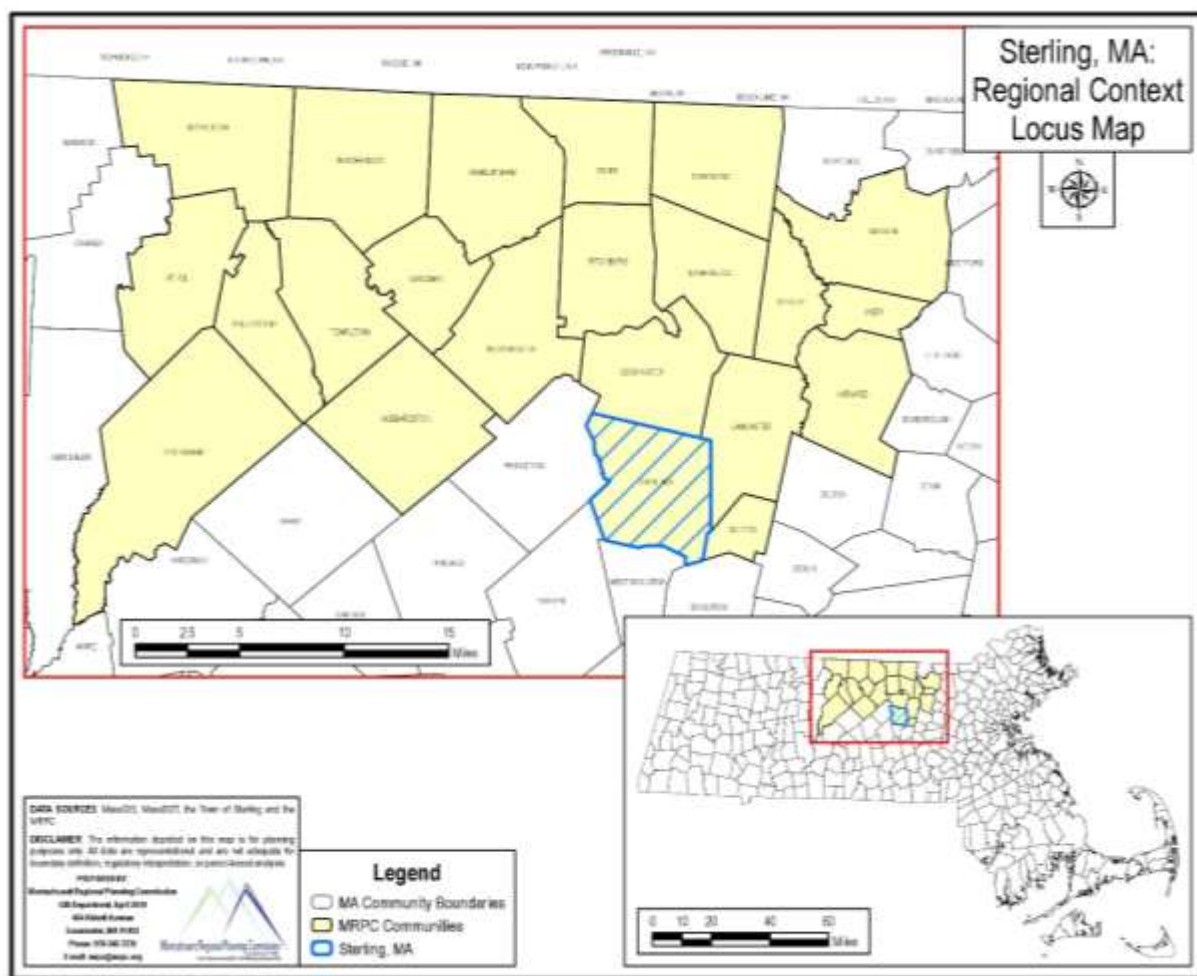
challenges facing those entities. Discussions and emails were exchanged with the Recreation Department, Water Department and Department of Public Works staff.

SECTION 3 – COMMUNITY SETTING

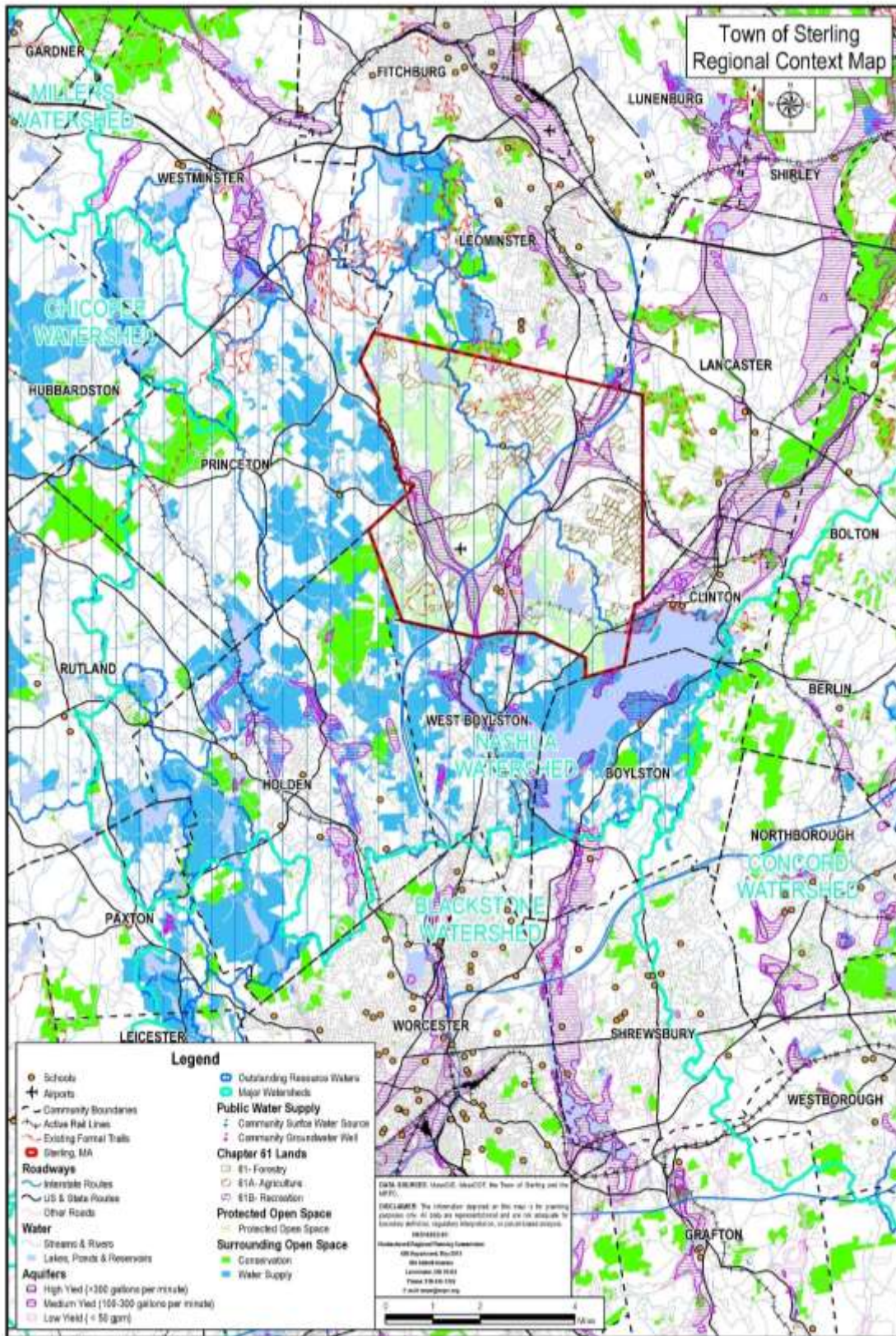
A. REGIONAL CONTEXT

Set in north-central Worcester County, Sterling is a residential-agricultural community bounded by the towns Princeton, Holden, Boylston, West Boylston, Clinton, and Lancaster, and the City of Leominster. (Required Map 1) Forests, farms, historic buildings, and open spaces contribute to Sterling's rural feel. Its hillside roads offer scenic vistas of the Nashua River Valley and Wachusett Mountain, and views of orchards and barns. One of 32 towns in the Nashua River Watershed, Sterling plays an important part in safeguarding the region's water resources. Sterling lies at the confluence of two tributaries to the Wachusett Reservoir: the Quinapoxet and Stillwater Rivers. As a result, roughly half the town falls under the jurisdiction of the Massachusetts Watershed Protection Act (WsPA). To the north, the Wekepeke Brook flows to the Nashua River. The Wekepeke aquifer is a regionally significant water resource for Sterling, Leominster, Lancaster, and Clinton.

Sterling is inextricably linked to its neighbors through water, transportation networks, public facilities, and outdoor recreation areas. Bisected by Interstate Route 190, Sterling connects with surrounding towns along the east-west Route 62 and two north-south roadways, Route 140 and Route 12. In addition, Sterling participates in the K-12 Wachusett Regional School District with Holden, Rutland, Paxton, and Princeton. Regional outdoor recreation areas exist at East Lake Waushacum, Leominster State Forest, and the Wachusett Mountain Ski Area to the north, and the Sterling Rail Trail, a component of the Mass Central Rail Trail system. Finally, Sterling is one of twenty-four cities and towns served by the Montachusett Regional Planning Commission (MRPC).



Map 3-1. Sterling, MA: Regional Context Locus Map



Map 3-2. Town of Sterling Regional Context Map

B. HISTORY OF THE COMMUNITY

The Nashaway tribe resided in the vicinity of Wachusett Mountain until 1641, when European settlers acquired the 80 square miles of land that eventually became Sterling. The imprint of pre-colonial Native American life and the region's "re-imagination" throughout the Contact Period can be seen in Sterling and the surrounding communities. Notably, the main road for the Nipmuc and Wampanoag Indians between Wachusett Mountain and Rhode Island became known as "Redemption Rock Trail" (Route 140), a place memorialized in Mary Rowlandson's famous Captivity Narrative (1682).¹ By the 1660s, a path from Lancaster to the Waushacum Lakes now known as Chace Hill Road had become a colonial cart path used by settlers who owned property near West Lake Waushacum. In 1717, the town of Lancaster widened the path and it became the first official road, later linking Lancaster (and Sterling) with points west. A network of other Indian paths connected Wachusett Mountain to the "Old Connecticut Path" through parts of Sterling and Lancaster, which created linkages to Massachusetts Bay and Springfield.²

The present center is the original religious and political center of the Town of Sterling. In 1741, the town was set off from Lancaster as the second or west precinct parish. Lancaster built a meetinghouse for the new west parish the following year and founded the center village. Parishioners voted to separate from Lancaster in 1781 and form the new Town of Sterling. Twenty-five years later, Mary Sawyer, the child who inspired the classic nursery rhyme, "Mary Had a Little Lamb," was born on Maple Street in Sterling. Her family's home was listed on the National Register of Historic Places in 2000, only to be destroyed by fire in 2007.

Sterling's early industrial economy benefited from the power of small streams. Chairmakers, hat manufacturers, blacksmiths, shoemakers, cabinetmakers, scythe-snath makers, tanners, and merchants formed the heart of Sterling's economy until the recession that followed the Panic of 1837. The arrival of rail service in 1849 allowed for a shift toward agriculture, for the local depot opened opportunities to connect Sterling farm products with markets in Boston, Fitchburg, and Worcester. The railroad also enabled Sterling to grow as a summer resort destination, with easier access to the Methodist Association Campgrounds (now referred to as Waushacum Village) and Waushacum Park.

The second industrial revolution in the U.S. triggered population growth throughout the Northeast. Sterling and its neighbors were not immune to the effects of post-Civil War economic growth. Construction of the Wachusett Reservoir and a new regional water system began in 1895. The project eliminated 1,400 acres of farmland and eventually led to the demise of the excursion boat business and Waushacum Park, which became part of the Wachusett Reservoir

¹ Mary Rowlandson, *Narrative of the Captivity and Restoration of Mrs. Mary Rowlandson* (1682). Rowlandson is believed to have crossed from Lancaster through Sterling to Princeton during the first and second "removes."

² Prescott, John, *The Founder of Lancaster, 1603 To 1682*, By Hon. Henry S. Nourse.
<http://www.usgwarchives.net/copyright.htm>

system in 1916. The loss of some amenities that brought visitors into Sterling's stores and hotels also reduced demand for passenger rail. Nevertheless, the outflow of East Lake Waushacum was ultimately rerouted away from the Wachusett watershed, enabling recreational access to East Lake. Sterling established a town beach at Sholan Park in 1934.

In the late 1800s, the Town of Clinton petitioned the legislature to allow the acquisition of water supply from Sandy Pond (1876) and the Wekepeke Brook (1882). The Upper Lynde, Lower Lynde, Spring Reservoir, and Heywood basins were all included in these purchases. Since the reservoirs are at a higher elevation than Clinton, the water supply was gravity fed through pipes to a distribution reservoir at the top of Clinton's Burditt Hill.³ Clinton used the Wekepeke Watershed and Heywood Reservoir as its primary water source until decommissioning them in 1962, when demand exceeded capacity. Clinton holds the land in an undeveloped state, essentially closed to the public, but has supported recreational activity there.

Sterling's relevance as a small regional economic center declined in the early twentieth century with the introduction of the automobile. Land formerly used for agriculture eventually reforested. By 1900, the agriculturally dependent cider mill was the only large manufacturing left in the center of the town. Today, Sterling retains vestiges of its rural past in part due to the Commonwealth's aggressive efforts to protect land in the watershed of the Wachusett Reservoir. Over 30 years ago, Massachusetts launched an extensive land acquisition program, purchasing watershed land along major waterways and associated uplands in order to protect reservoir water quality.⁴ The Department of Conservation and Recreation (DCR) Division of Water Supply Protection (DWSP) now controls over 25 percent of the land in Sterling. Some recreational uses are allowed on these lands, such as limited boating (no gas power,) fishing, hunting, hiking, and biking, but strict limitations apply around and immediately upstream of the reservoir, where dogs, horses, boating, swimming, and wading are prohibited.

Due to Sterling's geography, most of the protected land lies in the western and southern parts of the town, as DCR-DWSP efforts focused on Wachusett watershed lands. Protected open space does exist in the North Nashua drainage basin in the northeastern and eastern parts of town. However, these areas will probably be subject to higher development pressures over time. While the lack of public sewers in Sterling has generally inhibited industrial, commercial and residential development, the demand for housing throughout Eastern Massachusetts has brought small towns like Sterling into the orbit of the Greater Boston labor market.

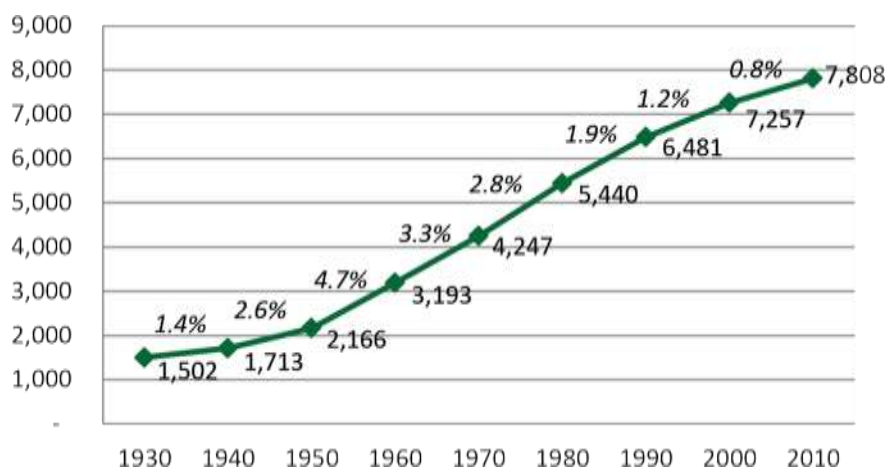
C. POPULATION CHARACTERISTICS

Population and Population Change

According to the American Community Survey (ACS), Sterling's current population is approximately 7,954 (2016 ACS). In the last century, Sterling's most significant growth period occurred in the 1950s, with an average annual growth rate of 4.7 percent. Growth gradually

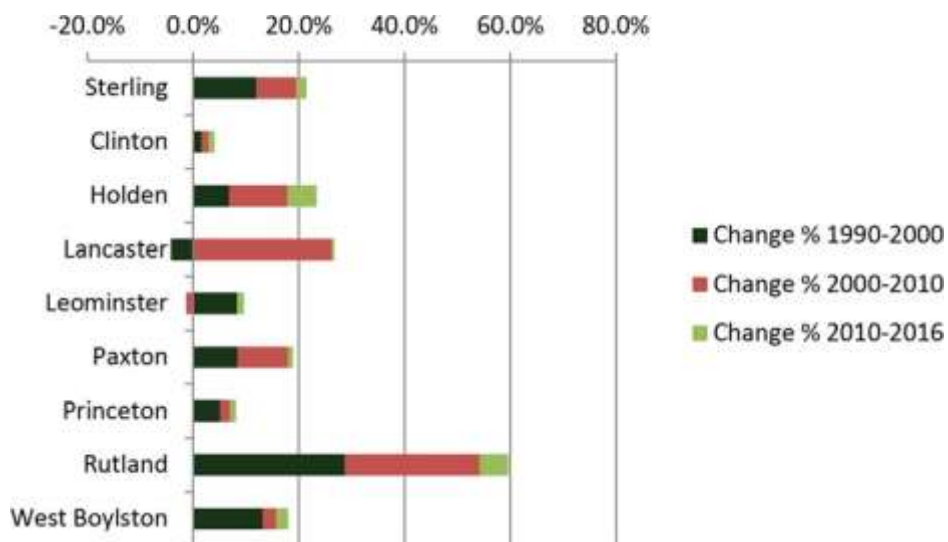
slowed to 0.8 percent per year on average in the 2000s, likely reflecting changes in the housing economy and diminishing availability of buildable land.

Figure 3-1. Population and Average Annual Growth Rates in Sterling 1930-2010 (US Census)



Compared with neighboring towns over the past 20 years, Sterling is generally average in population growth rate. Rutland and to a lesser extent Lancaster have led the region for population growth, with Princeton and Clinton lagging well behind.

Figure 3-2. Population Change in Sterling and its Neighbors 1990-2016 (US Census)



*2016 is an estimated value

Population Age

Sterling's population is aging. The median age in Sterling has increased from 38.1 in 2000 to 44.0 in 2010 and an estimated 44.9 in 2016. The Donohue Institute at the University of Massachusetts (UMass) predicts that Sterling's 65+ population will grow significantly in coming

decades while numbers in other age groups will decrease. Sterling is following national trends as the large “Baby Boom” generation enters retirement age. The town may eventually see a change in overall financial flexibility as its population ages, with households that once had enough wage or salary income will be increasingly dependent on fixed-income sources. The social service, recreational, housing, and health care needs of a much older population will also place new demands on town services, too. Toward these ends, Sterling recently constructed a pleasant senior center on Muddy Pond Road, just north of the elementary and middle schools and the Griffin Athletic Complex.

The estimated number of school-age children in Sterling has decreased from 1,504 in 2010 to 1,314 in 2016. This decrease may be due to a reduction in average family size or an increase in the number of families without children. It may also reflect the presence of “empty nester” families whose children have grown and moved away. Any of these explanations would make Sterling consistent with national trends and they echo the importance of open space and recreation investments that serve an aging population.

Educational Attainment

On average, the residents of Sterling are well educated. Educational attainment estimates reported by the federal Census Bureau indicate a slight drop in Sterling over the past several years, but the decrease may not be statistically significant because the town is so small.

Table 3-1. Educational Attainment for Population 24 Years and Over		
Education Level	2010	2016
Percent high school graduate or higher	95.7%	95.3%
Percent bachelor's degree or higher	55.5%	49.9%
Source: Census Bureau, ACS 2012-2016.		

Employment

Sterling’s labor force was estimated at 4,380 in 2016. The unemployment rate in Sterling remained at 5.4 percent in 2010 and 2016. Not surprisingly, most of Sterling’s labor force commutes in a single occupancy vehicle (84.5 percent), while almost 7 percent carpool and over 7 percent work at home. A handful of residents walk, bike, or use public transportation (<2 percent).

Table 3-2. Employment by Industry, 2010 and 2016					
Industry	No. of Establishments		Total Wages		Average Monthly Employment
	2010	2016	2010	2016	2010
Total, All Industries	241	238	\$97,203,818	\$119,554,310	2,338
Natural Resources and Mining	7	4	\$337,133	\$624,282	22

Construction	46	45	\$5,783,034	\$13,569,127	138	229
Manufacturing	19	20	\$34,298,211	\$44,682,970	596	741
Trade, Transportation and Utilities	39	37	\$19,220,252	\$18,688,805	436	391
Information	4	3	\$438,703	\$724,917	14	18
Financial Activities	13	11	\$1,750,845	\$1,722,254	36	32
Professional and Business Services	37	40	\$11,045,561	\$9,219,030	189	178
Education and Health Services	17	24	\$15,167,931	\$19,030,374	453	489
Leisure and Hospitality	18	19	\$4,781,029	\$5,917,057	303	349
Other Services	22	19	\$1,683,882	\$2,162,693	62	69
Source: EOLWD.						

Educational Attainment

On average, the residents of Sterling are well educated. Educational attainment estimates reported by the federal Census Bureau indicate a slight drop in Sterling over the past several years, but the decrease may not be statistically significant because the town is so small.

Table 3-3. Education of Sterling's Labor Force

Education Level	2010	2016
Percent high school graduate or higher	95.7%	95.3%
Percent bachelor's degree or higher	55.5%	49.9%
Source: Census Bureau, ACS 2012-2016.		

Income and Housing

Sterling's median household income of \$104,187 is higher than all its neighbors except Princeton and much higher than the median for Worcester County or the state. It has risen 2.0 percent since 2010. The median home value of \$340,600 is comparable with the state and higher than that of the county. The -1.5 percent change in estimated median home value since 2010 suggests that housing values may not have recovered yet in Sterling from the recession. The 30.6 percent income to home value ratio is in the lower middle range of its neighbors.

Table 3-4. Median household income and median value of owner-occupied housing units, 2010 and 2016

Location	Median household income			Median home value			Income / value ratio	
	2010	2016	% Change	2010	2016	% Change	2010	2016
Massachusetts	\$64,509	\$70,954	10.0%	\$352,300	\$341,000	-3.2%	18.3%	20.8%
Worcester County	\$64,152	\$67,005	4.4%	\$282,800	\$254,100	-10.1%	22.7%	26.4%
Sterling	\$102,115	\$104,187	2.0%	\$345,800	\$340,600	-1.5%	29.5%	30.6%
Clinton	\$58,826	\$60,755	3.3%	\$275,900	\$242,800	-12.0%	21.3%	25.0%
Holden	\$88,405	\$100,599	13.8%	\$298,600	\$289,200	-3.1%	29.6%	34.8%
Lancaster	\$80,938	\$93,750	15.8%	\$362,600	\$299,600	-17.4%	22.3%	31.3%

Leominster	\$55,695	\$56,510	1.5%	\$252,900	\$227,200	-10.2%	22.0%	24.9%
Paxton	\$100,333	\$93,654	-6.7%	\$305,900	\$280,800	-8.2%	32.8%	33.4%
Princeton	\$102,853	\$121,500	18.1%	\$395,500	\$368,500	-6.8%	26.0%	33.0%
Rutland	\$81,295	\$95,347	17.3%	\$272,000	\$279,600	2.8%	29.9%	34.1%
West Boylston	\$79,906	\$74,005	-7.4%	\$296,800	\$267,700	-9.8%	26.9%	27.6%
Source: Census Bureau, ACS.								

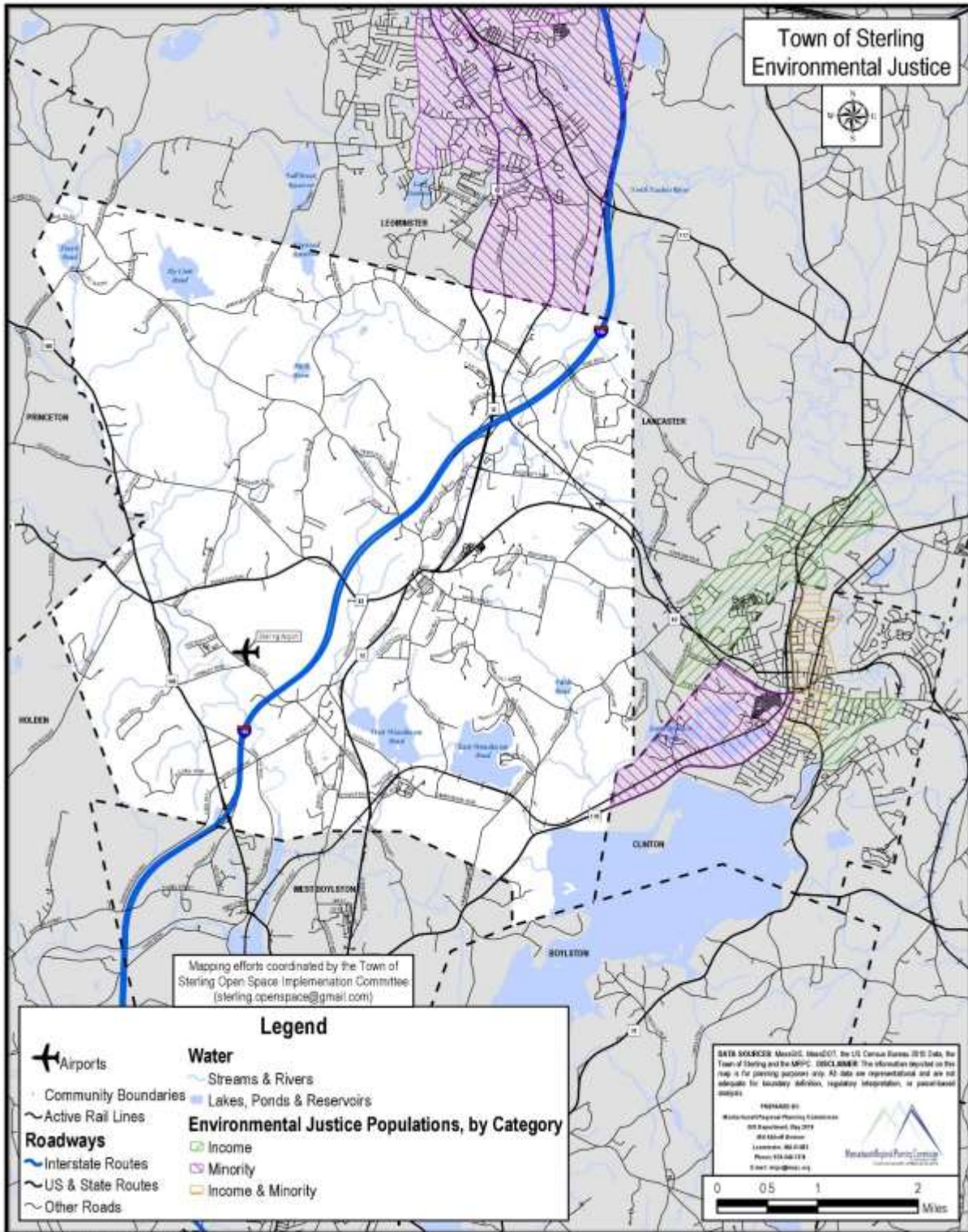
The housing unit vacancy rate rose from 2.4 percent in 2000 to 5.2 percent in 2010, which was surely a residual impact of the recession. In 2010, 87.0 percent of Sterling’s households were homeowners. Almost a third of Sterling households (870, 31.1 percent) are **housing cost burdened** – that is, they spend more than 30 percent of their income on housing costs.

Race and Ethnicity

Sterling residents identified as 97.0 percent white in 2010. The Latino population grew from 0.8 percent in 2000 to 2.0 percent in 2010. Sterling has far less population diversity than neighboring Lancaster and Leominster, where Latinos make up 8.1 percent and 14.4 percent, respectively, of the total population.

D. ENVIRONMENTAL JUSTICE POPULATIONS

The Commonwealth identifies Census block groups as Environmental Justice communities if any of the following are true: annual median household income is equal to or less than 65 % of the statewide median (\$62,072 in 2010); or 25 percent or more of the residents identify as a race other than white; or 25 percent or more of households have no one over the age of 14 who speaks English only or very well. Sterling has no Environmental Justice areas, but some EJ populations are located in the adjoining towns of Leominster and Clinton.



Map 3-3. Town of Sterling Environmental Justice

E. GROWTH & DEVELOPMENT PATTERNS

1. Patterns & Trends

Since 1950, residential development has absorbed significant amounts of forest and farmland in Sterling, as has been the case in so many Eastern and Central Massachusetts towns. Postwar household formation rates, the Baby Boom, and economic growth produced tremendous demand for housing. Despite these forces, Sterling remains a rural-residential community, with homes clustered in village centers or interspersed across broad stretches of open land. Almost two-thirds of Sterling's land is still in forest or farms, and much of that land is protected for watershed purposes.

Agriculture remains important in Sterling. The town has a higher proportion of land dedicated to farming than is generally the case in Worcester County, and agriculture is a strong force in Sterling's economy. Orchards are the primary source of agricultural income in Sterling, but the agricultural base includes dairies, nurseries, a goat farm, and several tree farms. Nevertheless, the general trend has been to convert large tracts of land into subdivisions. Over 87 percent of Sterling is zoned for Rural Single-Family Residential development, requiring a minimum of two acres per house lot. Unfortunately, while this kind of zoning may slow development and limit the total amount of housing built in a community, it also is a prescription for residential sprawl and open space fragmentation.

Sterling has a Light Industrial district that encompasses about five percent of the town's total land area. There will be ongoing challenges to balance the Town's need for water quality protection and a prosperous local economy. The Industrial Zone is located entirely within the Water Resource Protection Overlay District.

2. Infrastructure

Transportation Systems. The principal highways serving Sterling include Interstate Route 190 and State Routes 12, 62 and 140. I-190 significantly reduces driving time to Worcester and Leominster, providing Sterling with greater access to job markets and shopping and also to Route 2. Railroad use mostly restricted freight service operated by Conrail and Guilford. The Sterling Rail Trail occupies on an old rail line.

Water Supply. All of Sterling's land area lies within the Nashua River Watershed. The Town's drinking water wells draw from aquifers in the Wachusett Watershed, so they are protected by the relatively strict regulations of the WSPA. Sterling provides public water from a total of six wells. There are three large wells in West Sterling and three small wells on Route 12 near West Waushacum Lake. Wells #2A, 2B and 2C are located at Pump Station 2 on Worcester Road/Rt. 12. Wells #3, 4, and 5 are located at the West Sterling Pump Station on Redemption Rock Trail. There are also three remote storage tanks to help maintain even pressure throughout the system.

(Tuttle Road, Osgood Road, Kendall Hill Rd) In emergencies, Sterling has the ability to obtain from Leominster or West Boylston.

When all wells are on line, they have the capacity to pump approximately 1,300 gallons per minute into the distribution system. Sterling Water Department pumps an average of 610,000 gallons of water per day or approximately 220 million gallons per year. In the summer, the Water Department sometimes pumps as much as 1.5 million gallons of water a day, i.e., maximum day demand. The increase is primarily due to lawn watering.

There are roughly 70 miles of water mains and over 450 water hydrants in Sterling's distribution system. Today, the Water Department services 2,404 water service connections, including 2,166 residential connections which serve approximately 80 percent of the Town's population. Other town residents use private wells. Since the last Open Space and Recreation Plan was prepared in 2010, the Town has made several water system improvements ranging from cleaning and upgrading storage tanks to addressing water main breaks, conducting a full-system leak detection survey, and installing "Smart Meters" for approximately half of its service connections.

Water pressure and storage is supplied by two water tanks, each with an overflow level of 736 feet. The tank on Osgood Rd has about 800,000 gallons of storage capacity and is a wire wrapped pre-stressed concrete tank. The tank on Kendall Hill is a 250,000-gallon steel tank. A new underground tank on Tuttle Road installed on online in 2002 is a poured- in-place concrete tank and has a capacity of 1.3 million gallons.

To improve the quality of Sterling's drinking water, it is treated to remove several contaminants. The water system is disinfected with ultraviolet light to keep it free of coliform bacteria and microorganisms. If for some reason the UV fails, the Water Department is equipped with a chlorine backup system. The water is also treated with potassium hydroxide to maintain proper pH (acidity levels) and to reduce lead and copper concentrations. The Sterling Water Department and MassDEP help to determine the effectiveness of existing water treatment and constantly monitor the water quality of our system.

The Sterling Water Dept. takes 17 bacteria samples per month. This includes nine routine samples within the distribution system, two at the plant tap, and six raw water samples. The Water Department also tests for volatile organic contaminants (VOCs) in 2011 and had no detections from 2010-2016.

MassDEP prepared a Source Water Assessment and Protection (SWAP) Report (Last updated in 2011) for the water supply sources serving Sterling's water system. A susceptibility ranking of High was assigned using the information collected during the assessment by MassDEP. The Sterling Water Department also has a Source Water Protection Plan that was updated in 2008-2009 by Mass. Rural Water and funded by a grant from DCR. Both documents are available at the Water Department office.

Protection of the Nashua River Watershed falls under the jurisdiction of the Massachusetts Rivers Protection Act (RPA) and Massachusetts Wetlands Protection Act (WPA), which restrict certain activities around surface water resources ranging from rivers to swamps. The non-profit Nashua River Watershed Association (NRWA) monitors the Nashua River Watershed.

Wastewater. Wastewater management in Sterling depends on septic systems except at the Waushacum Village campground site, Chocksett Crossing, and the Sterling Nursing Home. To date, the Town has rejected all alternatives for sewage other than onsite subsurface disposal systems due in part to costs and the potential for dramatic changes in development patterns. The Town needs to identify a means to address problems at East Lake Waushacum and the downtown area. There have been some initial investigation into feasibility in downtown but costs are very high. However, economic development goals and continued growth pressure may necessitate a change in perspective in the future. A Comprehensive Wastewater Management Plan will be needed as current demographic trends and new development continues.

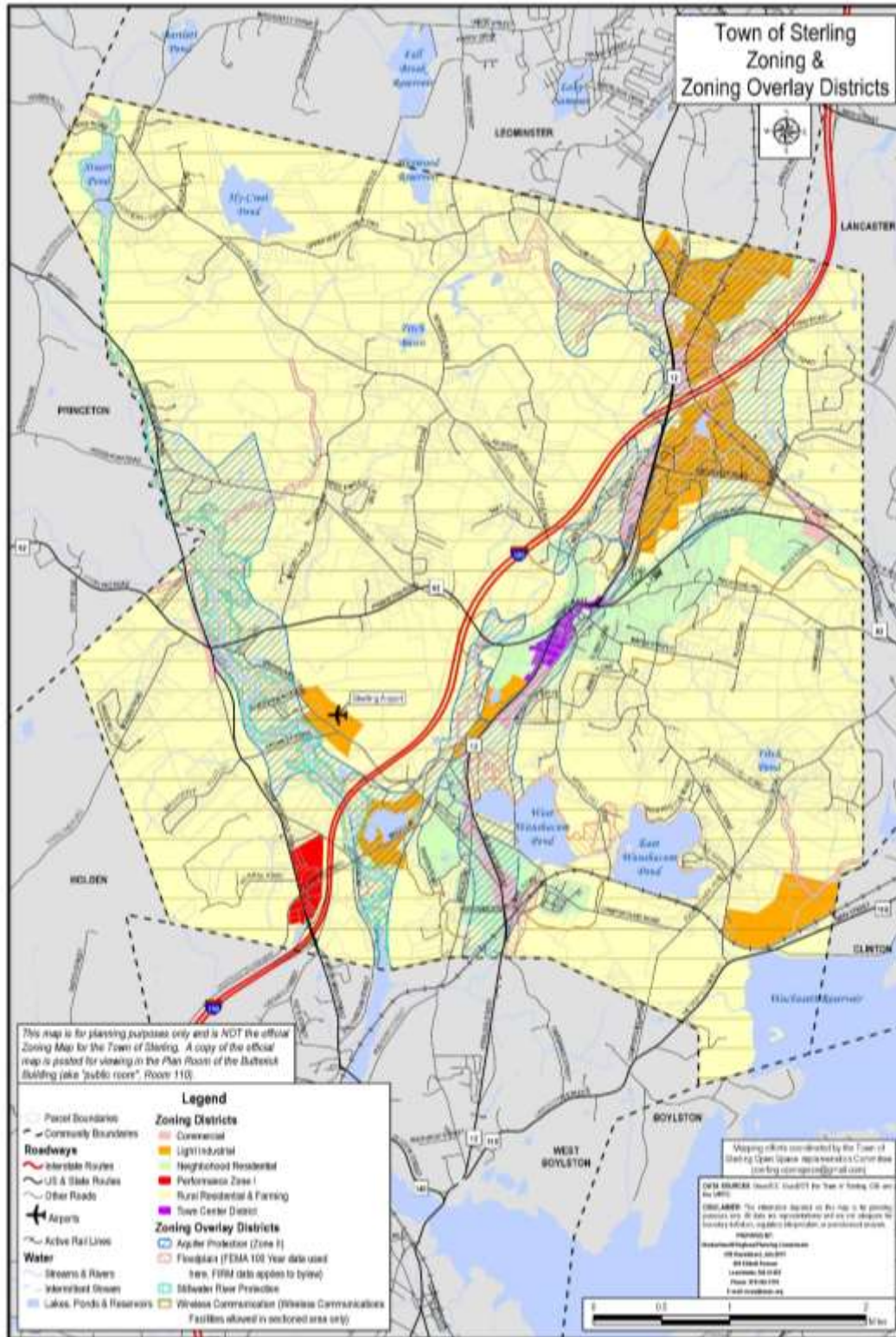
3. Long-Term Development Patterns

Zoning. Through amendments to the Zoning Bylaw, Sterling has instituted some mechanisms to protect rural features of the Town and provide adequate oversight of the development process. As of 2018, the Town controls land use through the application of six use districts. (*Zoning Map 3.*)

- *Rural Residence (RR).* Most of Sterling lies in the Rural Residential district. To comply with amendments adopted in 1997, new lots must have a minimum lot of two areas, 225 linear feet of frontage, and deep setbacks. Two-family dwellings require a larger lot.
- *Neighborhood Residence (NR)* includes the more densely developed residential areas around the center of town and near other commercial nodes in Sterling. This district is largely built out, with homes on half-acre lots and 125 feet of frontage on a public way.
- The *Commercial (C)* district applies to land in various locations along Route 12. It is a general business zone.
- The *Town Center (TC)* district covers the historic town center, located in the vicinity of Maple Avenue, School Street, and Pine Street.
- The *Light Industrial (LI)* district on the north side of town along Route 12 and Chocksett Road, and in pockets on the south side of town at the airport, south of the town center, and adjacent to the Clinton town line.
- *Performance Zone 1* is an environmental protection zone in the vicinity of Redemption Rock Trail and Dana Hill Road.

Sterling has established three overlay districts, each with specific environmental protection purposes (as their names imply):

- Flood Plain District
- Stillwater River Protection District
- Aquifer and Water Resource Protection District



Map 3-4. Town of Sterling Zoning & Zoning Overlay Districts

In addition to zoning tools, Sterling has adopted general bylaws that work in conjunction with zoning to preserve and protect important land characteristics. These bylaws include:

- *Agricultural Districts General Bylaw*, which provides for the creation of farmland districts with at least 50 acres. The bylaw requires an impact analysis of public investments such as infrastructure extensions, land acquisitions, and zoning changes on properties in a designated Agricultural District. The bylaw also gives priority for purchase of proposed Agricultural Preservation Restrictions to property located in an Agricultural District.
- *Scenic Roads General Bylaw*, which authorizes the Planning Board to adopt reasonable rules and regulations to administer G.L. c. 40, § 15C.

4. Growth Management

Since so much of Sterling remains undeveloped and DCR controls quite a bit of the remaining vacant land, it is hard to imagine that Sterling could change much in the foreseeable future. However, land that is not protected in perpetuity is vulnerable to land use change, and in Sterling, the most vulnerable areas are unprotected land under Chapter 61 or 61A. In these cases, the land owners can change the use of their property after paying a conveyance or rollback tax. Conservation restrictions provide more lasting protection. By relinquishing the development rights through a conservation restriction, a landowner can continue to farm while enjoying reduced property taxes and a reduction in income taxes equal to the value of the restriction if it is given to a conservation organization. The state also offers an Agricultural Preservation Restriction (APR) program with funding to purchase development rights on actively farmed, high-quality land. Sterling currently has two APR properties

Another opportunity to protect agricultural and forestry land or significant habitat resources is the Community Preservation Act (CPA), a state law (G.L. c. 44B) that allows communities to impose a surcharge on property tax bills and dedicate the surcharge revenue to protecting open space, improving recreation areas, preserving historic built assets, or creating affordable housing. The state provides matching funds. Despite support for the Community Preservation Act at the Annual Town Meeting, Sterling residents voted against it on a ballot question in 2006.

The Town has initiated a Master Plan process. In 2018 a series of facilitated sessions were held with more planned for 2019. Attendance and participation indicates a strong interest in completing this document.

5. Recent and Proposed Development Projects

Most likely reflecting the economic impacts of the Great Recession there was very little new construction activity in Sterling from 2010 to 2013. Building permits for new construction increased dramatically beginning in 2014.

Table 3-5. Building Permits (New Construction) Issued 2010-2018

Permits Issued	2010	2011	2012	2013	2014	2015	2016	2017	2018
Residential	7	9	7	9	20	26	26	18	12
Commercial	0	0	0	0	3	1	2	2	1

6. Subdivision Approvals

Since 2010, only two subdivisions were approved in Sterling.

1. Homestead Lane-- approved in 2010.
2. Primrose Lane--approved in 2005, rescinded in 2017 and then approved in 2018.

7. Proposed or Potential Developments

As of January 2018, there is a proposed multi-family development on Flanagan Hill Road to consist of 9 buildings with 18 units. A 40 B project on Chace Hill Road is in very preliminary stages, a formal proposal has not come before the Planning Board. Initial information indicates a multi-family development with 8 buildings for a total of 16 units.

8. Infrastructure and Utilities

Water resources are a critical limiting factor of Sterling's growth potential. New developments at elevations above 655 feet increased the demand for water and brought the Town to investigate the benefits of expanding the public water infrastructure with an expensive, secondary pumping system, ensuring water service at a DEP-recommended water pressure of 35 pounds per square inch (psi).³ Projections of future needs have prompted the Town to consider both town-owned lands and DCR-owned lands for possible well sites in future years. Heywood Reservoir, the Town of Clinton's reserve supply system, lies at the headwaters of Wekepeke Brook less than 200 yards from Leominster's Fall Brook Reservoir. Leominster's past efforts to negotiate surface water rights to the Heywood Reservoir have failed to-date.⁴

Sterling needs to study the opportunity costs of certain types of development along the Wekepeke aquifer. In addition, Sterling, Leominster, and Clinton may need to work cooperatively to protect both surface and ground water resources for the integrity of the Wekepeke Aquifer and the health of native brook trout and other coldwater aquatic life in the Wekepeke Brook. Sterling leaders may also want to spearhead a volunteer monitoring program in search of arsenic in private well water. The northern and western sections of Town will likely need to rely on private wells for the long term until Town identifies viable source water

alternatives or a secondary pumping station can be built. Careful attention should be given to the installation of septic systems in these areas to prevent contamination of on-site wells.

9. Land Use Change

Sterling has a total land area of 20,230 acres, including 800 acres of water. DCR owns or controls 5,561 acres, or 26 percent of the town, to protect the Wachusett Reservoir. Over 56 percent of Sterling is forested. Agricultural uses such as cropland, pasture and orchards accounts for over 14 percent of the land area, while residential uses account for 15 percent at 3,035 acres. In contrast, in 1985, forestland accounted for nearly 60 percent of the land area, agricultural uses accounted for 16 percent, and residential uses accounted for just 11 percent. Water accounted for 4 percent of the area in both 1985 and 1999.

Growth in industrial, commercial, and residential land uses are inevitable. Industrial and commercial development has taken place mainly in the Pratt's Junction area and Chocksett area, where the land is so zoned, near the interchange of I-190 and Route 12. This trend is expected to continue, and to lead to a related growth in residential use in other areas of town. Since this industrial zone lies largely in the Wekepeke Aquifer, great care must be taken in the siting and material handling practices of industries. Industries that use or produce hazardous substances should be especially well designed, monitored frequently, and carefully regulated.

SECTION 4 – ENVIRONMENTAL INVENTORY AND ANALYSIS

A. GEOLOGY, SOILS AND TOPOGRAPHY

1. Geology

Sterling owes its rich and rolling landscape to violent upheavals that took place over hundreds of millions of years as continents drifted apart and collided. The bedrock underlying most of the town is the Merrimack Terrane, composed of meta-sedimentary and intrusive igneous rocks some 400 million years old. In Sterling, it consists of two distinct belts of rock including the Wachusett Mountain Belt and the Nashua Belt. The Wachusett Mountain Belt, a giant fold of crystalline rock, includes a pluton of Fitchburg granite that intruded as igneous rock over 400 million years ago. The Nashua Belt is a band of Silurian and Devonian age metamorphic sedimentary rock that lies between the Clinton-Newbury Fault and Wachusett Mountain Belt.

The geology of the surface layers is a result of glacial activity. A succession of great ice sheets, estimated to have a thickness of up to two miles, scraped and wore deep grooves into the land during the Pleistocene Era, 11,000 to 1.8 million years ago. The last of these was the Wisconsinian Ice Sheet. As the glaciers advanced, materials scraped from the underlying bedrock were carried south. When the Wisconsinian ice sheet melted, it left behind dense glacial till deposits that form a thin veneer over the bedrock surface throughout most of the town.

A series of glacial lakes formed in the Nashua Valley. As the glacial ice receded northward, successive great deposits of sand formed under the impounded waters of Glacial Lake Nashua at the toe of the glacier. Meltwater that occupied the confluence of the Stillwater and Quinapoxet River valleys deposited sediments that filled the southern end of the lake, leaving behind beds of sand plain. Similarly, melt-water occupied the Wekepeke valley, depositing sands that today underlie the northeast quadrant of Sterling. Eventually, the lakes increased in size and filled the Nashua Valley, encompassing an area with a combined length of 35 miles. The north flowing Nashua River drained Glacial Lake Nashua over thousands of years. Over time, the water levels lowered, leaving behind extensive deposits from melting glacial ice of delta sand and gravel up to 165 feet thick. Two broad bands of stratified glacial deposits (sand and gravel) stretch across the lowlands of Sterling, forming the Stillwater and Wekepeke Aquifers.

2. Topography

Geologic activity and glacial sculpting also left a deep imprint on the topography. The terrain in Sterling is very hilly with well-defined valleys. Elevations above sea level range from 330 feet where Wekepeke Brook flows into Lancaster to 1,010 feet on the northern border with Leominster. The hills surrounding the center and throughout the town were named for geographic features, such as Ridge and Redstone Hills, or for the prominent families whose

farms covered them, such as Kendall, Ross, Fitch and Chace Hills, or places of origin, such as Rowley.

Much of the land on Justice Hill, Fitch Hill, and Hog Hill remains undeveloped and protected by DCR-DWSP holdings. These upland areas represent the watershed of the Stillwater River and the Stillwater Aquifer, providing drinking water to both the Town wells and the Wachusett Reservoir.

The geologic history of the rolling topography created a complex drainage network of numerous streams and wetlands. These streams flow southeast toward the Wachusett Reservoir and the Nashua River Basin, following the ancient path of the glaciers. The two major flood plains in Sterling are along the Stillwater River and Wekepeke Brook, but zones of flooding exist along almost every stream, as shown on the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Maps (FIRM). These areas lie in the lowlands at the feet of the glacially carved hills.

3. Soils

Soils in Sterling include the deposition of glacial till in the uplands and sand and silt in Glacial Lake Nashua. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service has produced a Soil Survey of Worcester County, including Sterling.⁵ In general, Sterling has five naturally recurring soil associations (an area in which different soils occur in a characteristic fashion, or a landscape which has characteristic kinds, proportions, and distributions of component soils. For the most part, the soils found in Sterling have only limited to moderate limitations for residential, commercial, and industrial development.

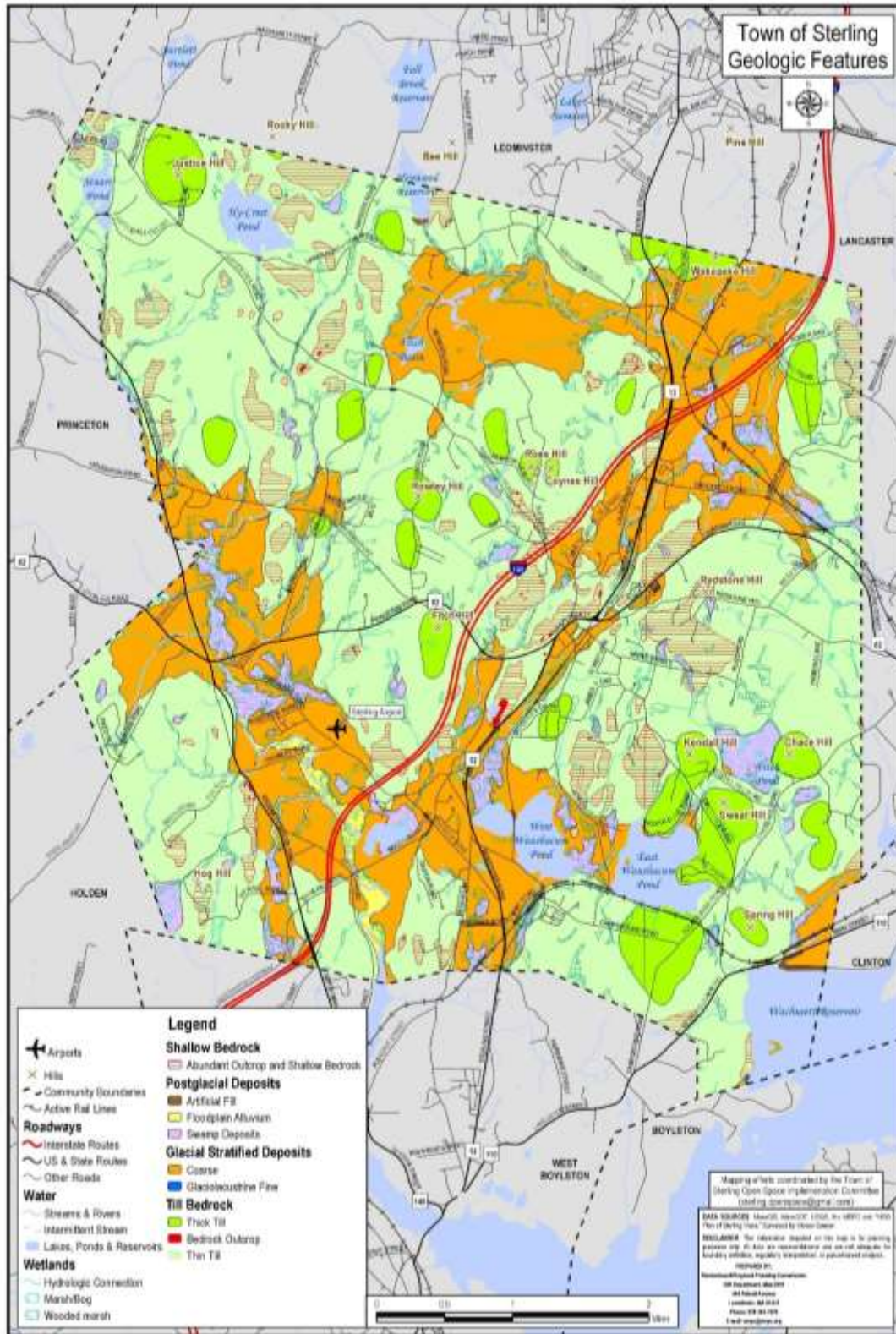
Prime Farmland Soils and Farmland. Prime agricultural farmland is best suited to grow food, feed, forage, fiber, and oilseed crops. Prime farmland soils produce the highest yields with minimal energy and economic resources, and farming it results in the least damage to the environment. Sterling has roughly 3,583 acres of prime agricultural soils, over half of which are subject to some form of perpetual or temporary protection.

Forest Soils with Moderately High Productivity and Working Forests. The USDA funded a project by the Department of Forestry and Wildlife Management of the University of Massachusetts to define, classify, and map the prime forestlands in the state. They developed the Massachusetts Prime Forest Classification System as a model for determining the productive capacity of forests. The Soil Survey for Worcester County lists the soils that are suitable for wood crops and assigns each an ordination symbol that indicates the level of productivity and the major management limitations associated with the soil. The soils are rated from 1 to 5, with 1

⁵ Taylor, William, and Charles F. Holz, *Soil Survey of Worcester County, Massachusetts, Northeastern Part*, USDA Natural Resources Conservation Service, in cooperation with Massachusetts Agricultural Experiment Station.

indicating very high productivity and 5 indicating low productivity. In Sterling, the Soil Survey did not reveal any soils that were rated 1 or 2. However, most of the Chapter 61A land in Sterling consists of soils with moderately high productivity for forestry. Over 1,900 acres of these soils are privately owned and considered unprotected. About 28 percent are permanently protected. Forestry soils are located in areas with significant value as water resource districts or scenic landscapes.

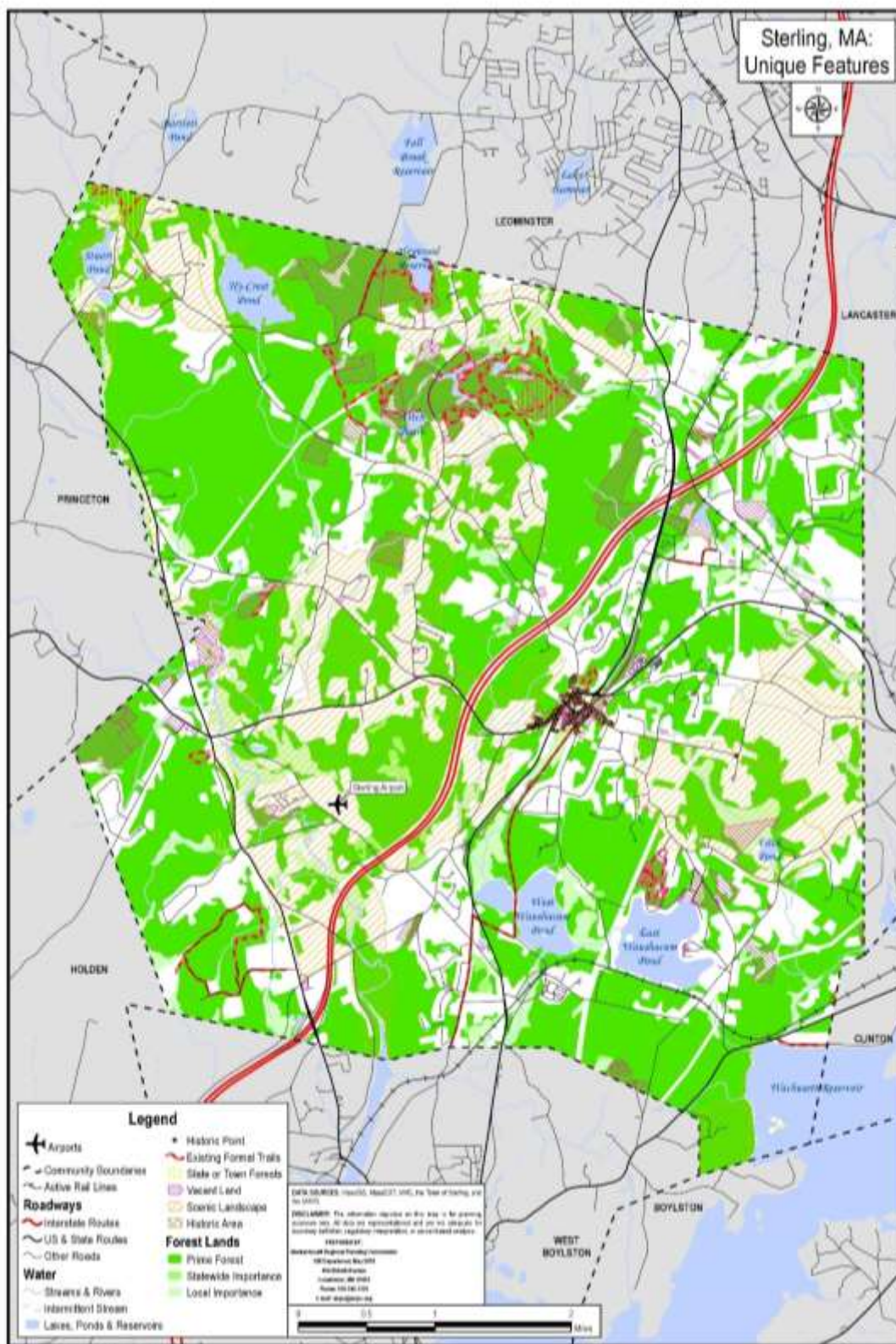
Recreation Soils and Septic Systems. The Soil Survey rates soils for their suitability to several categories of recreation based on the limitations or restrictive features such as wetness, slope, and texture of the surface layer. In general, the best soils are almost level and not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. Most of the soils in Sterling have moderate to severe limitations for playgrounds. Only the Agawam fine sandy loams have a rating indicating slight limitations. As it happens, these are also the soils best suited to agricultural uses.



Map 4-1. Town of Sterling Geologic Features

B. LANDSCAPE CHARACTER

Sterling lies on the border of the Southern New England Coastal Plains and Hills and the Worcester Plateau Ecoregions which comprise of plains with a few low hills. Sterling is distinct for its picturesque farms and orchards nestled into the valleys and cresting the hillsides of Justice, Rowley, Fitch, Redstone, and Kendall Hills. Many of these hillsides offer magnificent views across the Nashua River Valley and the hillsides of Clinton, Lancaster, and Harvard. The relatively flat valley of the Stillwater River affords a sweeping view of Wachusett Mountain. East and West Lakes Waushacum and Wachusett Reservoir add to the menu of refreshing views.



Map 4-2. Sterling, MA: Unique Features

Sterling's Town Center is a postcard perfect example of the traditional New England Town Center, replete with pristine white churches and meeting houses, and traditional colonial and Victorian homes. The compact development pattern of the properties in the town center is a testament to the colonial, and pre and post industrial past of rural New England.

Nearly 34% of Sterling's land base (~6,700 acres) is protected from development in perpetuity. This is due to DCR-DWSP ownership and protection of the watershed lands of the Stillwater River and other associated drainages within the Wachusett Reservoir watershed, as well as a scattering of town conservation lands and local land trust tracts. With the agricultural landscapes, Sterling's landscape combined with its easy access to major roadways makes the town very attractive to residents and visitors alike.

A number of trails in Sterling provide access to the scenic landscapes in the hills and river valleys. These trails are located on state, town and local land trust properties offering a variety of experiences in the fields, forests, wetlands and waterways that dominate much of Sterling's landscape. The Sterling Rail Trail at the town center runs to Gates Road in Rte 12, a reminder of past railroad activity. Rivers, streams and ponds offer opportunities for aquatic adventures from fishing and boating to fish and wildlife observation. Popular areas in Sterling attracting birders include Muddy Pond and Sterling Peat near Rte 190, East and West Waushacum Lake, North Dike on Wachusett Reservoir and the agricultural fields on Redstone Hill. MassWildlife stocks trout during the spring in the Stillwater River, and West Waushacum Lake for recreation purposes; enhancing trout fishing opportunities, creating reproductive trout populations. Hunting opportunities have been available in this rural setting. South and east of Rte 190, DCR WSP lands were closed to hunting until 2018. Due to high deer densities and resulting forest ecological damage and impeded forest regeneration from over browsed areas, DCR WSP opened lands in Sterling and other Wachusett Watershed towns (~7000 acres) to hunting. A controlled deer hunt on lands in Sterling directly abutting the Wachusett Reservoir was also initiated.

Developed recreation areas such as Sholan Park and Beach on East Lake Waushacum, the school playgrounds, playing fields and old running track at Houghton Chocksett School are popular but are suffering from overuse and deferred maintenance. The same is true for some other ballfields, tennis/pickle and basketball courts in West Sterling and the Redstone Hill ballfield.

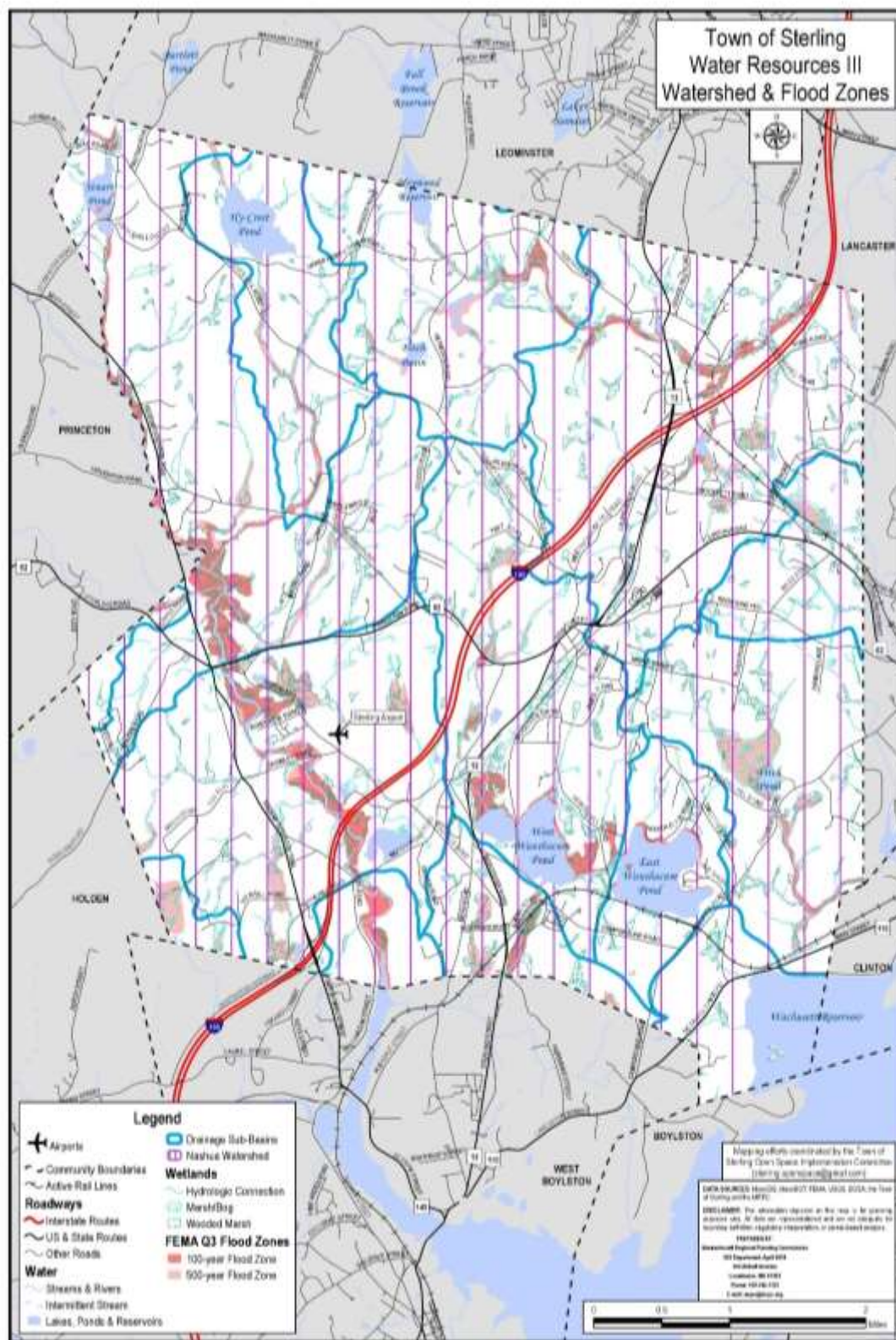
Several state numbered highways run through Sterling, (Rte 140, 62, 12, I-190) with an industrial zoned located area located near Rte I -190 and Rte 12. Recent installation of roundabouts in this area were a result of increased traffic and vehicular accidents in the past decade. Some businesses located along Rte. 12 are not actively in use, and are the subject of citizen concerns relating to aesthetics, noise and lack of economic activity.

C. WATER RESOURCES

Sterling has abundant water resources of excellent quality and regional importance. The town contains sources of pure water beyond its own present or likely future needs. Through the Massachusetts Water Resources Authority (MRWA), Metropolitan Boston shares in some of Sterling's water resources. The Stillwater River and West Lake Waushacum are part of the Wachusett Reservoir system. The Town of Clinton has used water from Sterling in the past and could do so again, since it still holds reservoir lands in northern Sterling.

1. Watersheds

Sterling is located in Nashua River Watershed, which in Sterling includes two sub-watersheds: the Wachusett Watershed, which drains into the Wachusett reservoir (of which the Stillwater River watershed is an integral part), and the Wekepeke watershed which drains into the North Nashua River.



Map 4-3. Town of Sterling Water Resources III Watershed & Flood Zones

The extreme southeast corner of Sterling lies within the Wachusett Reservoir, Boston's main source of drinking water. Several other bodies of water are found in Sterling, including East and West Waushacum Ponds and the Quag, HyCrest Pond, Stuart Pond, the Clinton Wekepeke Basin Reservoirs and Muddy Pond. The Stillwater River is the largest stream flowing through town. Smaller streams bisect the town, including the Wekepeke, South Meadow, Wilder, Scanlon and Houghton and Rocky Brooks.

The Wachusett watershed covers the majority of Sterling's area to the west. The Stillwater River is its chief stream, with tributaries Justice Brook, Bailey Brook, Rocky Brook, Ball Brook, Wilder Brook, Scanlon Brook, Houghton Brook, Connelly Brook and Waushacum Brook. Quinapoxet River flows into the Stillwater at the southwestern end of the Wachusett Reservoir. South Meadow Brook flows into South Meadow Pond in Clinton.

In the northeastern quarter of Sterling lies the Wekepeke watershed, which drains to the two branches of Wekepeke Brook, and one named tributary, Lynde Brook. Beneath these two watersheds are the rich sand deposits that comprise the Stillwater and Wekepeke aquifers.

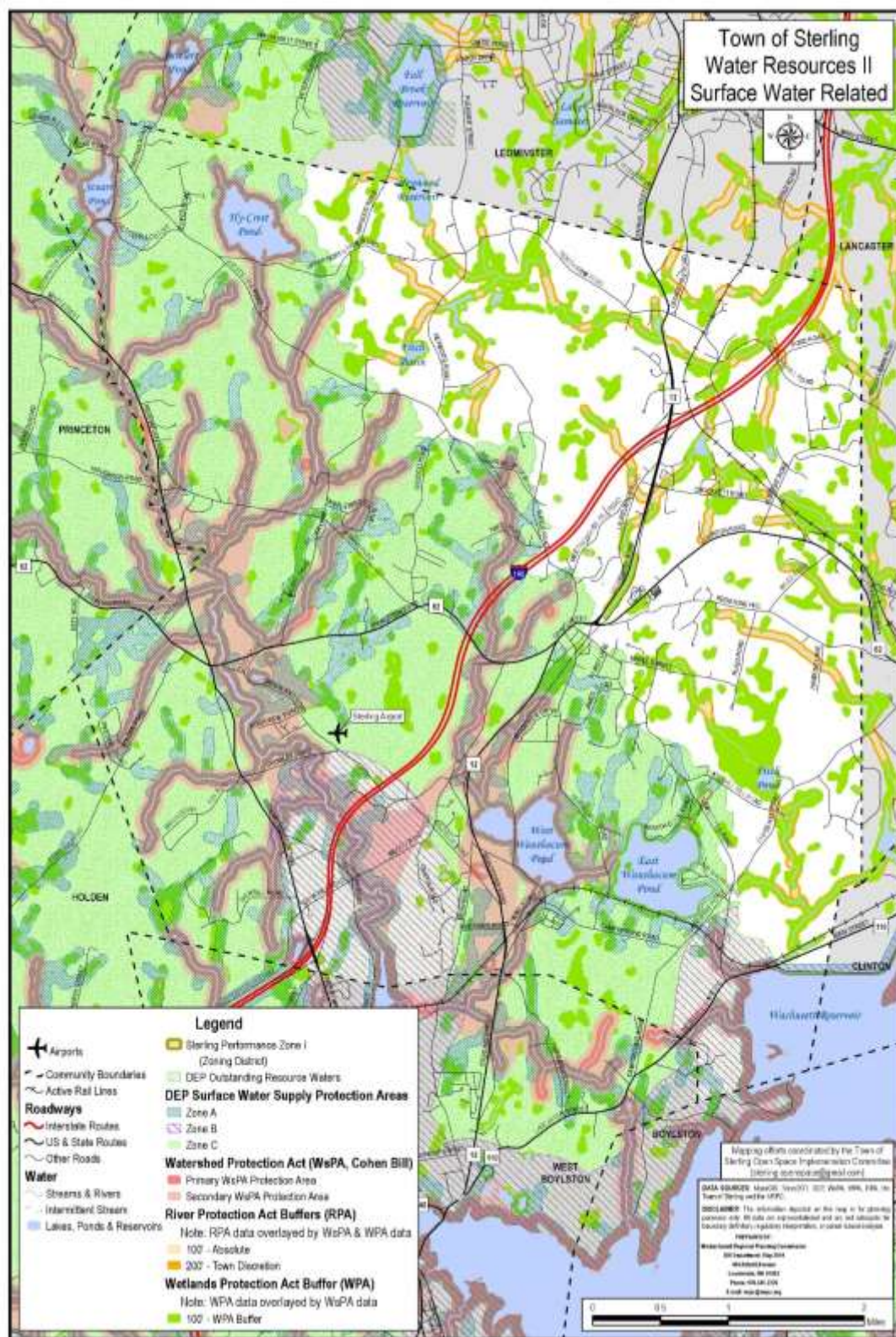
2. Flood Hazard Areas

Floodplains are the lowlands adjacent to streams, rivers, or lakes that are susceptible to flooding. A floodplain has two main components, the floodway and the flood fringe. The floodway is the area adjacent to the water body that is subject to frequent flooding. It serves as a channel for diverting floodwaters. The flood fringe is the area to the outer edge of the floodplain that is subject to flooding less often, and at more shallow depths. A floodplain serves two primary functions: (1) to channel floodwaters downstream, and (2) to impede the flow of floodwater throughout the area.

Sterling has a Floodplain District that regulates land uses within the areas defined on the Flood Insurance Rate Maps (FIRM) and the Flood Boundary and Floodway maps, on file with the Town Clerk, the Planning Board, and the Building Inspector. The Bylaw prohibits any encroachments within the district unless certified by a registered professional engineer or architect demonstrating that the encroachment will not increase flood levels during the 100-year flood.

3. Surface Water

Land near water bodies offers the most attractive sites for outdoor recreation. Some water bodies have limited informal public access for boating and fishing, generally located where roadways abut the ponds, as in the case of Stuart Pond.



Map 4-4. Town of Sterling Water Resources II Surface Water Related

Rivers, Streams, and Brooks

- **Stillwater River** extends 7.8 miles from Princeton to the Wachusett Reservoir. In its northern reaches, the Stillwater is a narrow, swift-moving stream, but below West Sterling the river opens out into a broad swamp. Then it becomes wider, with riffles and pools, creating a stream popular for both fishing and canoeing. Numerous tributaries flow into the Stillwater River including Wachusett Brook, Ball Brook, Bailey Brook, Rocky Brook, Wilder Brook, Scanlon Brook, and Houghton Brook. The Stillwater River is one of the state's 16 Recreational Natural Landscape Rivers under the Massachusetts Scenic Rivers Program. In addition, it is designated as an area of Outstanding Resource Waters (ORW). It is estimated that 10 to 15 percent of the total water yield of the DCR-DWSP system comes from the Stillwater. Although the DWSP has extensive land holdings along both banks of the Stillwater's lower reaches, most of the river's banks are in private hands.
- **Wekepeke Brook.** Flowing from the Clinton water supply reserves of Heywood Reservoir, the Wekepeke Brook extends along the northern tier of Sterling before joining the North Nashua River. Due to its high-water quality and the underlying Wekepeke Aquifer, the Wekepeke Brook and its watershed are a valuable source for water supplies. Lynde Brook, an important tributary, flows through an impoundment known as Fitch Basin and another pond known as Lynde Basin. Both of these waterbodies are held as part of the Clinton water reserves and are open to the public through a conservation restriction held by MassWildlife. A wellfield in Leominster taps the underlying aquifer across the northern border near the confluence with the North Nashua River. The Sterling Land Trust owns land along the river that extends from Pratts Junction Road west to the rail bed of the former Agricultural Branch, now operated by Conrail. Several tributaries to the Wekepeke as well as the brook itself are designated coldwater fisheries resources by MassWildlife. (*see Section 4 Fisheries and Wildlife, Wildlife Corridors*)
- **Connelly Brook** flows south from Rowley Hill Road to the Quag, passing beneath I-190. It continues south through two DCR-DWSP parcels and several privately owned parcels, including the Pandolf-Perkins Quarry until it reaches Route 12. At Route 12, it passes through a culvert onto property owned by the DCR-DWSP for the protection of the Quag.
- **South Meadow Brook** flows southeast across the farmlands where Mary Sawyer of "Mary Had a Little Lamb" fame grew up. It flows to Fitch Pond through extensive wetlands, then it crosses Chace Hill Road and continues south across Rota Springs Farm into Clinton to South Meadow Pond.
- **Waushacum Brook** flows from East Lake Waushacum, between Sterling Junction and Sterling Campgrounds, into West Boylston and its confluence with the Stillwater River. The brook is noted for its filtering wetlands.

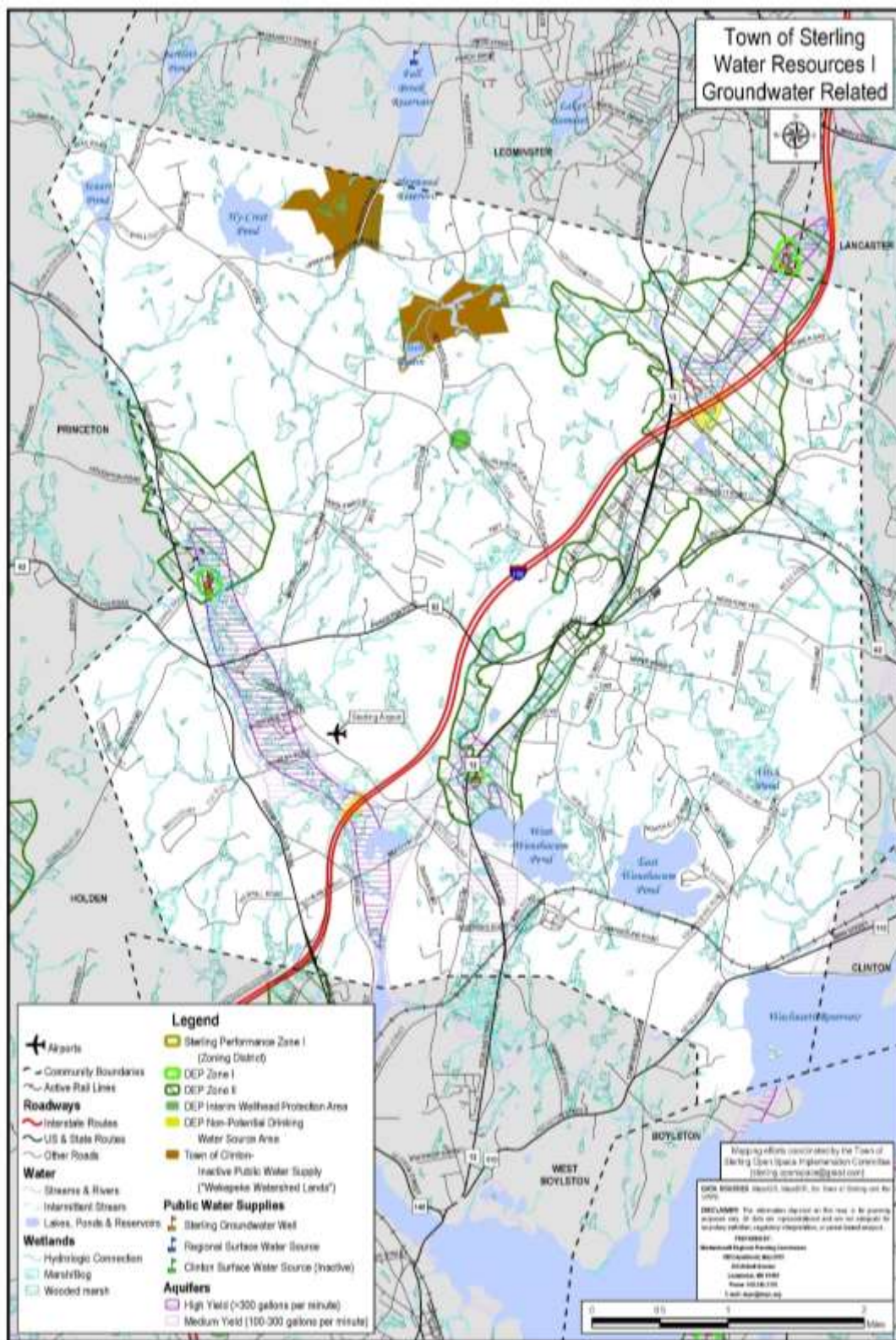
Ponds and Lakes

Sterling has 12 ponds and lakes encompassing a total of 734 acres. Several of these waterbodies serve as public water supplies and they have limited recreational uses. Table 4-1 describes the lakes and their existing and potential uses.

Table 4-1 Inventory of Ponds and Lakes in Sterling		
Sites	Acres	Current Recreational Access
East Lake Waushacum	188	Listed as a Great Pond by the state, to which the public has a right of access. Town Beach and picnic area. This popular lake is used for swimming, fishing, boating (motored and non-motored), water-skiing. Majority of shoreline is residentially developed. Non-resident passes are very limited (10) and expensive (\$300/year).
Fitch Basin	9	Town of Clinton - Old water supply system, held in reserve. Headwaters of the Wekepeke Brook, drains to Lynde Basin. Owned by the Town of Clinton with MassWildlife holding a conservation restriction. Open to passive recreation including fishing, hunting, hiking and nature observation. Prohibited: Motorized vehicles
Fitch Pond	9	Fitch Pond Association- Access to land abutting pond through conservation easement held by Sterling Land Trust. 2 parking spaces on Great Pond Way.
Heywood Reservoir	37	Clinton water supply system, held in reserve. Hiking trails surround the reservoir and connect with other trails networks. Trail brochure and info Kiosk at trailhead.
Hycrest Pond	90	Private access. Water body is owned by DCR-DWSP.
Lynde Basin	10	Clinton water supply system, held in reserve. A pond along the headwaters of the Wekepeke Brook. Open to fishing (and hunting on the lands surrounding it) and walking.
Muddy Pond	10	Also known as Sterling Peat this pond is popular with birders in the region, fishing from shore and non-motorized boats. Owned by DCR-DWSP
Quag Basin	36	Fishing, limited boating (no gasoline motors, boats no bigger than can be carried to top of a car), hiking and cross-country skiing on watershed lands, dogs on leashes. Prohibited: motorized recreation, bicycles, horseback riding, bicycle riding
Spring Basin	2	Clinton water supply system, held in reserve. Part of drainage system, fishing allowed.
Stuart Pond	4.5	A privately owned pond with informal access, used for fishing. Access is restricted to non-motorized, daytime passive recreation and is limited to a 10-foot wide strip along the shoreline measured from the mean high water mark. 93 acres of land abutting the pond is open to the public for wildlife related recreation due to a Conservation restriction held by MassWildlife.
Stump Pond	5	Wildlife habitat--osprey nesting for over 10 years. Conservation easement held on area around pond by Sterling Conservation Commission. Potential for trails, birding and other nature observation.
Wachusett Reservoir	225	DCR-DWSP water supply. Allowed uses: fishing from shore (no boats, no waders). Controlled deer hunt through DCR-DWSP on lands directly abutting the water. Prohibited: Swimming, wading, horseback riding, pets.
West Lake Waushacum	112	Listed as a Great Pond by the state, to which the public has a right of access. Controlled by DCR-DWSP. Fishing during designated season by DCR-DWSP, non-motorized boating (boats no larger than can be carried to top of a car), hiking and cross-country skiing on watershed lands, dogs on leashes. Prohibited: motorized recreation, bicycles, horseback riding, bicycle riding, ice fishing

4. Aquifers and Recharge Areas

Two broad bands of stratified glacial deposits (sand and gravel) stretch across the lowlands of Sterling, forming the Stillwater and Wekepeke Aquifers. Several streams and wetlands flow southeast toward the Wachusett Reservoir and the Nashua River Basin, following the ancient path of the glaciers, and they recharge these aquifers. The Stillwater River is the surface manifestation of a highly productive groundwater resource, the Stillwater Aquifer. The Stillwater Aquifer is estimated to be capable of yielding 2 million gallons of water per day (GPD). The water in the Stillwater Aquifer is high in iron and somewhat corrosive.



Map 4-5. Town of Sterling Water Resources I Groundwater Related

Wekepeke Aquifer is a broad band of gravelly deposits along Wekepeke Brook extending into Leominster and Lancaster. According to the USGS, the Wekepeke Aquifer can yield over two million gallons per day. The City of Leominster presently has wells in the aquifer, and the Town of Lancaster has recently done exploratory drilling for a potential water source. Testing by the state Department of Environmental Protection (DEP) has shown the water quality of the Wekepeke to be very high. Based on yield and quality information, this aquifer offers one possible future water supply for Sterling, should it prove necessary. However, in addition to the risk of quality deterioration by industrial development, the Town's landfill, which is closed and capped, is located adjacent to the aquifer.

Sterling's Aquifer and Water Resource Protection District protects the groundwater quality of the portions of the Stillwater Aquifer that have a potential well yield greater than one hundred (100) gallons per minute. It also protects all areas in the Town that are within either a delineated Zone II or are within a ½ mile radius of municipal wellheads lacking a Zone II delineation. Permitted uses are subject to special permit approval to ensure conformity with the bylaw. Noxious uses are prohibited.

5. Wetlands

Wetlands are inundated or saturated by ground water (hydrology) at a frequency and duration sufficient to support a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands are generally areas with low relief or depressions formed by glacial activity or former locations of shallow lakes and ponds. They can be flooded permanently, seasonally, or only intermittently, or they can be boggy areas that simply have soils that are saturated to the surface most of the time.⁶

Many wetland types exist along the rivers, streams, and ponds in Sterling, from vernal pools and forested wetlands to shrub swamps, bogs, and both deep and shallow marshes. Wetlands are found along the lower reaches of the Stillwater River, in the vicinity of Moore's Corner and along Wekepeke Brook in Pratt's Junction. A sizeable swamp surrounds Fitch Pond off Chace Hill Road in southeast Sterling. At the foot of Hog Hill in the southwest corner of town sits a 30-acre swamp. Other significant estimated wetland habitats delineated by MassWildlife include a wetland on Waushacum Brook near the Sterling Campground area and the Town of West Boylston and the Wekepeke drainage wetland on Flanagan Hill Road near the Lancaster town line. Numerous smaller ones exist along Houghton Brook, Rocky Brook, Connelly Brook and in the lowland spots of the hilly terrain.

To the extent that wetlands exist within protected aquifer recharge areas, the Aquifer and Water Resource Protection District in the Sterling protects them from noxious land uses. Similarly, to

⁶ Michael J. Caduto, *Pond and Brook, a Guide to Nature in Freshwater Environments*, 1990, University Press of New England.

the extent that the wetlands fall within the Flood Plain Overlay District, these areas are protected from encroachment unless a certifying engineer can show that development will not significantly alter the flow dynamics of the floodplains during major storm events.

Beyond zoning, the provisions of the Federal Clean Water Act, the Massachusetts Wetlands Protection Act (G.L. c. 131, Section 40), and the Massachusetts Rivers Protection Act, as amended in 1996, provides some protection to wetlands. The Rivers Protection Act creates a 200-foot riverfront corridor on each side of a perennial river or stream, measured from the mean annual high-water line of the river, to protect the natural integrity of rivers and to encourage and establish open space along rivers. Existing structures such as single-family homes and accessory uses are exempt from the Rivers Protection Act.⁷ Sterling does not have a wetlands bylaw.

6. Outstanding Resource Waters

Outstanding Resource Waters (ORW) are water bodies and waterways protected under state regulations due to their “outstanding socio-economic, recreational, ecological and/or aesthetic values.”⁸ The entire Stillwater River Watershed is a designated ORW due to its significance to the Wachusett Reservoir and the Sterling Wells.

D. VEGETATION

1. General Inventory

Sterling lies on the border of the Southern New England Coastal Plains and Hills and the Worcester Plateau Ecoregions. Many major rivers drain both of these ecoregions. The Southern New England Coastal Plains and Hills Ecoregion is comprised of plains with a few low hills. The Worcester Plateau Ecoregion is an area that includes the most hilly areas of the central upland of Massachusetts with a few high monadnocks and mountains.

Sterling has vegetation characteristic of Agricultural Zone 5 combined with a mix of forests, fields and orchards. Apple orchards in Sterling and its neighboring towns serve as regional recreation centers, particularly for people from Worcester, Fitchburg and Leominster who enjoy weekend outings to pick apples, stop by a local farm stand for produce and take in the fresh air. While the majority of Sterling may be classed as Zone 5 (A and B), there are areas with microclimates ranging from 4 through 6.

In Sterling, the above characteristics combine to create appealing opportunities and experiences for the outdoor enthusiast, from hikers, birders, naturalists, hikers, boaters, anglers and hunters.

⁷ Athol Master Plan 2002, Natural Resources Chapter, Montachusett Regional Planning Commission

⁸ See 314 CMR 4.00.

2. Forest Land

Some large blocks of woodlands are located in the north central part of town, and on extensive reaches of DCR-DWSP owned lands on the west and south sides of town. The Town also maintains two town forests, one in the north central part of town off Tuttle Road, the other on the western edge of town off Route 62 and Holden Road. Remaining forest lands are in private ownership. Some are listed in the Chapter 61 and 61 A programs, others are completely unprotected.

Because Sterling lies along the border of two eco-regions, its forests consist of central hardwoods with some transition hardwoods, some elm-ash-red maple and red and white pine as well as transition hardwoods and some northern hardwoods. Forested wetlands are common.

Harvard Forest digitized maps from the 1830s showing forested areas that were mandated at that time by the Massachusetts legislature.^{9 10} Sterling's map shows areas of possible Primary Forest, untilled woodlots, and wooded pastures that were forested in the 1830s.¹¹ Such lands have greater biodiversity than areas that have been tilled. These are not Old Growth, they have been harvested and pastured, but the ground may not have been tilled. DFW-NHESP GIS staff took those data and combined them with information from MassGIS's land-cover data-layer made from 1999 aerial photos. Although a great deal will have gone on in those areas in the time between the map dates, some areas that were forested in both times likely have never been tilled. The importance of primary forest is that such sites retain more native biodiversity than sites that have been tilled: soil fauna and flora, microorganisms and plants that reproduce primarily vegetatively contribute to the higher biodiversity. In addition, a variety of species of wildflowers are more common in untilled forests than previously tilled lands. Several blocks of possible primary forest mapped by NHESP in Sterling are protected through DCR-DWSP ownership or the Wekepeke Wildlife Conservation Easement.

Priority Natural Community--MassWildlife's NHES Program has identified one Priority Natural Community in Sterling, the Acidic Shrub Fen. This Natural Community is ranked as Vulnerable (S3) meaning that it is a habitat vulnerable to extirpation from the state. This habitat has a restricted range, with relatively few statewide occurrences (often 80 or fewer), limited acreage, or miles of stream, recent and widespread declines.. Exemplary occurrences of two more common natural communities have also been documented in Sterling: the Shrub Swamp and White Pine-Oak Forest. Fact sheets on these natural communities can be found at MassWildlife's website: <https://www.mass.gov/service-details/natural-community-fact-sheets>. Natural communities are groups of plant and animal species that share a common environment and occur

⁹ See <http://harvardforest.fas.harvard.edu/data/p01/hfo14/1830readme.html>

¹⁰ Hall, B., G. Motzkin, D. R. Foster, M. Syfert, and J. Burk. "Three hundred years of forest and land-use change in Massachusetts, USA," 2002, *Journal of Biogeography* 129: 1319-1135.

¹¹ Harvard Forest. 2002. 1830 Map Project. Harvard Forest Archives, Petersham, MA.

together repeatedly on the landscape. *BioMap2* gives conservation priority to natural communities with limited distribution and to the best examples of more common types. The described Natural Communities are not regulated by any law or regulations, but they can help to identify ecologically important areas that are worthy of protection.

BioMap2, produced by MassWildlife's Natural Heritage and Endangered Species Program (DFW-NHESP), identifies core terrestrial and aquatic areas most crucial to protecting the State's wildlife and plant diversity. BioMap2 also identifies Critical Natural Landscape areas that safeguard the Core Habitat. The conservation status of the Core Habitats and Critical Natural Landscapes identified in Sterling is positive as evidenced by information provided by MassWildlife in January of 2017.

The DCR's Division of Water Supply Protection is the largest landowner in Sterling, (5,533 acres, Feb 2019) and much of the land is forested though there are tracts of fields and shrublands. These lands are part of what is referred to as Wachusett Watershed Lands which are found in Sterling and surrounding towns. The following information is from DCR's 2017 Land Management Plan and relates to all Wachusett lands, not just the land in Sterling. The history of forest management at Wachusett began in the early 1900's earlier. About 4,000 acres of land outside the reservoir were initially taken for protection, and pine plantations were established on a little more than 1,000 acres. Most of the DWSP-owned forest at Wachusett today grows on lands purchased since the mid- 1980s. The forestry history of these newer lands varied at the time of acquisition from completely unmanaged to heavily cut over. Since active harvesting silviculture re-started in 1979, foresters have conducted over 250 regular operations, covering over 8,300 acres, that have included cordwood thinnings, plantation removals, and regeneration harvests. In addition, a number of salvage operations following large wind events, fires, and insect infestations (primarily gypsy moth) have occurred on a total of 472 acres.

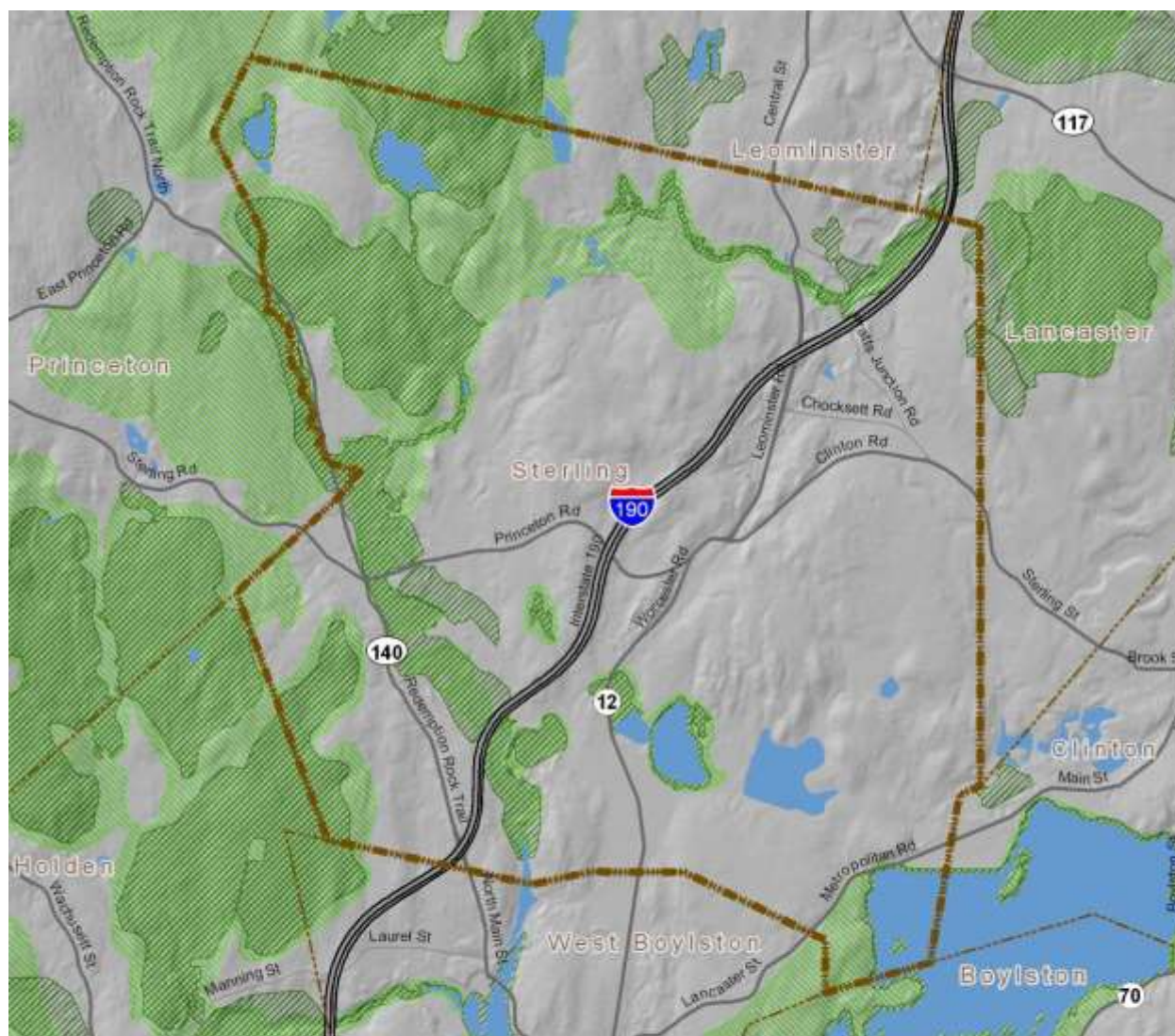
Forest regeneration is important for water quality protection. Concern about overbrowsing by deer in forested habitat led DCR WSP to conduct vegetation and pellet surveys on both hunted and non-hunttable DCR Watershed Lands. High deer densities were detected on the lands directly adjacent to the reservoir as well as the surrounding area which had been closed to any hunting. In 2018, DCR opened previously non-hunttable lands in Sterling (south and east of Rte 190) and other Wachusett Watershed towns (~7000 acres) to hunting. A controlled deer hunt on lands in Sterling directly abutting the Wachusett Reservoir was also initiated to address high deer densities.

Public Shade Trees -- Sterling is a well forested town, providing shade for many residences. To promote shade trees, the Planning Board reviews subdivision plans to assess how many trees will be cut in the development process. If a number of trees are to be cut, the Planning Board requires the developer to plant shade trees every 40 feet (plus or minus, depending on driveway locations.) Sterling has a Scenic Road bylaw to protect shade trees. Also, a bylaw in town

requires that when a homeowner wishes to cut a tree on the Town right-of-way, a hearing will be held not only with the Tree Warden who is the Highway Superintendent but also with members of the Planning Board with all of them having a vote in the matter.

3. Rare, Threatened and Endangered Plants

A comprehensive botanical survey of all types of plants in Sterling would be useful. A 2011 publication "Massachusetts Vascular Plants: A County Checklist" is available from MassWildlife which would provide information relevant to Sterling. The County Checklist provides current names for 3,293 native and introduced vascular plants and recognized but unnamed hybrids, found currently or historically in the Commonwealth. Distributions indicate whether a species is considered native or introduced in the county.



Map 4-6. BioMap2 Core Habitat and Critical Natural Landscape

MassWildlife's NHES Program has documented occurrences of the following plants under the Massachusetts Endangered Species Act (MESA) in Sterling. (Letter to OSIC, January, 2017)

Table 4-2. Endangered Plants Occurring in Sterling

Alternate-flowered Water-milfoil	<i>Myriophyllum alterniflorum</i>	E
Terete Arrowhead	<i>Sagittaria teres</i>	SC
Algae-like Pondweed	<i>Potamogeton confervoides</i>	T
<i>E= Endangered T= Threatened SC=Special Concern</i>		

MassWildlife also maintains a [Plant Watch List](#), an unofficial, non-regulatory list of plants of known or suspected conservation concern that NHESP is interested in tracking. In a 2019 communication from Karro Frost, MassWildlife Botanist, two plant species from the Plant Watch List have been documented in Sterling:

Table 4-3. Watch List Plants--Sterling

Water Marigold	<i>Bidens beckii</i>	Last observed in 2006
Large Whorled Pogonia	<i>Isotria verticillata</i>	Last observed in 2003

4. Invasive Non-Native Plants

In 2008, OSIC committee members conducted an informal survey of easily observable and identifiable invasive plants. No other known surveys have occurred since that time. The results are summarized below:

- Autumn Olive *Elaeagnus umbellata* is wide-spread along the I-190 corridor and adjacent areas as well as in the Muddy Pond, Hog Hill and the industrial zoned area near Rte 12 and I-190.
- Multiflora Rose *Rosa multiflora* is found in abandoned or fallow pasture lands, but also in abandoned orchards, roadsides, adhering to mature trees, and in successional woods. While it is found in all parts of town and in large numbers, it seems to be most destructive to the character of abandoned or fallow pastures and orchards.
- Purple Loosestrife *Lythrum salicaria* L. is widespread in all areas of the town, clustered in wetlands but also found in meadows and along season-al stream margins.
- Oriental Bittersweet *Celastrus orbiculatus* Thunb. found all over Sterling forest edges, woodlands, hedge-rows, and early successional fields. In addition, large populations are found in abandoned orchards.
- Common Reed *Phragmites australis* This plant is found across Sterling. Stands have been noted in drainage ponds and other disturbed areas in the area of the Rte I -190 corridor.

MassWildlife encouraged the town to assess its conservation areas for the presence of invasive species and if present in considerable numbers or many areas consider removing them. In 2016, MassWildlife initiated a wildlife habitat management grant program that funds such activities for

both municipal and private owners of conserved lands. A "Guide to Invasive Plants in Massachusetts" published by MassWildlife aids in identification of 66 plant species recognized Invasive, Likely Invasive, or Potentially Invasive in Massachusetts. Importation, propagation and sale of these plants is regulated by the Massachusetts Department of Agricultural Resources. (See Appendix D)

E. FISHERIES AND WILDLIFE

1. Inventory

For purposes of this Plan Update, wildlife includes fish, mammals, birds, reptiles, amphibians, and invertebrates. Sterling hosts a wide variety of wildlife including some state-listed rare and endangered species. No comprehensive surveys of all types of wildlife has been done in the town, but county lists of reptiles, amphibians, and mammals from the Massachusetts Division of Fisheries and Wildlife (MassWildlife) document species most likely to be found in Sterling. The Forbush Bird Club (FBC), based in Worcester County has for decades published "The Chickadee" an annual compilation of Worcester County bird sightings. Popular areas in Sterling attracting birders include Muddy Pond and Sterling Peat near Rte 190, East and West Waushacum Lake, North Dike on Wachusett Reservoir and the agricultural fields on Redstone Hill.

Bear sightings (and bear damage reports to beehives and chicken coops) are becoming more prevalent. Deer numbers and damage to landscaping and forests is on the rise. In 2018, after vegetation and pellet surveys indicated noticeable damage to the forest, the DCR's Division of Water Supply Protection opened properties east and south of Rte I-190 in Sterling and other Wachusett Watershed towns to hunting. A controlled deer hunt on lands in Sterling directly abutting the Wachusett Reservoir was also initiated to reduce the impacts of deer browsing to a level that allows and promotes the development of a healthy, resilient, diverse forest that can adequately and continues to protect water quality.

Fish Inventory — Between 2009-2017 warmwater and coldwater fish surveys have been conducted on streams and ponds in Sterling primarily by MassWildlife but also by fisheries biologists with DCR's DWSP. The surveyed waterbodies included both West and East Lake Waushacum, Stillwater River, Ball Brook, Wekepeke Brook, East Wachusett Brook and some un-named streams.

Fish Species Documented by Masswildlife (2009 -2017)
(Wachusett Reservoir Excluded)

Table 4-4. Cold Water Fish Species--Sterling

Longnose Dace, <i>Rhinichthys cataractae</i>
Eastern Brook Trout, <i>Salvelinus fontinalis</i>
Landlocked Salmon, <i>Salmo salar</i>

Table 4-5. Warm Water Fish Species--Sterling

Banded Killifish, <i>Fundulus diaphanus</i>	Largemouth Bass, <i>Micropterus salmoides</i>
Black Crappie, <i>Pomoxis nigromaculatus</i>	Pumpkinseed, <i>Lepomis gibbosus</i>
Blacknose Dace, <i>Rhinichthys atratulus</i>	Redfin Pickerel, <i>Esox americanus americanus</i>
Bluegill, <i>Lepomis macrochirus</i>	Rock Bass, <i>Ambloplites rupestris</i>
Brown Bullhead, <i>Ameiurus nebulosus</i>	Smallmouth bass, <i>Micropterus dolomieu</i>
Chain Pickerel, <i>Esox niger</i>	Tessellated Darter, <i>Etheostoma olmstedii</i>
Common Shiner, <i>Luxilus cornutus</i>	White Sucker, <i>Catostomus commersoni</i>
Fallfish, <i>Semotilus corporalis</i>	White Perch, <i>Morone americana</i>
Golden Shiner, <i>Notemigonus crysoleucas</i>	Yellow Bullhead, <i>Ameiurus natalis</i>
Rock Bass, <i>Ambloplites rupestris</i>	Yellow Perch, <i>Perca flavescens</i>

Wachusett Reservoir Fishery --The Wachusett Reservoir and the land surrounding it is managed to protect water quality, enhance the ecological integrity and ensure the future protection of these valuable natural resources from pollution, encroachment and environmentally damaging public use. Fishing is allowed with restrictions at the Wachusett. Though only a small portion of the Reservoir proper is in Sterling, near the North Dike, shore fishing from that area is popular. The list of fish species below is from fisheries work by DCR and MassWildlife including creel surveys, electro-shocking, and general observation. (DCR-Joy Trahan-Liptak, March 2019)

Table 4-6. Wachusett Reservoir Fish Species

Largemouth Bass, <i>Micropterus salmoides</i>	Yellow Perch, <i>Perca flavescens</i>
Smallmouth Bass, <i>Micropterus dolomieu</i>	Chain Pickerel, <i>Esox niger</i>
Rock Bass, <i>Ambloplites rupestris</i>	Pumpkinseed, <i>Lepomis gibbosus</i>
Brown Bullhead, <i>Ameiurus nebulosus</i>	Landlocked Salmon, <i>Salmo salar</i>
Yellow Bullhead, <i>Ameiurus natalis</i>	Rainbow Smelt, <i>Osmerus mordax</i>
Bluegill, <i>Lepomis macrochirus</i>	Brook Trout, <i>Salvelinus fontinalis</i>
Black Crappie, <i>Pomoxis nigromaculatus</i>	Brown Trout, <i>Salmo trutta</i>
Tessellated Darter, <i>Etheostoma olmstedii</i>	Lake Trout, <i>Salvelinus namaycush</i>
Banded Killifish, <i>Fundulus diaphanus</i>	Rainbow Trout, <i>Oncorhynchus mykiss</i>
White Perch, <i>Morone americana</i>	White Sucker, <i>Catostomas commersoni</i>

2. Vernal Pools

According to a letter sent in 2017 to the Sterling OSIC by MassWildlife's Natural Heritage and Endangered Species Program there are now 23 Certified Vernal Pools (22 in 2007) in Sterling. There are 128 Potential Vernal Pools (PVP) which have been identified from aerial photographs, but need verification/certification on the ground. MassWildlife's NHES Program encourages the town to verify and certify vernal pools on any town owned lands and to require developers to verify and certify PVPs on any property as part of its permitting procedures.

A vernal pool is a seasonal wetland contained in a depression lacking a permanent above ground inlet or outlet that appears when the water table rises in the fall and winter, when the snow melts in the late winter and early spring and with runoff from rain. The water lasts for a few months in the spring and early summer before drying up completely. Vernal pools range in size but are generally shallow (about 3-4 feet deep) and can be found in low areas of a forest, in a floodplain or a river or stream, within a vegetated wetland, in an open field, in abandoned quarries or natural rock formations and other areas where water might pool. Though periodic drying does not support fish populations, many other creatures have adapted their life cycles to this special type of wetland. Wood frogs, mole salamanders, and fairy shrimp are dependent (obligate) upon the pools for their survival. The presence of these organisms are a prime indicator that vernal pools exist nearby. Fairy shrimp depend on vernal pools throughout their life cycle.

3. Corridors and Large Undeveloped Areas for Wildlife Movement

Streams and rivers are natural wildlife corridors for some kinds of aquatic and terrestrial wildlife. The most dramatic example of such a wildlife corridor in Sterling is the protected lands of the Stillwater River sub-basin that extends through both Sterling and Princeton. Wild trout or coldwater stream habitats are generally considered uncommon in the central part of the state, but Sterling has number of streams with native trout and other coldwater dependent fish populations.

Surveys conducted since 2002 by MassWildlife intended to identify coldwater fisheries habitats known as Coldwater Fisheries Resources (CFRs). The following brooks and streams contain CFR designated reaches.

Table 4-7. Designated Coldwater Fisheries -- Sterling	
Ball Brook	Scanlon Brook
East Wachusett Brook	South Meadow Brook
Goodridge Brook	Steam Mill Brook
Lynde Brook	Wekepeke Brook
Rocky Brook	(<i>MassWildlife 2018</i>)

Additional CFRs in un-named streams were identified in the following locations:

- A brook in the southwest corner of town; a tributary to Wekepeke Brook, following north parallel to Rte. 12;
- A brook draining from South Meadow Pond originating near Redstone Hill Road.

Two other streams, Goodrich Brook and an un-named tributary of South Meadow Brook, while not CFRs, drain downstream to identified CFRs in neighboring Clinton.

Core Habitats and Supporting Natural Landscape Areas

BioMap2, produced by MassWildlife's Natural Heritage and Endangered Species Program, identifies core terrestrial and aquatic areas most crucial to protecting the State's wildlife and plant diversity, through an evaluation of their extensive records of rare plants, animals, and natural communities. BioMap2 also identifies Supporting Natural Landscape areas that safeguard the Core Habitat. The information on BioMap2 is made available for conservation planning efforts through the MassGIS. (*See Appendix D*)

Sterling at a Glance--Through the lens of BioMap2

Total Area: 20,264 acres (31.7 square miles)

Open space protected in perpetuity: 6,932 acres, or 34.2% percent of total area*

- *BioMap2* Core Habitat: 3,689 acres
- *BioMap2* Core Habitat Protected: 2,837 acres or 76.9%
- *BioMap2* Critical Natural Landscape: 5,758 acres
- *BioMap2* Critical Natural Landscape Protected: 4,037 acres or 70.1%.

* Calculated using MassGIS layer "Protected and Recreational Open Space-March 2012"

BioMap2 Components

Core Habitat

- 1 Exemplary or Priority Natural Community
- 4 Forest Cores
- 14 Species of Conservation Concern Cores --1 mammal, 4 birds, 2 reptiles, 1 insect, 1 mussel, 3 plants
- 5 Wetland Cores
- 8 Aquatic Cores

Critical Natural Landscape

- 4 Landscape Blocks
- 6 Wetland Core Buffers
- 7 Aquatic Core Buffers

Some of the above areas overlap which can help prioritize land protection and management decision making. Fortunately in Sterling, a fair amount of these areas are on lands that are permanently protected from development, but there are areas that are vulnerable. Large un-fragmented conservation lands provide the best opportunities to maintain populations of wildlife and limit species loss from the Town. Land protection and management activities by towns that ties in with open space in other municipalities, and other protected open space, public or private is one way to provide important large areas that protect both rare and common wildlife and plants.

MassWildlife's NHESP also produces regulatory **Priority and Estimated Habitat maps** for use under the Wetlands Protection Act. These maps are provided to municipal Conservation Commissions, Planning Boards and Select Boards. Priority Habitat maps depict habitat for all known areas where rare species occur in the state. Estimated Habitat maps are a complete subset of Priority Habitats that focus on habitat of rare wetlands wildlife. Early planning and review of development projects under the Wetlands Protection Act regulations and Massachusetts Endangered Species Act play a very positive role in protecting rare species habitats. Town commissions and boards are encouraged to request the assistance of MassWildlife's NHES Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps. These regulatory map data layers are also available from MassGIS. 25

It's important to understand the difference between the BioMap2 maps from the Priority and Estimated Habitats. BioMap2 core areas identify areas particularly important for conservation planning purposes. Priority and Estimated Habitats are regulatory under the Massachusetts Endangered Species Act (MESA). The Priority and Estimated habitat maps are updated every five years, based on sightings and the latest scientific studies. The BioMap2 map and report is static and doesn't include the most recently identified rare species areas.

4. Rare and Other Species of Conservation Concern

Several rare wildlife and plant species are known to occur in Sterling. They include state-listed species under the Massachusetts Endangered Species Act (MESA). Additional species and

habitats most in need of conservation attention as identified in the 2016 State Wildlife Action Plan (SWAP). (Letter to OSIC, January 2017)

Table 4-8. Wildlife Species Of Conservation Concern/Interest In Sterling	
Mussels	Reptiles
Triangle Floater, <i>Alasmidonta undulata</i> , SWAP	Spotted Turtle, <i>Clemmys guttata</i> , SWAP
	Wood Turtle, <i>Glyptemys insculpta</i> , SC
Dragonflies	
Spine-crowned Clubtail, <i>Gomphus abbreviatus</i> , SC	Birds
	American Bittern, <i>Botaurus lentiginosus</i> , E
Mammals	Least Bittern, <i>Ixobrychus exilis</i> , E
Water Shrew, <i>Sorex palustris</i> , SC	Common Loon, <i>Gavia immer</i> , SC
	Bald Eagle, <i>Haliaeetus leucocephalus</i> , T
LEGEND	
E = Endangered Species under MESA, T = Threatened Species under MESA, SC = Special Concern Species under MESA, SWAP = State Wildlife Action Plan Species (non-regulatory status)	

MassWildlife's NHES Program suggested conservation action to protect land along the Wekepeke Brook which would aid in a largely unprotected Wood Turtle protection in that area. The Wood Turtle is considered at risk across New England. The population in Sterling and adjoining community in Lancaster is considered robust; conserving land on this brook would reduce serious mortalities of this long-lived reptile. (2017)

F. SCENIC LANDSCAPES

Protecting Massachusetts' scenic beauty will play an important role in the future desirability of the Commonwealth as a place to locate." The Massachusetts Landscape Inventory published in 1981 by the Department of Environmental Management (now Department of Conservation and Recreation) remarks that extensive areas of pastoral scenery are becoming rare due to development. These areas are valuable not only for scenic beauty, but for agricultural, historic and environmental qualities. Scenic landscapes play a significant role in the way Sterling residents characterize the town. Unfortunately, the loss of agricultural lands to development in the past few decades has adversely impacted Sterling's many scenic vistas.

Surveys collected from previous OSRP Updates and in 2018, have expressed a common theme focusing on the preservation and positive aspects on the quality of life of Sterling's "rural character". However, other than the Town Common, respondents identified few specific places or vistas, but rather expressed an overall desire to preserve the rural character and limit development.

Sterling is primarily noted in the Landscape Inventory as the Sterling Unit, though a portion of Sterling is also found in the Upper Nashua Valley Unit as well. Within these two inventoried

Units, several geographic areas qualified as either "Distinctive" or "Noteworthy" features. The Sterling Unit, beginning in the northwestern portion of town, identified several distinctive features. All these areas feature open fields and pastures as well as views of the Wachusett highlands. Several areas were identified as "noteworthy." Among them are:

The lands surrounding Justice Hill and Stuart Pond due to the presence of pasture and fields, the riparian zone of the Stillwater River, and some views of Wachusett Mountain.

The area that extends into Sterling from the Fallbrook Reservoir in Leominster, following the Wekepeke Brook drainage, which also features agricultural and open vistas. The water basins of the Wekepeke lands, which formerly supplied municipal water for Clinton and Lancaster.

The landscape located along Rowley Hill Rd, Osgood Road, Wilder and South Nelson Road, crossing Rte. 62 and I-190 to the landscape by the Sterling Airport, Greenland Road and its environs. (*See Unique Features Map 5*)

Much of the lands featured in the Landscape Inventory unit are protected either through ownership or conservation restriction or through town conservation or agricultural protections. One agricultural restriction area is located on Tuttle Road. Another agricultural restriction protects lands on Chace Hill Rd. The orchard of the town conservation property Waushacum Overlook is protected under a Agricultural Preservation Restriction. The Massachusetts Division of Fisheries & Wildlife holds a conservation restriction on land adjacent to Stuart Pond. Within the Upper Nashua Valley Unit, Sterling has other areas designated as either noteworthy or distinctive. These include:

The land area and wetland around the landlocked Fitch Pond, near the junction of Kendall Hill Rd and Chace Hill Rd, is deemed "Noteworthy", but most of this land has since been developed. However, Fitch Pond still receives relatively pristine small drainage from Kendall and Redstone Hill, and has two outlets; one emptying into East Lake Waushacum Lake and the other flowing eastward toward South Meadow Pond.

1. Cultural, Archeological, and Historic Areas

Sterling is rich in historic sites that testify to its colonial origins and extending through its economic success during the age of the railroad. The Town has a Historic District listed on the National Register of Historic Places, and two more districts, Pottery Village and Sterling Campgrounds that could potentially be listed due to their unique historic significance. Considerable archaeological evidence of Indian encampments predating the European discovery of the continent indicates that Native Americans in significant numbers inhabited the town for thousands of years. The oldest site is on Swett Hill, where projectile points 9,000 years old have been found. Finally, a 2001 Farm Survey commissioned by the Historic Commission documented the historical significance of 57 farms and the importance of agriculture in the town.

Historic Sites

In 1995, the Sterling Historical Commission developed a tour and guidebook of historic sites of the Town. The sites portray the rich pre- and post-colonial history of the Town, as well as its development to a small manufacturing community and resort destination in the 1800s with the advent of the railroad.

Sterling Historic District

In 1991 the Sterling Historical Commission created a Historic District in the center of town to highlight the old village center. The district is listed in the National Register of Historic Places as a Local Historic District, commencing April 14, 1988. The district is roughly bounded by Main, Maple, Pine, School, and Bird Streets, Meeting House Hill, Princeton, Worcester, Newell Hill, and Houghton Roads. The Sterling Historical Society created a walking tour map past many historic sites, including the Josiah Levitt House (ca. 1778), the Moses Smith House/Shop (ca. 1788), the old Town Hall (1835), the First Church of Sterling (ca. 1843), the Sterling Library (ca. 1885), and the Town Common, which features a “Mary Had a Little Lamb” statue to commemorate the famous poem inspired by a young Sterling native, Mary Sawyer.

Historic Farms

In August of 2001, the Sterling Historical Commission completed a survey of historic farmsteads in Sterling. The intensive project was funded with a Survey and Planning Grant from the Massachusetts Historical Commission (MHC) and matching Town funds. The survey was tailored to document surviving farmstead complexes to prepare for a community-wide preservation plan. The project established the historical context of the agricultural properties, and their eligibility for nomination to the National Register of Historic Places.

The 57 farms surveyed were categorized as individual properties or farm areas depending upon the amount of historic resources found at each property. Ten individual properties were found to be eligible for listing on the National Register of Historic Places. Some of the individual properties may also be eligible as part of a district. Most of the farms are now inactive and many of the barns and outbuildings in Sterling are deteriorating, and the written and photographic record may eventually be all that remains of the agricultural architecture.

These beautiful farmsteads are a primary element of the prized rural character of Sterling. Often these landscapes overlap with the important water resources of the Town. Efforts to preserve the historic value of these properties should be complemented with similar efforts to protect the landscapes they rest upon.

Archeological Sites

The waning of the Ice Age left three lakes, East and West Lakes Waushacum and Fitch Pond; and numerous ponds and streams such as the Stillwater River, the Wekepeke Brook and their

tributaries. For thousands of years before the arrival of the Europeans, an indigenous people inhabited the area around these freshwater ponds and streams. They left behind many artifacts that reveal the ancient history of the town, which can still be found today. The artifacts offer evidence of four periods of ancient indigenous occupation of the Sterling land area. The Sterling Historical Society has many fine artifacts dating to these periods in its collection.

- The oldest habitation sites include the hilltops surrounding the lakes, Swett Hill, Kendall Hill and Newell Hill. The three oldest projectile points found in Sterling, were discovered by Maryanne MacLeod on these hills. Approximately 9,000 years old, these points belong to a period known in archaeology as *Early Archaic*, dates from 10,000 to 8,000 years ago.
- The *Middle Archaic Period*, 8,000 to 6,000 B.C., is represented by a large increase in native population with an accompanying greater number of sites. These include the lands around the Waushacum Lakes, Sterling Center, the Chace Hill Rd, Flanagan Hill Rd., Albright Rd., and the Stillwater River drainage. Artifacts typical of this time include woodworking tools, such as adzes and axes, and projectile points made from local stone, such as Sterling argillite and quartz.
- The *Late Archaic*, 6,000 to 1,700 BC, and the *Terminal Archaic*, 1,700 to 700 BC are well represented in Sterling's ancient history. The Historical Society houses many drills, knives, scrapers, pestles and mortars from this time period in its collection. Known site areas include all sites previously mentioned. Burial sites, believed to date to this period, have also been discovered. Two of them, on Kendall Hill and on Flanagan Hill, were destroyed by development, despite attempts to save them. A third site on Campground Rd. still remains and it is hoped that this one will be preserved.
- The *Early Woodland* (700 BC to 200 BC) and the *Middle Woodland* (200 BC to 500 AD) Periods were times of great change for the indigenous people. Pottery and agriculture were introduced. By the Late Woodland Period (500 AD to 1,500 AD) there were many agricultural sites in Sterling. Cornfields covered much of the plains extending from Sterling center to the West Boylston town line and the flat lands along Route 62 to the Lancaster town line. Fewer artifacts from these periods have been found in Sterling, but this is true of southern New England as a whole.

2. Unique Environments and Recreational Assets

Scenic Vistas/Scenic Roads. Sterling is blessed with many rural roads that offer scenic vistas of its historic farmlands and pastures, barns and farmhouses. In the highlands of the town, these roads offer longer-range views of the surrounding valleys and nearby hills of neighboring towns, most notably, Wachusett Mountain. The best view of the mountain is afforded from Muddy Pond Road, not far from Chocksett School. Here, open fields and the peat bogs lie in the floodplain lands of the Stillwater River. Across from this area, on the north side of I-190, the Sterling Airport takes advantage of the extensive lowlands for its runways. (*See Unique Features Map 5*)

The Waushacum Lakes. These beautiful lakes in the southern part of town offer attractive scenery and some wonderful opportunities for fishing. West Waushacum Lake is stocked with trout by the state. At East Lake Waushacum the Town beach at Sholan Park affords local residents a range of summer recreational activities including swimming, sunbathing, volleyball, basketball, picnicking, fishing and boating.

The Sterling Rail Trail. The non-profit Wachusett Greenways is leading efforts to develop the abandoned rail bed of the Fitchburg and Worcester Railway into a pedestrian rail trail currently referred to as the Sterling Rail Trail. Wachusett Greenways has completed a critical trail section between the Sterling Cider Mill across a bridge at the causeway between the Quag and West Waushacum Pond, to Gates Road. The bridge at the causeway was reconstructed from two surplus pedestrian bridges left over from Boston's "Big Dig". The completed trail section, comprised of compacted stone dust, is primarily under the control of the DCR-DWSP except for the cider mill section which is private property.

There is a plan to extend the trail northerly just east of Route 12 to the Chocksett Road vicinity through lands owned by the Town of Sterling immediately west of Oak Hill Cemetery, onto a pending Wachusett Greenways easement through industrially-zoned lands ultimately leading to Chocksett Road.¹² The interim northern endpoint of the trail is expected to be in the vicinity of Chocksett Road just south of the Exit 6 interchange of I-190 and Route 12 and the Sterling Police Station. The trail will also diverge from the rail bed in that vicinity since the historic rail bed follows the current path of Route 12 at that point. Full trail development through the privately-owned easement is expected to take a period of 5 to 10 years and is partially dependent on the development of a proposed industrial park. In particular, the Town of Sterling and MassDOT provided safe pedestrian passage as part of the redesign of the Chocksett Road¹³ and Route 12 intersection. In 2018, a roundabout was constructed at that intersection as well as by the junction of the Rte 12 Rte I 190 Interchange. Bike and sidewalks were part of the design. Residents of Patriot Crossing near the Chocksett Rd area have been seen utilizing the walkways for exercise and access to a nearby local ice cream stand and mini-golf business. Further

¹² The pending easement is intended to pass through privately owned parcels which are slated for light industrial development. The landowners agreed to extend this easement to Wachusett Greenways contingent on the Town of Sterling's willingness to rezone the property to Light Industrial Use. The rezoning took place at the May 14, 2007 Annual Town Meeting.

¹³ Chocksett Road is a state-owned "cutoff" which connects the Exit 6 interchange to Route 62, Leominster and Clinton.

extension of the trail along the I-190 corridor is of interest and may include lands within the Town of Lancaster and City of Leominster.

G. ENVIRONMENTAL CHALLENGES

Though many people view Sterling as a relatively rural community, the town is host to a number of small businesses, farms, light industrial companies, airport, as well as mining and soil production operations. A major north-south connecting interstate highway Rte I-190 cuts across Sterling. The town's geographic location as well as the rural atmosphere attracts residential development (contributing to an ever-increasing network of roads), and the presence of a major drinking water supply and all of its attendant land use restrictions combine to provide some significant environmental challenges.

1. Water Resources

According to Sterling's DPW Director, the most significant water resource challenges in Sterling are:

- Water conservation and educating residents about conservation;
- The Water Withdrawal Permit from DEP. Even though Sterling is growing, the DEP expects permit holders to meet the growth through conservation efforts, not by increasing the withdrawal limits;
- Aging asbestos/concrete water mains in many of the older areas in town.
- Another source of water for the town.

Wekepeke Aquifer at Risk: Sterling's Industrial Zone overlaps with a high-quality Water Resource Protection Zone near Leominster town line. Further development could jeopardize groundwater quality and quantity which may affect not only Sterling residents as well as Leominster which draws groundwater from the area.

Vernal Pool Certification: There are 128 Potential Vernal Pools (PVP) which have been identified from aerial photographs, but need verification/certification on the ground.

MassWildlife's NHES Program encourages the town to verify and certify vernal pools on any town owned lands and to require developers to verify and certify PVPs on any property as part of its permitting procedures.

2. Invasive Species

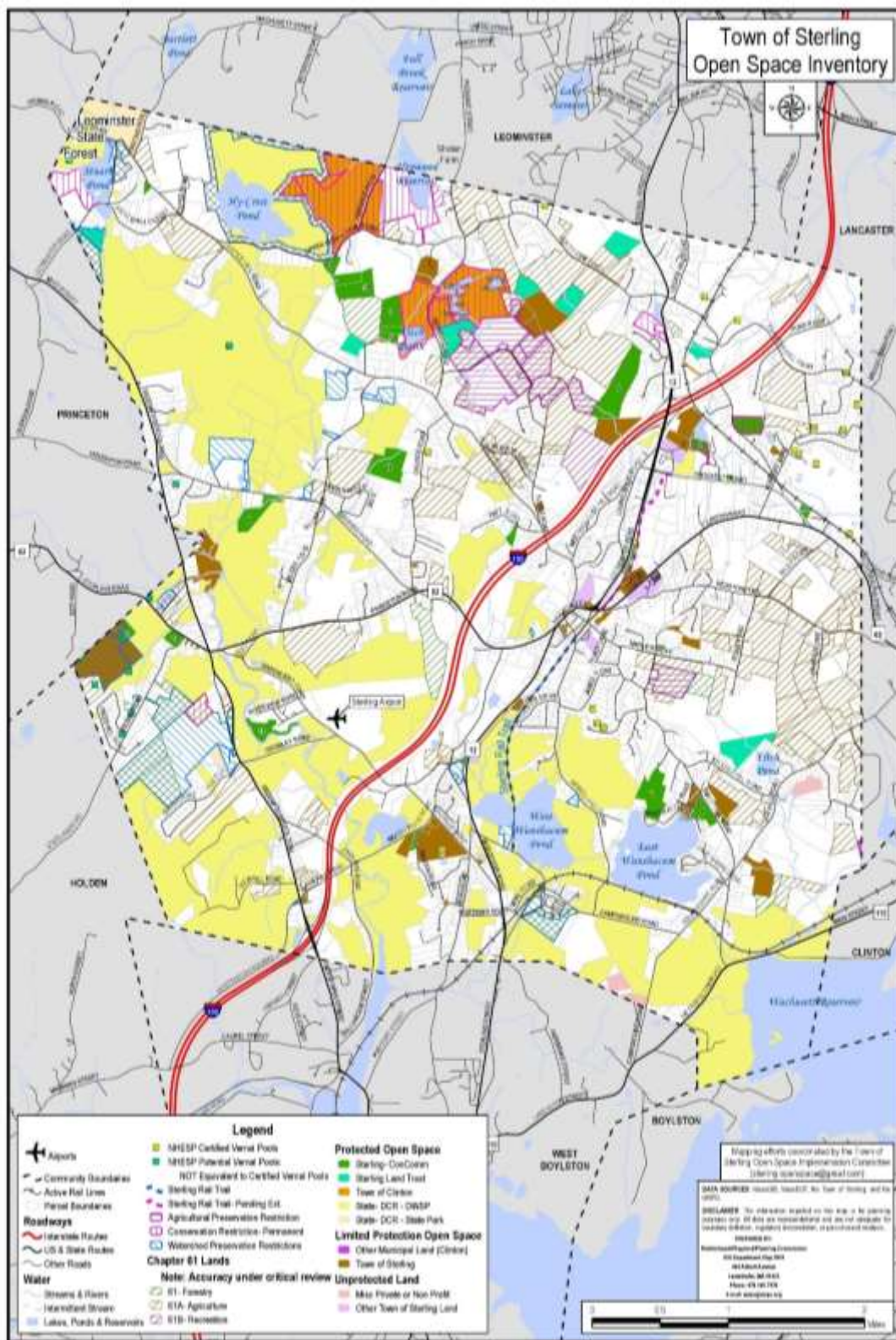
Hydrilla, a highly invasive exotic aquatic plant was discovered in the neighboring community of Clinton's waterways prior to the 2010 OSRP Update. It is imperative that water-based recreationists clean their gear, boats and other equipment before entering a different body of water.

Asian Long-horned Beetle: The year 2018 marked the 10th anniversary of the discovery of the Asian Long-horned beetle. Sterling has so far been fortunate in that no ALB infestations have been found in traps set up in town. However, neighboring West Boylston is within the Regulated area due to infestations. Far fewer infested trees have been found in recent years within the Regulated area and it is hoped that eradication will be possible over the next few years. Citizens need to be alert and report any possible ALB infestation evidence to DCR, MDAR or USDA-APHIS.

East Lake Waushacum -- Currently (2018) a committee is working on improvements at Sholan Park and the Town Beach. These improvements will include: overhaul of the drainage system to improve water quality and property erosion, The Town and East Lake Waushacum have been paying for alum treatment on a regulation to deal with weed issues. Concerns about cyanobacteria have also been expressed.

SECTION 5 – INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

The rural character of Sterling appeals to residents and visitors alike, as evidenced by information from public surveys for past Open Space Plans as well as this current Plan. Sterling residents express concern for the preservation of the rural character of the town. The vast majority of large blocks of permanently protected open space owned either by the state or the town are located north and west of Rte 12; while a disproportionate area on the east side of town, closer to Clinton and Lancaster lacks permanent protection for much of the open space. Community-based land protection measures offer means to protect properties exemplifying this rural character as well as to protect valuable water resources from pollution and urban encroachment. (*Map 5-1. Town of Sterling Open Space Inventory*)



Map 5-1. Town of Sterling Open Space Inventory

Sterling encompasses a land area of 30.53 sq miles, or 19,539 acres, of land; and it has 808 acres of water. Of this land, a total of 6,700 acres (approximately 34%) is permanently protected open space. Of this substantial percentage, the Department of Conservation and Recreation Division of Water Supply Protection (DCR-DWSP) owns or holds in Watershed Protection Restriction (WPR) just over 5,500 acres (27% of Sterling's land base), the result of over three decades of concerted open space acquisition effort to protect the water quality of Wachusett Reservoir. Much of Sterling's present rural character is, for the most part, a by-product of the effort to protect drinking water. Most of the DCR land is in the Stillwater drainage basin and does not go beyond what DCR designates as the Wachusett watershed boundary (roughly west of Rte. 12 for most of its land holdings in town). The DCR-DWSP lands are the most restrictive on recreation access, depending on the location of the property in question. This situation causes confusion, frustration, and concern for both citizens and visitors to the area.

Another state agency, the Division of Fisheries and Wildlife holds a Conservation Restriction of 93 acres on Stuart Pond in the northwestern part of town and a Conservation Restriction on the (Clinton Water Works) Wekepeke properties protecting another 487.4 acres north of North Row Rd and bordering Leominster water supply land. This property is open to passive recreation and non-motorized boating. Motorized vehicles are prohibited.

Finally, the MA Department of Agricultural Resources holds two (2) Agricultural Protection Restrictions, with the Allen properties off Tuttle Road and the Philbin Orchards off of Chamberlain Road. This APR provides permanent protection for the land solely for agricultural purposes. Public access is not allowed without landowner permission.

The Town of Sterling owns 424.6 acres of protected open space (nearly 2 % of the total land area) comprised of Conservation Commission and Town Forest holdings. Town held conservation restrictions protect at least 31.8 additional acres. (1 parcel is jointly holding of 37.6 with the Sterling Land Trust.)

The Sterling Land Trust owns just over 144 acres in fee and holds additional lands (69.4 acres) through conservation restrictions for a total of just over 200 acres. The conservation restrictions do not allow for public access without landowner permission.

Much of the permanently protected Town Conservation Commission, Town Forest and Sterling Land Trust property is open to some form of recreation, most of which is limited to passive recreation (non-motorized) activities. The 2011 Open Space Plan noted little information was available to citizens regarding recreation activities on town-owned forest and conservation lands. Since then, OSIC has produced "Sterling Trails" brochures indicating hiking opportunities on a variety of publicly open, accessible land. Several kiosks have been constructed and placed at the Butterick, Heywood and Wekepeke trailheads with information about the property and trail.

Five of the eight brochures are currently posted on the Town website, and all brochures have been placed for pick up at the library, senior center and on occasion at the Recreation Department office. In 2018, a staffed table at the Sterling Fair included trail brochures and an attractive seasonal display was set up in the town library. Trail brochures are very popular, with several reprints occurring within a year to keep up with demand.

According to the Sterling Recreation Department, geographically, developed recreational facilities in town are somewhat unevenly distributed throughout the town. A large block of developed recreation facilities and adjacent undeveloped open space is located around and between Boutelle, Muddy Pond and Griffin Roads, encompassing school playgrounds and ball fields; multiple town ball and soccer fields, walking track, marked fitness trail, football field, new playground facility for young children, and a refurbished pond with a walking path and benches. This large area also abuts protected DCR-DWSP land along the Stillwater River and Muddy Pond. Muddy Pond is also popular for birdwatching, some fishing and other nature observation. Downhill from Muddy Pond is the Stillwater River, another popular fishing area. With abutting elementary and middle school and new senior center located in this area, an excellent opportunity is available for intergenerational programming regarding recreation and environmental education.

In West Sterling, another multi-purpose recreation facility consists of two ball fields, a tennis court, basketball court, and playground. The tennis court has also served as a pickleball court, a very recent addition to programming. Tennis and basketball courts are currently in very poor condition and a group of users have been working on a plan to restore these facilities with support from a variety of town boards and committees. This property is currently (by deed) under the jurisdiction of the Conservation Commission.

Memorial Park is located off Cross Street in the town center with a gazebo and open grassy area. Most often used for concerts, in the past it housed an ice skating rink in winter.

Off Hall Road is Sholan Park, which includes the town beach and boat ramp on East Lake Waushacum. Sholan Park contains picnic areas, bathhouses, a basketball court, and a volleyball court, and the beach parking lot is utilized heavily (and not available for other beach visitors) in the summer for the Recreation Summer Camp. Abutting conservation land that stretches up to Swett Hill Road to a newer parcel of Con Comm land, Mudgett Orchard as well as nearby Overlook Property offers an opportunity for trail linkages and environmental education programming.

The town website offers well described information about town Recreation Department opportunities and programming. Local newspapers readily publicize activities offered by the Recreation Department and a sign in front of the 1835 Town Hall posts important recreation reminders. The Recreation Department also advertises offerings on a Facebook account and has now instituted electronic registration for its programs.

The tables that follow list the parcels of land that are of conservation or recreation interest to the residents of Sterling by protection status (permanent, limited, temporary, or unprotected) and by public and private ownership (and illustrated on the *Open Space Inventory Map*). 3 The information is the best available, although OSIC has identified a few discrepancies in the assessor's records that remain unresolved as of this writing.

Table 5-1: Acreage of Open Space in Sterling by Level of Protection		Area in Acres
Land Permanently Protected from Development		
Department of Fish and Game, Division of Fisheries & Wildlife Land Owned in Fee		93.0
Department of Fish and Game, Division of Fisheries & Wildlife Conservation Restrictions (w/Town of Clinton Waterworks Land owned in fee)		487.4
DCR-DWSP Lands Owned in Fee		4985
DCR-DWSP Watershed Protection Restr.		552.2
DSR-Leominster State Forest		63.0
Sterling Conservation Commission Lands Owned in Fee		303.3
Sterling Conservation Commission Conservation Restrictions		29.4
Sterling Town Forest		121.3
Sterling Land Trust Lands Owned in Fee		144.0
Sterling Land Trust Con Restrictions		65.2
Agricultural Preservation Restrictions		226.1
	Subtotal	6,974.3
Land with Limited Protection from Development		
Cemetery		28.8
Sterling Active Recreation Areas		77.7
Sterling Parks for Passive Recreation		15.6
Other State Open Spaces		15.3
Other Municipal Open Spaces		172.2
	Subtotal	318.4
Land Temporarily Protected from Development		
Chapter 61 – Forestry		291.0
Chapter 61A –Agriculture		2,203.4
Chapter 61B – Recreation		60.4
	Total	2,554.8
	Total Open Space Land	9,847.5

According to the EEA Division of Conservation Services, land owned by the Town's Conservation Commission, one of the State's conservation agencies (MassWildlife or DCR-DWSP), or a nonprofit land trust (the Nature Conservancy or the Sterling Land Trust), is permanently protected, especially if the Town received State or Federal funds to purchase or improve the property. Private land is considered protected if it has a deed restriction in perpetuity, if an Agricultural Preservation Restriction (APR) has been placed on the property, or if DEP has placed a conservation restriction on it as part of the Wetlands Conservancy Program. Removing land from permanent open space protection status so that it may be developed requires an affirmative vote by two thirds of the State Legislature. In most cases, the watershed district would be required to show the Massachusetts Department of Environmental Protection just cause for converting the use of the land.

Town-owned parcels of land under the authority of the Select Board instead of the Conservation Commission has limited protection. Such parcels could serve as a open space for recreation and the environment, but still lack the long-term protection afforded to Conservation Commission lands. Without permanent protection status, and a legal restriction on uses attached to the deed, it is possible to convert town-owned parcels to school playgrounds, parking lots or other town uses, upon Town meeting approval to do so. The level of protection afforded to publicly owned parcels with limited protection depends on the policies of each community. Sterling has a total of 318.4 acres of land with limited protection, used for cemeteries, Town-sponsored active recreation, parks, and other public services. In addition, there are 15 acres of land in state ownership used for public services such as highway maintenance facilities.

Chapter 61 tax abatement programs afford parcels temporary protection. The Chapter 61 programs offer landowners a reduction of their property taxes in return for signing a contract promising that the predominant use of the land will not change during an agreed upon time (ten years for Chapter 61 and 61B, one year for Chapter 61A). The Chapter 61A program helps farmers by reducing their taxes while they farm their land. The Chapter 61 program helps lower the expenses of maintaining actively managed forestland. Landowners with parcels in the Chapter 61B program receive lower property taxes in exchange for keeping their land in recreational open space for ten years. The tax abatement programs can also provide the community an opportunity to protect land permanently. When parcels enrolled in one of the Chapter 61 programs are put up for sale, the Town has right of first refusal over the property giving the Town the opportunity to purchase the property during a one hundred and twenty (120) day waiting period.

A. PRIVATE PARCELS

1. Agricultural Properties

The Allen Properties on Heywood and Tuttle Roads are a significant agricultural resource for which the Department of Food and Agriculture has approved an Agricultural Preservation Restriction on 177 acres in the Tuttle Road area. Another MDAR APR was approved in 2008 on 35.7 acres of land on Chamberlain Road. The Conservation Commission holds an “Orchard CR” on 13.3 acres owned by the Rittenhouse family.

2. Areas of Significant Water Resources

Both the Clinton land holdings and the Wekepeke Aquifer represent significant water resources in the northern tier of Sterling. The properties owned by the town of Clinton support their reserve water supplies, and to some extent, the Division of Watershed Protection and the Conservation Commission protect these resources through their property holdings. The Wekepeke aquifer has a Zone II delineation that represents the boundaries of the Water Supply Protection Overlay

District. Stricter standards for land use apply in this district, yet the best method for protecting a water supply is to acquire the land that supports it. Wekepeke Brook and its watershed are the recharge area for the aquifer and efforts to protect these assets should include protection of land resources around the brook.

3. Priority Areas for Natural Heritage

The Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program (DFW-NHESP) has identified extensive areas in Sterling as Core and Supporting habitats for rare plants, rare animals, and natural communities, as illustrated on the State of Massachusetts BioMap2. The BioMap2 project, conducted by the DFW-NHESP, identifies those areas most crucial to protecting the State's Biodiversity, through an evaluation of their extensive records of rare plants, animals, and natural communities. The BioMap2 also includes the supporting natural landscape areas that safeguard the Core Habitat. The MassGIS distributes information contained on the BioMap2 in GIS data layers available for conservation planning efforts.

The BioMap2 prominently features Sterling as part of the Southern New England Coastal Plains and Hills geographic region. (*See Appendix D*) The Town is notable for having extensive portions of the Core and Supporting Habitats already in permanent protection. Core Habitat areas include the lands surrounding the Heywood Reservoir, the lands off of Flanagan Road and Albright Road, and uplands of the Stillwater River from the confluence of Bailey Brook and Rocky Pond Brook to the Wachusett Reservoir. Supporting habitat areas include the Southwest corner of Sterling west of Route 140, the northern tier of Sterling encompassing all of the water resource lands and the headwaters of Wekepeke Brook, and the hillsides northwest of I-190.

4. Private Recreational Lands

Davis's Farmland, Redstone Hill Road ---A seventh generation, 129-acre family farm operating as a farming-oriented recreation center aimed at children aged one to eight. They also run a large field maze, named the Mega Maze, in a field of sorghum. Visitors can encounter many species of farm animals, participate in interactive playscapes, ride ponies, take hayrides, collect eggs, milk the cows, and feed baby animals. They recently added a water spray ground featuring ground bubblers, misters, a pretend car wash, and a water tower geyser. Programming at the farm runs from April through October.

Sterling National Country Club, Albright Road ---This is a private club with an 18-hole golf course. Sterling National also has a pro shop, pool and two restaurants for members. The property sits on 243 acres, partly in Lancaster and mostly in Sterling. Weddings and other special events are also held. It is also designated as an Audubon International Cooperative Sanctuary. This facility was closed in 2009 and before the May 2010 Town Meeting, town officials had discussed the town potentially buying the course and running it as a municipal golf course and

revenue source. A Rhode Island based company that operates golf courses purchased the property and it re-opened in 2010.

Eight Point Sportsmen's Club -- A private membership-based sporting organization on Beaman Road, owns 66 acres in the Chapter 61B program dedicated to the use of hunting and fishing enthusiasts. The site features a shooting range for skeet and trap, a pond and an archery range. The DCR-WSP holds a Watershed Protection Restriction on a large portion of the club's property acquired well before 2010.

B. PUBLIC AND NONPROFIT PARCELS

1. Public, Conservation, and Recreation Resources

The inventory of protected open space in Sterling totals 6,974.3 acres, and is comprised of only that land owned by the Conservation Commission, Water Department, a state conservation agency, or a nonprofit land trust; land purchased by the town with state or federal funds; or land with a deed restriction in perpetuity or DEP Wetland Conservancy conservation restriction. (See *Open Space Inventory Map 5-1*)

In Sterling, the Department of Conservation's Division of Water Supply Protection, the Division of Fisheries and Wildlife, the Sterling Conservation Commission, and the Sterling Land Trust hold the publicly owned, permanently protected parcels. The privately held, permanently protected parcels have an Agricultural Preservation Restriction held by the MA Department of Agricultural Resources attached to their deeds.

Although Sterling agricultural landowners have generally not taken advantage of this program to date, one popular way to ensure that farmland remains in its current use is to enroll the parcel in the Agricultural Restriction Program (APR). Adopted by state legislature in 1977, the APR program ensures the permanent protection of large blocks of farmland by making it economically feasible for farmers to keep farming. Administered by the Massachusetts Department of Agriculture, this program offers farmers the difference between the "fair market value" and "agricultural value" of their land in exchange for a permanent deed restriction on the property precluding uses that may harm the agricultural viability of the land. The farmer continues to own the land and can sell it, but only for agricultural uses.

State-Owned Land

The Commonwealth of Massachusetts is the largest landowner in Sterling. Three state agencies, DCR (Divisions of Watershed Supply Protection and State Forests), MassWildlife and MassDOT own in fee or hold conservation restrictions on just over 30% of Sterling's land mass.

DCR Watershed Supply Protection Lands and Uses

The majority of acres were procured by DCR-DWSP (4985 acres) for the protection of the upland watershed of the Stillwater River, the Quag, and West Lake Waushacum, as well as the Wachusett Reservoir. The DCR-DWSP controls an additional 552.6 acres through conservation restrictions. Some portions of the DCR-DWPS properties are open to the public for passive recreation such as fishing, hiking, hunting, or bird watching; however, the DCR-DWPS restricts other activities and dogs to protect against pollution of the Stillwater River and Wachusett Reservoir watersheds.

Public access to and recreational use of drinking water supply lands and surface water supplies can serve as potential routes for the introduction of disease causing agents, so purveyors of drinking water must exercise caution when considering policies for recreation on water supply lands. The DCR-DWPS's Public Access Plan describes the public access policies, as outlined below. (Wachusett Reservoir 2011 Public Access Plan Update) Three policy boundaries govern DWSP lands in Sterling: the Intake Zone, the Reservoir Protection Zone, and the Tributary Headwaters Zone.

DCR Wachusett Watershed Public Access Protection Zones

DCR-DWSP divides the Wachusett watershed into three management zones: the Intake Protection Zone, the Reservoir Protection Zone and the Tributary Headwaters Zone.

The Intake Protection Zone provides primary protection of the water supply by prohibiting public access near reservoir intake structures. The Intake Protection Zone affects the southeastern corner of the Town, where the DCR-DWPS has a no-access policy. The boundary extends roughly from the Wachusett Reservoir, northward along South Meadow Brook to Fitch Pond near Chace Hill Road.

Noted Trends and Issues in the Intake Protection Zone relevant to Sterling include:

Fishing -- The use of lead sinkers, lead weights, and lead fishing jigs with a mass of less than 1 ounce in all inland waters of Massachusetts. Previously use of lead sinkers was limited to Wachusett and Quabbin Reservoirs, the core area of endangered Common Loons. This regulatory change took effect January 1, 2012.

West Waushacum Pond --There are no major issues in this area, but litter and trash is an ongoing problem. Outreach, education, and modified signage should be used to address this issue. New signs have been placed that include correction of the spelling of Waushacum and also list the authorized fishing season. Electric motor boats, canoes, and kayaks are allowed on West Waushacum Pond provided that all state regulations related to boating be followed. The purchase of kayaks for Ranger staff has allowed patrol of the waters and island. Prior ATV and

snowmobile use has declined due to the upgrade of the old rail line to a bicycle trail (Sterling section of Mass Central Rail Trail) and barriers that have been put in place. DCR owns a significant portion of this rail trail, allowing cross-country skiing, walking, jogging, bicycling, and snowshoeing. Dogs are not allowed, but have been observed despite signage.

Recommendations from the DCR Public Access Plan include:

- Utilize outreach, education, and modified signage to address ongoing litter and trash problems.
- Continue on-going Ranger patrols and coordination with local and state police.

Sterling Rail Trail in DCR Ownership -- The rail trail in the Sterling section off Gates Road Dogs continues to be a problem in Holden and Sterling. The trails are partly owned by other entities. Illegal posting of inappropriate materials and stickers had been an issue along the Sterling section, but has been curbed by Ranger and law enforcement involvement.

Stillwater Farm Interpretive Site --The Stillwater Farm Interpretive Site in Sterling near the junction of Rte 62 and Rte 140 is an environmental education facility managed by the Division of Water Supply Protection. This 55-acre site on the Stillwater River hosts an 18th century farmhouse, a barn and a self-guided interpretive trail. The facility provides individuals and groups an opportunity to better understand the connections between land use and community character, and between natural resource protection and land management. Stillwater Farm, through scheduled programs and events, demonstrates both past and present interactions between the working landscape and resource stewardship. Particular emphasis is given to watershed related issues and dynamics. The site is staffed regularly by Interpretive Services from Memorial Day to Labor Day, and the interpretive shed contains brochures and educational materials year round. Recommendations from the DCR Public Access Plan include:

- Utilize kiosk for timely watershed related information.
- Consider developing a permanent multi geocache trail using relevant watershed and water quality facts.

Hydrilla Concerns -- The discovery of *Hydrilla* prior to 2010 in Clinton, MA poses significant threat to water quality, as private boating is one of the primary means of transport of invasive species from one body of water to another.

The Reservoir Protection Zone (referred to in previous plans as the Reservoir and Tributary Shoreline and West Waushacum Pond Protection Zone) includes the watershed lands around the Reservoir and main tributaries (Quinapoxet and Stillwater Rivers) and the West Waushacum Pond. In Sterling, this Zone includes all lands (except the Intake Protection Zone) east of Rte I- 190, including East and West Lakes Waushacum, and the Stillwater River as it parallels Rte 140 in Sterling.

Hunting--Hunting is allowed in this zone on DCR/DWSP lands. All state, federal and local hunting laws apply and a free DCR Watershed Hunting Permit must be in possession at all times. In 2018, DCR/WSP opened all lands in the Reservoir Protection Zone to all types of hunting. The exception was the shorelines lands of Wachusett Reservoir which were subject to a controlled deer hunt. Due to data collected via deer pellet surveys and browse surveys, high densities of deer were beginning to damage the ecological integrity of the lands. During hunting season, notices are placed at all parcels where visitor use is high, reminding hunters that it is a multi-use area, and other users that hunting is allowed. All visitors are encouraged to wear bright colors, such as blaze orange, while in the woods and meadows of DCR lands during hunting seasons.

The Tributary Headwaters Zone is made up of DCR/DWSP lands located outside of the Route I-190 and Route 62 corridor. In Sterling, this DCR lands are located in the northern part of town, between Rte 140 and Rte I-190.

Hunting -- Hunting was originally an allowed use on these lands on a trial basis. After finding that no impacts to the water supply or resource degradation occurred as a result of this activity, hunting is authorized by the Division in this zone. All state, federal and local hunting laws apply and a free DCR Watershed Hunting Permit must be in possession at all times. A map of designated hunting areas is distributed with each hunting permit. Use of dogs for hunting is also allowed on these lands, but not in the other Zones.

Bicycling -- Bicycling was originally an allowed use in these areas on a trial basis. After finding that no impacts to the water supply or resource degradation occurred as a result of these activities, bicycling is now authorized by the Division.

Canoeing & Kayaking -- Canoeing and kayaks are allowed on the Stillwater Rivers upstream of Thomas Basin. Canoes must be taken out of the Stillwater River at the bridge located on Muddy Pond Road. Both lower limits of canoeing and kayaking fall within the Reservoir and Tributary Shoreline Zone. No special permit is required, as this is a fairly low use activity and the season is short. All state regulations related to boating must be followed.

State-Owned Parcels

DCR is the largest state agency landowner in Sterling. The majority of acres were procured by DCR-DWSP (4,985 acres) for the protection of the upland watershed of the Stillwater River, the Quag, and West Lake Waushacum, as well as the Wachusett Reservoir. The DCR-DWSP controls an additional 552.6 acres through conservation restrictions known as Watershed Protection Restrictions. The DCR Division of State Parks owns 63 fee acres in Sterling of Leominster State Forest. MassDOT owns 26 fee acres of land in Sterling. MassWildlife holds 98 acres of a conservation restriction known as Wildlife Conservation Easement on Stuart Pond

with a private landowner and another 462 acres as a Wildlife Conservation Easement with the Clinton Waterworks on what are called the Wekepeke Watershed lands.

Table 5-2. State-Owned Open Spaces within Sterling			
Parcel #	Location	Use Code	Acres
State Forest			
123-15.1	Off Fox Run Road	9100	7.5
4-7	69-85 Justice Hill Road	9150	63.0
		Subtotal	70.5
DCR Division of Watershed Protection			
101-1	254-258 Princeton Road	915R	7.5
101-12	228 Redemption Rock Trail	915R	35.8
101-13	282 Princeton Road	9150	1.5
101-2	16 Reed Road	9150	83.0
101-29	262 Princeton Road	9150	3.0
101-31	253 Princeton Road	9150	291.0
101-4	208 Greenland Road	9150	32.0
101-6	276 Princeton Road	9150	1.0
101-7	213-229 Redemption Rock Trail	9150	75.0
104-5.1	Off Old Princeton Road	9150	17.9
105-31	201 Worcester Road	9150	0.8
116-2	Off Greenland Road	9150	9.4
117-7	144 Greenland Road	9150	4.0
120-16	27 Pikes Hill Road	9150	1.2
123-1	Redemption Rock Trail	9150	161.0
123-12	9 Fox Run Road	9150	8.3
123-9	10 Fox Run Road	9150	1.0
124-1	30 Crowley Road	9150	0.4
125-6	95 Greenland Road	9150	73.3
126-1	Worcester Road	9150	3.6
126-4	113-123 Worcester Road (Off)	9150	169.0
127-1	76-112 Newell Hill Road	9150	161.0
127-5	77-91 Newell Hill Road	9150	14.8
135-17	Newell Hill Road	9150	0.7
137-2	6 Gates Road	9150	10.8
137-6	2 Old Gates Road	9150	0.8
137-68	3 Bean Road	9150	3.0
138-4	64-70 Boutelle Road	9150	116.0
14-7	3 Lucas Road	9150	1.9
145-5	68 John Dee Road	9150	99.0

145-6	65 John Dee Road	9150	14.9
145-8	63 Dana Hill Road	9150	3.9
146-6	Worcester Road	9150	4.3
147-24	Campground Road	9150	54.0
147-25	29 Worcester Road	9150	54.0
148-11	194 Newell Hill Road	9150	0.9
148-23	139-185 Newell Hill Road	9150	92.6
152-3	Off Metropolitan Road	9150	2.8
153-3	Metropolitan Road	9150	78.9
154-27	22 Chace Hill Road	9150	4.6
155-1	Campground Road	9150	6.4
155-2	2 Campground Road	9150	24.9
155-3	44 Campground Road	9150	55.0
156-14	10 Campground Road	9150	2.8
157-18	6-22 Mortimer Road	9150	23.0
157-7	50 Bean Road	9150	12.4
158-6	121 John Dee Road	9150	40.0
159-13	12-38 Redemption Rock Trail	9150	7.3
159-14	Off Legg Road	9150	522.0
159-15	Legg Road	9150	0.2
159-6	Redemption Rock Trail	9150	0.4
159-7	Redemption Rock Trail	9150	1.4
162-4	Redemption Rock Trail	9150	0.1
164-2	Off Palmer Lane	9150	2.0
165-1	Off Worc/Campground Rds	9150	59.0
165-3	Off Fairbanks Street	9150	2.5
165-4	Fairbanks Street	9150	0.3
165-5	4 Palmer Lane	9150	0.5
166-13	Off Fairbanks Road	9150	0.4
166-14	Campground Road	9150	267.0
167-1	Metropolitan Road	9150	473.0
168-1	Metropolitan Road	9150	27.0
17-1	Off Justice Hill Road Cutoff	9150	58.4
18-19	121 Justice Hill Road	9150	25.5
19-1	Off Roper Road/Justice Hil	9150	315.5
19-12	Off Upper North Row Road	9150	5.6
19-4	318 Upper North Row Road	9150	12.7
3-1	38-58 Lucas Road	9150	43.0
3-6	43 Lucas Road	9150	7.6
34-10	Justice Hill Road	9150	30.0
34-8	75 Justice Hill Road	9150	45.9

35-1	Off Justice Hill Road	9150	794.0
39-1	406-466 Redemption Rock Trail	9150	31.3
55-7	18-52 South Nelson Road	9150	64.0
56-2	Off South Nelson Road	9150	25.4
57-1	Off South Nelson Road	9150	39.0
57-2	Off Pheasant Hill Lane	9150	4.3
58-14.1	Off Redemption Rock Trail	9150	7.2
59-30	3 North Oakdale Cutoff	9150	5.6
60-11	Off Beaman Road	9150	6.0
60-12	South Nelson Road	9150	12.0
60-13	Off Beaman Road	9150	20.0
61-1	Off South Nelson Road	9150	10.0
61-11	86-94 South Nelson Road	9150	1.2
61-5	Off South Nelson Road	9150	45.0
63-6	112 Rowley Hill Road	9150	9.0
66-1	Leominster Road (Off)	9150	5.2
66-10	Chocksett Road	9150	12.7
73-25	68 Rowley Hill Road	9150	16.8
76-1	56 Wilder Road	9150	53.4
76-18	At Beaman Road	9150	29.7
76-5	71 Wilder Road	9150	1.6
77-21	135-137 South Nelson Road	9150	1.5
77-22	135 South Nelson Road	9150	1.0
77-23	133 South Nelson Road	9150	1.0
82-12.1	44 Beaman Road	9150	12.1
93-48.1	Princeton Road	9150	54.1
94-16	93 Princeton Road	9150	4.0
94-17	91 Princeton Road	9150	77.0
95-7	Off Princeton Road	9150	111.0
96-18	23 Wilder Road	9150	4.6
97-6	260 Redemption Rock Trail	9150	6.2
97-7	273 Redemption Rock Trail	9150	5.8
98-3	340 Princeton Road	9150	73.0
98-8	Rear 4 Burpee Road	9150	18.0
		Subtotal	5,332.8

Municipal Land

Sterling Conservation Commission owns approximately three hundred (303.5) acres, as listed in Table 5-4 and identified by name and street address. Refer to Appendix E for a comprehensive

listing of Conservation Commission properties, maintenance and management, zoning, and public access.

Table 5-4 Municipally Owned Properties under Permanent Protection				
Parcel# Map-Lot	Location	Owner	Use Code	Acres
Land Owned by Town Of Sterling--Conservation Commission				
73-5	22 Taft Road	Con Com	9030	4.7
67-1	Chocksett Road	C/O Con Com	9030	0.9
42-14	Justice Hill Road	Con Com Heywood	9030	5.0
45-4	Tuttle Road (Off)	Con Com (Percival)	9030	56.0
70-17	209-221 Pratts Junction Rd	C/O Con Com	9030	3.1
134-17	27 Swett Hill Rd	Con Com B Hall	9030	13.4
19-3	Hardscrabble Rd	Con Com	9030	17.0
34-12	North Row Road	Con Com (Wass)	9030	24.3
33-2	Heywood Road	Conservation Com Control	9030	19.9
76-25	42 Tanglewood Road	Con Com	9030	1.2
98-1	300-312 Princeton Road	Con Com W. Sterling Athletic Field	9030	7.9
98-5	Princeton Road	Con Com	9030	4.0
98-6	Justice Hill Road	Town Forest C/O Cons Commission	9030	5.0
117-10	Off Greenland Rd	Con Com	9030	17.2
14-27	210 Justice Hill Road	Con Com	9030	2.1
138-1	3 Griffin Road	Board Of Selectmen (Con Com)	9030	1.0
138-2	1 Griffin Road	Board Of Selectmen (Con Com)	9030	1.0
145-4	5 Griffin Road	Board Of Selectmen (Con Com)	9030	1.0
126-7	4 Greenland Road	Con Com	9030	0.3
33-1	Off Hardscrabble Road	Con Com	9030	5.0
76-16	124 Beaman Road	Con Com Munoz (Rocky Brook)	9035	20.0
134-19	10 Hall Avenue	Con Com	9035	0.3
66-12	Off Chocksett Rd	Con Com	9035	10.2
91-32	Off Redstone Place		9035	8.7
62-3	Off Osgood Road		9035	33.2
107-3	7 Redstone Place		9035	1.0
129-31.1	9 Tara Lane		9035	34.1
85-53	57 Leominster Rd	Con Com	9035	6.0
Total				303.5
Conservation Restrictions Held by Town of Sterling--Conservation Commission				
129-31	87-91 Kendall Hill Rd	Rittenhouse		13.3
130-12.1	Chace Hill Rd off	Griffin		16.08
Total				29.39
Town of Clinton Owned Lands (w/Conservation Restrictions held by MassWildlife)				
21-32	49-103 Heywood Road	Clinton Water Works	9030	127.0
32-1	40-56 Heywood Rd	Clinton Water Works	9030	62.0
20-9	281-323 Heywood Road	Clinton Water Works	9030	137.0
20-10	247-279 Heywood Road	Clinton Water Works	9030	27.0
10-2	Heywood Road	Clinton Water Works	9030	90.0
12-1	Rear Upper North Row Road	Clinton Water Works	9030	9.3
12-2	Heywood Road	Clinton Water Works	9030	6.2
46-34.1	Off Pratts Junction Road	Clinton Water Works	9030	1.8
132-2	Off Chace Hill Road	Town of Clinton	9030	2.4
Total				462.7

(See Open Space Inventory Map 5-1)

2. Nonprofit Lands

Table 5-5. Sterling Land Trust Holdings (Oct. 2018)			
Property & Interest	Parcel Number (map/lot)	Location	Acres
Wekepeke Path (FEE)	46-38	52-66 Pratt's Junction Road	9
Allenwood (FEE)	43-18, 43-11	6 Heywood Road	17
Fitch Pond Floodplain (FEE)	130-2	136 Kendall Hill Road	30.2
Hornbeam Cons. Area (FEE)	42-26	10 Hardscrabble Hill Road	11.3
Poor Farm Cons. Area (FEE)	23-28, 31-6, 31-1	Off North Row Road	52.4
Allenwood Annex (FEE)		6 Heywood Road	8.2
Petit Cons. Area (FEE)	16-1	100 Justice Hill Cut Off	12.6
Hornbeam Addition (FEE)		10 Hardscrabble Hill Road	3.4
Sagatabscot Hill (CR)	118-14	Off Johnson Road	15
Brown's Farm (CR)	29-1	216 Leominster Road	16.8
Fitch Pond (CR)	130-3, 130-4, 130-6, 130-12, 130-12.1	Fitch Pond Way	30
Arthur's Orchard (CR)			3.4
Total			209.3

C. OPEN SPACE WITH LIMITED PROTECTION

Parcels with limited protection from development fall into two categories: those protected due to their current use and those parcels owned by a Town department other than the Conservation Commission. Two examples are parcels used to protect water supplies and lands used for railroad purposes. Any change in use of these lands would require either a vote at Town Meeting or a decision by the Select Board. The Town of Clinton also owns 462.7 acres of land classified as open space with limited protection, mostly held as reserve water supply lands, however these lands are under permanent protection through a conservation restriction granted to MassWildlife by the Town of Clinton. Refer to Appendix E for a comprehensive listing of Recreation Department properties, maintenance and management and access.

Table 5-6: Municipally Owned Properties with Limited Protection				
Parcel #	Location	Description	Use Code	Acres
Town of Sterling--Town Forest				
31-3	Off Tuttle Road	Town Forest	9030	10.0
31-5	Off Tuttle Road	Town Forest	9030	32.0
31-4	Off Tuttle Road	Town Forest	9030	8.4
98-7	Off Holden Road	Town Forest Howe Lumber	9030	14.5
100-27	Off Holden Road	Town Forest Newhall	9030	10.0
100-28	Off Holden Road	Town Forest	9030	46.4
Subtotal				121.3
Town of Sterling--Cemetery				
85-57	25 Clinton Road	Cemetery Dept	903i	14.5
133-15	112 Chace Hill Road	Cemetery Dept Fairbanks	9030	0.3
85-55	20 Clinton Road	Cemetery Dept	9030	10.0
146-10	13 Boutelle Road	Cemetery Dept	9030	0.6
159-2	43 Redemption Rock Trail	Cemetery Dept Legg	9030	2.0

92-11	7 Clinton Road	Cemetery Dept Reed	9030	1.5
			Subtotal	28.8
Town of Sterling--Active Recreation Areas				
138-3	44-48 Muddy Pond Road	Hwy Dept Griffin	9030	8.0
134-35	2 North Cove Road	C/O DPW	9030	0.9
134-34	1 Hall Avenue	Town Beach	9030	0.3
129-24	Swett Hill Road	Town Beach C/O DPW	9030	11.5
137-11	20 Bouttelle Road	Houghton/Chocksett School	9033	57.0
			Subtotal	77.7
Town of Sterling--Parks for Passive Recreation				
92-74	1 Park Street		903i	13.7
93-11	3 Waushacum Avenue	DPW Memorial Area Mitchell	9030	0.1
93-16	4 Cross Street	DPW Memorial Area	9030	0.6
93-17	5 Waushacum Avenue	DPW Memorial Area	9030	1.1
			Subtotal	15.6
Town of Sterling--Other Open Space (Multiple Owners)				
66-9	129-135 Leominster Road	Police Department	903i	11.0
51-7	Leominster Road	Selectmen	9030	24.0
66-8	137-145 Leominster Road	Highway Dept	9030	10.0
54-29	135 Rowley Hill Road	School Dept	9030	0.2
9-38	2 Williams Street	Selectman	9030	0.3
157-51	7 Sunset Drive		9030	1.0
92-62	Btwn Maple & Waushacum	DPW Penn Rail Road	9030	1.5
75-26	17 Tanglewood Road	C/O Board Of Selectmen	9030	0.6
92-112	1 Bridge Street	Hwy Dept Allen	9030	0.3
92-86	Clinton Road	Select railroad R O W	9030	3.1
80-3	Redemption Rock Trail	DPW Pumping Station	9030	2.3
80-2	Redemption Rock Trail	DPW Pumping Station	9030	26.0
80-1	Redemption Rock Trail	Sterling Town Hall	9030	1.5
92-7	Maple & Clinton Road	DPW Penn railroad	9030	1.2
150-2	73 Chace Hill Road	Attn: Selectmen	9030	24.9
21-15	Upper North Row Road	Attn: Selectmen	9030	17.0
73-31.1	Tuttle Road		9030	2.3
134-5	38 Swett Hill Road		9030	14.0
134-6	40 Swett Hill Road		9030	1.0
101-18	294 Princeton Road		9030	0.3
101-22	298 Princeton Road		9030	0.5
101-15	288 Princeton Road	School Dept	903c	0.6
101-16	290 Princeton Road	Selectmen	9030	0.2
93-30	7 Cross Street	Fire Dept	9030	0.0
52-9	Off Leominster Road	Board Of Selectmen	9030	28.3
92-44	7 Bird Street	Sterling Housing Authority	903c	7.1
93-1	31 Main Street	Selectmen Town Hall Bldg	903c	0.2
93-15	5 Main Street	Fire Dept	903c	0.3
114-62	171 Worcester Road	Hwy Dept	903c	3.6
29-19	27 Pratts Junction Road	Electric Light Dept	903i	1.0
92-79	2 Leominster Road	Municipal Light Dept	903c	0.8
126-3	Worcester Road	Water Dept	903i	4.2
92-78	50 Main Street	SMLD	903c	0.9
93-61	2 Meetinghouse Hill Road	Library Bldg	903c	0.1
82-42	9 Osgood Road	Water Dept	9030	0.9
58-7	Redemption Rock Trail	DPW Gravel Pit	9030	0.4
114-63	163-165 Worcester Road	DPW Wheeler	9030	0.3

114-61	177 Worcester Road	Sanitary Land Fill	9030	0.3
113-6	Kendall Hill Road	Water Dept	9030	0.5
93-18	20 School Street	Highway Dept Estabrook	9030	0.1
95-33	Beaman Road	DPW	9030	0.1
106-48	2 Kendall Hill Road	Dept Public Works	9035	0.1
92-72	3 Maple Street	Selectmen	9030	0.1
93-29	18 School Street	Highway Dept Buck	9030	0.4
93-27	School Street	Selectman	9030	0.1
105-51	6 School Street	Highway-W W & Davis	9030	0.0
93-31	5 Cross Street	Highway Dept Clinton Trust	9030	0.0
156-18	3 Gates Terrace	Board Of Selectmen	903r	0.2
126-2	Worcester Road	Highway Dept Worc St Railroad	9030	2.3
			Subtotal	196.3
Unknown Owner (With 900 Series Tax Classification)				
91-41.4	Off Redstone Place		9030	0.0
25-2	Off Legate Hill Road		9030	0.0
82-34	Old County Road		9030	1.2
			Subtotal	1.2
92-68	30 School Street	American Legion Post 189	903c	0.3
			Total	1.5

D. OPEN SPACE WITH TEMPORARY PROTECTION

The privately-owned parcels enrolled in one of the Chapter 61 tax abatement programs (Chapter 61, Chapter 61A, or Chapter 61B) have temporary protection from development. Under these programs, if a landowner intends to sell the classified land or convert it to another use, he or she must notify Town officials by certified mail. The Town has the right of first refusal and assesses a penalty in the form of either a conveyance tax or a roll back tax. Sterling has 14 lots totaling 265.5 acres in Chapter 61, 11 lots totaling 422 acres in 61B, and 141 lots totaling 2708.5 acres in Chapter 61A. Currently undeveloped, these lands are of interest for both conservation and recreation purposes, since they constitute a significant amount of open space that could provide linkages between existing conservation and recreation lands to form a greenway network. Table 5-7 lists parcels of temporarily protected land by type and include their location, and the acreage. (See the *Open Space Inventory Map 5-1*).

Table 5-7: Inventory of Chapter 61 Forestry and 61B Recreation Parcels

Chapter Program	Parcel #	Location	Grantee	Use Code	Acres
61 Forestry	118-7	32-43 Johnson Road	Strang Joan S Trustee	601V	4.4
	119-3	36 Holden Road	French Arthur W	601V	35.0
	119-40	Off Holden Road	Harper James S Iii & Robin M, Trustees	601V	2.1
	122-14	Off Holden Road	Strang Joan S Trustee	601V	40.0
	122-15	Off Redemption Rock Trail	Strang Trustee Joan S	601V	40.0
	150-8	Off Chace Hill Road	Macleod Neil	6010	14.1

	16-2	98 Justice Hill Road Cutoff	Baker, Janeen T., Trustee	6010	16.0
	175-209	Campground Road	Waushacum Village Homeowners' Assoc Inc	6010	24.0
	42-12	Off Hardscrabble Road	Bates Thea B T, Trustee	6010	51.3
	94-9	122 Old Princeton Road	Ciborowski Henry, Mark/Beaulieu Carolyn	610V	64.1
				Total	291.0
61B Recreation	10-15	132 Heywood Road	Bird William W Sr	8030	7.4
	64-10	Off Tuttle Road	Roseberry Armand	8030	52.9
	69-4	Clinton Road	Sterling National Llc	8050	0.2
				Total	60.4

Table 5-8: Inventory of Chapter 61A Parcels – Agriculture

Parcel #	Location	Grantee	Use Code	Acres
10-1	146 North Row Road	Padula Michael L Trustee	713V	57.0
10-20	155 North Row Road	Padula Michael L. Trustee	713V	40.7
10-21	159 Upper North Row Road	Padula Michael L Trustee	7160	8.3
106-24	44 Kendall Hill Road	Chase Valerie V	717V	6.4
107-21	Maple Street	Melone Diane A	7200	19.4
107-25	Maple Street	Melone Anthony Richard	714V	17.0
107-27	9 Chamberlain Road	Philbin Stephanie	714V	35.8
107-28	Maple Street	Melone Anthony Richard	714V	9.3
108-5	42 Rugg Road	Hagberg Nancy M	717V	6.1
108-6	40 Rugg Road	Hagberg Nancy M	717V	6.9
108-7	0 Rugg Road	Melone Diane A	7130	27.6
109-2	Hawkins Lane	Broderick William E	716V	1.0
109-3	23-31 Hawkins Lane	Broderick William E	7140	22.0
109-5	17 Hawkins Lane	Broderick William E	7140	7.1
110-1	204r Chace Hill Road	Chandler David	7140	39.3
110-10	Hawkins Lane	Broderick William E	7140	16.0
110-11	Hawkins Lane	Broderick William E	7140	5.0
110-5	1-9 Chace Hill Road	Chandler David	7140	12.5
110-9	Hawkins Lane	Broderick William E	716V	37.5
111-1	Hawkins Lane	Broderick William E	7200	22.1
115-1	Jewett Road	Mcnamara William F Iii	716V	1.1
118-14	Off Johnson Road	French Dorothy A	7200	12.0
118-4	0 Redemption Rock Trail	French Dorothy A	7180	3.6
118-5	24-26 Johnson Road	French Arthur W	7140	1.0
120-22	Holden Road	Thompson Ronald S	7200	16.0
123-4	142-150 Redemption Rock Trail	Janowicz Walter M	713V	55.0

126-42	27 Greenland Road	Mcnamara William F Iii	713V	8.0
126-43	19 Greenland Road	Mcnamara William F Iii	713V	1.0
126-45	34-38 Jewett Road	Mcnamara William F Iii	713V	5.0
126-49	35 Jewett Road	Mcnamara, William F Iii	713V	0.7
130-19	206 Chace Hill Road	Chandler David	7140	4.1
131-1	178-186 Chace Hill Road	Chandler David	7140	21.0
131-2	Chace Hill Road	Chandler David	714V	1.0
131-6	Off Chace Hill Road	Chandler David	7140	11.7
131-6.1	Off Chace Hill Road	Chandler David	7200	1.7
131-8	Off Chace Hill Road	Chandler David	7140	20.0
132-1	Chace Hill Road	Harvey Flora M	7160	20.0
133-23	129 Kendall Hill Road	Gauld William J & Julia F, Trustees	717V	39.0
139-41	18 John Dee Road	Cutler Brothers, Llc	713V	9.2
139-44	28 John Dee Road	Hendrickson Elisabeth M Trustee	713V	9.6
14-2	188-194 Justice Hill Road Cutoff	Blanchard John V	7170	6.2
14-21	193-195 Justice Hill Road Cutoff	Blanchard John V	7170	0.9
14-31	Roper Road	Campobasso Colleen Trustee	713V	1.0
144-17	0 Redemption Rock Trail	Kristoff George Jr/Kristoff Nancy J Tr	7130	1.4
144-18	Redemption Rock Trail	Kristoff George W Jr/ Kristoff Nancy J	7130	3.2
144-2	8 Merrill Road	Kristoff George W Jr	713V	8.1
144-20	55 Redemption Rock Trail	Kristoff George W Jr/Kristoff Nancy J Tr	7130	5.3
144-21	58 Dana Hill Road	Kristoff George W Jr/Kristoff Nancy J Tr	7130	3.8
151-1	Metropolitan Road	Brodmerkle Paul	7170	22.8
18-16	142 Justice Hill Road	Justice Hill Inc	717V	48.5
18-18	Off Roper Road	Campobasso Colleen Trustee	722V	95.0
20-11	231 Upper North Row Road	Murray Verne S Et Al	713V	12.9
22-18	91 North Row Road	Orr Harrington Brian	7170	4.1
23-1	52-64 North Row Road	Lynn Marian, Trustee	713V	15.0
23-2	70 North Row Road	Orr Brian Harrington & Deborah	713V	64.0
23-5	57 North Row Road	Lynn Marian, Trustee	716V	15.0
23-6	43 North Row Road	Lynn Marian Trustee	713V	13.7
27-2	28 Ford Road	La Stella, John M, Trustee	713V	5.8
28-7	Off Flanagan Hill Road	Davis Farms Trust	7200	17.8
29-33	221-241 Leominster Road	Pratt, Vivian L.	7200	6.5
30-9	42 North Row Road	Lynn Marian Trustee	713V	50.0
31-2	Off Heywood Road	Allen John & Sara Miller Nancy	717V	4.0
4-19	47-67 Roper Road	Campobasso Colleen Trustee	713V	18.0
4-5	15-37 Lucas Road	Nelson Herbert A	713V	15.0
43-1	Heywood Road	Hart Judith L	713V	14.2
43-14	173-199 Tuttle Road	Starbard Eric D	7180	30.0
44-2	116-172 Tuttle Road	Allen John & Sara Miller Nancy	7180	26.0

44-4	109-155 Tuttle Road	Allen John & Sara Miller Nancy	7180	61.9
44-5	Off Tuttle Road	Davis Farms Trust	7200	17.0
44-6	Off North Row Road	Lynn Marian Trustee	7200	91.0
47-1	58-96 Flanagan Hill Road	Heinrich Mary E & Heinrich James T Trst	713V	55.6
49-2	74 Albright Road	Decker Robert	714V	16.0
53-29	Off Tuttle Road	Allen John & Sara Miller Nancy	717V	27.0
53-30	31-69 Tuttle Road	Applefarm Properties, Llc	7120	75.0
54-31	Off Rowley Hill Road	Starbard Eric D	7180	23.9
61-10	76-80 South Nelson Road	Janowicz Walter M	713V	50.0
63-1	74 Rowley Hill Road	Murray Bruce & Ann	7160	28.5
63-28	69 Osgood Road	Vaghini Family Ltd Partnership	7170	28.0
63-37	2 Kilburn Road	Murray Ann E	7180	5.9
64-11	45 Tuttle Road	Applefarm Properties, Llc	7200	3.5
64-12	43 Tuttle Road	Applefarm Properties, Llc	7120	3.7
64-17	75-99 Rowley Hill Road	Murray Bruce	713V	13.5
64-2	14-18 Kilburn Road	Murray Bruce & Ann	713V	18.5
64-20	0 Rowley Hill Road	Murray Bruce & Ann	7180	10.1
64-4	Kilburn Road	Alty Joyce	7150	14.5
64-6	44-70 Tuttle Road	Applefarm Properties, Llc	7200	5.9
71-19	Off Redstone Hill Road	Davis Dairy, Inc.	7200	11.6
75-41	67 Osgood Road	Vaghini Family Ltd Partnership	7170	44.0
76-20	87-117 South Nelson Road	Hulick Henry F	713V	8.3
88-10	Off Clinton Road	Davis Dairy, Inc.	713V	20.9
88-20	12-18 Wiles Road	Davis Dairy, Inc.	716V	12.5
88-21	0 Wiles Road	Konola Jukka T	713V	2.0
88-22	21 Wiles Road	Konola Jukka T	717V	16.9
89-10	169-179 Redstone Hill Road	Davis Dairy, Inc.	713V	32.0
89-12	161-163 Redstone Hill Road	Davis Dairy, Inc.	713V	9.0
89-13	159 Redstone Hill Road	Davis Dairy, Inc.	713V	2.7
89-17	Redstone Hill Road	Davis Dairy Inc	713V	42.8
89-18	145 Redstone Hill Road	Davis Dairy, Inc.	713C	12.9
89-2	160 Redstone Hill Road	Davis Dairy, Inc.	713V	16.1
89-3	168 Redstone Hill Road	Perry Wayne	7130	11.0
89-5	170 Redstone Hill Road	Perry Wayne	7200	6.7
89-9	Off Clinton Road	Davis Dairy, Inc.	7200	1.1
90-11	Rugg Road	Nourse Ralph B	716V	48.9
90-13	44 Rugg Road	Nourse Ralph B & Mary	7200	7.8
90-2	92-98 Redstone Hill Road	Davis Farms Trust	713V	13.6
90-3	100 Redstone Hill Road	Davis Farms Trust	7200	0.3
90-4	100-106 Redstone Hill Road	Davis Farms Trust	713V	11.3
90-5	Redstone Hill Road	Davis Farms Trust	7130	15.1

90-6	112 Redstone Hill Road	Davis Dairy Inc	7130	1.0
90-8	Redstone Hill Road	Davis Dairy, Inc	7160	16.0
90-9	121-123 Redstone Hill Road	Davis Farms Trust	713V	7.5
91-13	0 Redstone Hill Road	Nourse Ralph B & Mary E	713V	18.0
94-13	107-111 Princeton Road	Burzenski William J	7180	15.3
96-1	186 Princeton Road	Bigelow Nurseries Inc	719I	89.8
98-15	8 Burpee Road	Thompson Ronald S	7120	1.1
98-16	319 Princeton Road	Thompson Ronald S	7120	5.5
98-18	272 Princeton Road	Thompson Ronald S	7120	6.5
			Total	2203.4

E. OPEN SPACE OF UNKNOWN OWNERSHIP

In 2018, a few parcels exist that are of undetermined ownership. These parcels are not listed in the current assessor's database. Some of these are substantial in size and abut other parcels of conservation interest already protected so they may be of conservation interest. Parcel 43-4 is adjacent to the Clinton Waterworks property at Fitch Basin. Parcel 45-15 is adjacent to Conservation Commission land off Tuttle Road. Parcel 46-33 is adjacent to I-190 between two bridge structures. Parcel 74-1 is adjacent to a DCR-DWPS parcel off Taft Road. Parcels 49-49 and 113-9 are subdivision roads.

Table 5-10: Parcels of Interest Map & Lot #

Parcel #	Acres
43-4	13.3
45-15	55.9
46-33	5.1
49-49	6.5
74-1	18.2
113-9	7
Total	106.6

F. RECREATION PROPERTY INFORMATION

RECREATION PROPERTY INFORMATION Name/Location of Property	Current Use/ Acreage	Managed/Owned by	Condition	Recreation Potential	Zoning	Level of Protection	Grants for purchase or Renovations?	Public Access
Redstone Hill Redstone Hill Rd, Rte 62	ball field/ 1.25 acres	Rec Department Maintenance by DPW	2 softball fields, port-o-potties	team recreation recent field renovation (2018)	neighborhood residential	Deeded to town	no	15+ spaces on parcel
Sholan Park/Hall Rd	beach, picnic, basketball, volleyball, boating/recreation camp /.25	DPW Maintenance by DPW	Bath houses in need of renovation need replacement flooding issues in low areas, handicapped porta potties (seasonal)	fully utilized property	rural residential and farming	Deeded to town	Yes--Self Help and Town funding	40+ spaces (also used for camp)
Sterling Memorial Park, 4 Cross St	Concerts, picnic / .5 acres	DPW Maintenance by DPW	little shade, no picnic tables, lawn with gazebo	recreation/cultural activities	town center district	Deeded to town	no	15 spaces including fire station and onstreet
SPARC park/ Muddy Pond Rd	tot lot, picnic, play equipment, walking trail, pond / .8 acres	Rec Department Maintenance by DPW	good condition, new equipment, maintained. Surrounding park area needs cleanup including pond. Handicapped porta potties installed for year round.	recreation/education (near middle & elem school) and new senior center	neighborhood residential	Deeded to town	No--private funds	6 spaces off street, access from Griffin Rd fields parking
West Sterling Athletic Fields/ Princeton Rd	ball fields/tennis/basketball/bathrooms/ 3.1 acres	Selectman/Conservation Commission Maintenance by DPW	handicapped restroom, lockable dumpster , tennis, basketball courts in poor condition, poor condition of playing fields	recreation	rural residential and farming	conservation land-Article 97	No--gift	15-20 spaces on Holden and Rte 62
1835 Town Hall	Rec Dept office, dance, aerobics etc	Rec Department Maintenance by DPW	handicapped accessible-- currently being renovated, Rec Dept in Municipal Butterick Bldg	indoor recreation activities	town center district	Deeded to town	No	6 spaces off street and access from additional town common parking
Griffin Road Fields	ball fields, track, basketball, fitness and x-country running trails, soccer, football 6.1 acres	Selectman/Conservation Commission Maintenance by DPW	track not well maintained, 2 accessible restrooms,	fully utilized property	neighborhood residential	conservation land-Article 97	No-town purchase	50+ spaces off and on street parking and more from

			adequate team seating					school parking
Muddy Pond Fields, Muddy Pond Rd	ballfields, t-ball, u-10soccer and softball field / 2.6 Acres	Selectmen/Conservation Commission Maintenance by DPW	small bleachers, not much seating	team recreation, education (near schools and senior center) hiking (trailhead to Stillwater basin by parking lot)	rural residential and farming	conservation land-Article 97	No	10-15 spaces off street parking
Houghton School/Chocksett School, 20 Boutelle Rd	play equipment, ball fields, 4 square, open field / 46 acres	Rec Department Maintenance by DPW	utilized by elementary/middle school--off hours by others	variety of recreation activities, near new senior center	neighborhood residential	Deeded to town	no	school parking 50+ spaces

G. STATUS OF HANDICAP ACCESS EVALUATION FOR PARKS AND RECREATION AND CONSERVATION COMMISSION LANDS

In 2009, the Board of Selectmen appointed Matt Marro, the Town Conservation Agent, to the position of ADA coordinator. In the past, Marro worked for the Department of Mental Retardation and is knowledgeable about ADA requirements.

Recreational opportunities and facilities for people with disabilities are scarce in Sterling. In 2002, the Open Space and Recreation Committee conducted a 504 Self-Evaluation survey of seven conservation and recreation properties representative of the recreational experiences in Sterling, in accordance with the State's planning requirements. These sites are under the jurisdictions of the Conservation Commission, the Board of Selectmen, or the Department of Public Works. For each site, the committee recommended several improvement strategies to create compliance with the Americans with Disabilities Act, setting the groundwork needed for a Transition Plan. In 2017, a Transition Plan for the 1835 Town Hall (home of the Recreation Department) was developed as part of a feasibility study looking at repairs.

In 2018, due to planned studies and renovations of the 1835 Town Hall where the Recreation Department office was housed, the Recreation Department moved back to the Butterick Building basement which had been unoccupied since the new Senior Center was built. Handicapped parking spaces and an accessible elevator are in this location.

It should be noted that nearly all Town Forest parcels and many Conservation Commission parcels in Sterling are landlocked by private lands, making public access of any kind, never mind for people with disabilities, technically impossible. Therefore, these properties were not evaluated for this Update.

In 2009, the new conservation area at Waushacum Overlook was visited and evaluated using the DCS forms. Since the 2010 OSRP Update, there have been no changes in ADA status on any Town conservation properties.

Accessibility Accommodations on Developed Recreation Lands: The facilities of the Recreation Department were also evaluated in 2009. Since the 2010 Update, the Town has installed handicapped accessible portable toilets at the Town Beach at Sholan Park and at the playing fields at Griffin Park. Additionally, handicapped portable toilets were installed at Memorial Park and the Sterling Greenery Community Playground on Muddy Pond Road. The Recreation Department's children's swim program continues to provide additional aides for participants with special needs. No other changes have occurred on Town developed recreation facilities.

Nearly all Town Forest parcels and many Conservation Commission parcels in Sterling are landlocked by private lands, making public access of any kind, never mind for people with

disabilities, technically impossible. The ADA status of parking lots and trails on these properties has not changed since the 2010 OSRP Update. Therefore, these properties were not evaluated for this Update.

In 2009, the new conservation area at Waushacum Overlook was visited and evaluated using the DCS forms. Since the 2010 OSRP Update, there have been no changes in ADA status on Town conservation properties.

All developed recreational sites below are under the jurisdiction of the Conservation Commission or the Selectmen (in lieu of the Recreation Department) and were re-evaluated for compliance with the Americans with Disabilities Act requirements in 2018.

NAME: Sholan Park LOCATION: Lake Waushacum			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Swimming	Sand beach	Not ADA accessible	Same
Picnicking	Enclosed swimming area	Not ADA accessible	
Fishing	½ basketball court	Not ADA accessible	
Basketball	sand volleyball court	Not ADA accessible	
Volleyball	public bathrooms-building	Not ADA accessible	HP port-o-potties installed at Sholan Park
Boating	public changing facility-building	Not ADA accessible	Same
	site signage w/ rules	Large lettering	
	picnic tables	Not ADA accessible	
	life guard stations	Not ADA accessible-no paths	
	grills	ADA accessible	
	trash receptacles		
	public pay phone	Not ADA accessible	
	lawn area		
	stone dust paths	Stone dust and turf parking lot w/guard rails.	
	Parking > 50 spaces	No designated HP parking	HP signed spaces

NAME: Sterling Memorial Park LOCATION: 4 Cross Street			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Concerts	Gazebo	Not ADA accessible	Same
Informal Recreational Activities	Flagpole		
	Parking on road and behind fire station	No designated HP parking	
	Sign	Large lettering	Informational kiosk added

NAME: Waushacum Overlook LOCATION: Tara Lane			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Passive Recreation:			Same
Walking/Hiking	Trail network	20" Dirt paths, 90" cart roads, Not ADA accessible	
Cross Country Skiing		Path is not paved, nor is it stable, firm or slip resistant	
Bicycling		Slope exceeds ADA spec in some places	
Horseback Riding	Site signage w/ rules		
Pets	Parking 5 spaces on street	No designated HP parking	
Boating			
Nature Observation			

NAME: Wachusett Greenways LOCATION: Sterling Rail Trail			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Passive Recreation:	Recreational trail	Stone dust path 10' wide	Same
Walking/Hiking		ADA Accessible	
Cross Country Skiing			
Bicycling			

NAME: Sterling Greenway Community Park LOCATION: Muddy Pond Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Recreational park	Playground equipment for young people	Woodchip surface below, adjacent to rec path; ADA compliant spacing	Same
Social activities	Adjacent athletic fields and conservation land		
	Brick and stone dust recreation path	ADA Accessible, no rails, no signage	
	6 Picnic tables with benches	ADA compliant	
	2 pergolas	20 ft from path, near water fountain, trash can	
	Trash can	Adjacent to path	
	Porta potties	ADA accessible	
	Off Street Parking 6 spaces	2 HP signed Accessible van spaces, sited closest to entrance	

NAME: Chocksett School Play Ground LOCATION: Boutelle Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Play equipment	5-12 age appropriate play structure w/ fibar safety benches	ADA accessible	Same
Basketball	Adjustable basketball standards	ADA accessible	
Hop scotch	Hop scotch on pavement	ADA accessible	
Field sports	Turf fields and paved walks		

NAME: Griffin Road Athletic Complex LOCATION: Griffin Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
	HP accessible bathrooms	Installation complete	Same
Baseball	Babe Ruth field, associated equipment and bleachers	Not ADA accessible	
Softball	Two softball fields w/ skinned infield, associated equipment and bleachers	Not ADA accessible	
Football	Football field and goal posts	Not ADA accessible	
Soccer	Soccer played between fields	Not ADA accessible	
Jogging	Picnic tables	Not ADA accessible	
Concession	Trash receptacles		
Picnicking	Stone dust running track around football field	ADA accessible	
	Bubbler	Not ADA accessible	
	Stone dust parking lot >50ps	2 designated HP parking spaces	
	Concession building w/ restrooms	Not ADA accessible	
	Equipment storage building	Not ADA accessible	
	Site sign		

NAME: Muddy Pond Ball fields LOCATION: Muddy Pond Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Little League	Little league field, associated equipment and bleachers	Not ADA accessible	Same
Baseball	Bleachers		
Softball	Softball field w/ skinned infield, associated equipment and bleachers		
“T” ball	Temporary port-o-potty” restrooms	Not ADA accessible	
	Trash receptacles		
Soccer	Gravel parking area and on street parking	Not ADA accessible	
	Site sign		

NAME: West Sterling Athletic Facility LOCATION: Princeton Road / Holden Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Baseball	Two Babe Ruth baseball fields, associated equipment and bleachers	ADA accessible access to bleachers	Same
Basketball	Batting Cage		
Tennis	Announcers building and concession		
	Lighted basketball and tennis courts	Not ADA accessible; No ADA accessible basketball standards	Scheduled for renovation 2019
	Trash receptacles		Same
	Stone dust parking area >50 ps	ADA accessible; No designated HP parking spaces	3 HP spaces
	Site sign		Same
	Bathroom	Not ADA accessible	

NAME: Butterick Trail LOCATION: Park Street			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Walking	Stone steps	Not ADA accessible	Same
Hiking	Site sign	Large lettering	
Mountain biking	Unimproved trail	Not ADA accessible	
	Parking > 50 ps	4 designated HP parking spaces in adjacent Town Hall parking lot	
		ADA accessible restrooms available in adjacent Town Hall building	

NAME: Rocky Pond Conservation Area LOCATION: Beaman Road			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Historic site/ Interpretive trail	Site sign	Not ADA accessible	Same
Walking	Old stone culvert and waterfall		
Hiking	Historic mill pond		
Scenic water and woodland views	Old stone foundation		
	Stream and waterfall (previous mill dam)		
	On street dirt pull off parking < 3 ps	No marked HP ps	

NAME: Hardscrabble Parcels LOCATION: Off North Row Road, near Hycrest Pond			
ACTIVITY	EQUIPMENT	2009 NOTES	2018 STATUS
Hiking	Parking	3-car narrow pullout	Same
	Sign	In need of repair	
	Trail	Not ADA compliant; strenuous climb to trailhead	

Forest management activities have been active on these properties since 2018.

Recreation Program Promotion

Sterling Recreation Department advertises its programs in paper flyers, newspapers and in electronic format on the Town website. Since 2010 the Recreation Department has also advertised on its Facebook page and has instituted electronic registration for programs.

SECTION 6 – COMMUNITY VISION

A. DESCRIPTION OF PROCESS

Several methods were employed to determine what the community values with regard to open space and recreation. Trend and resource information from town departments was gathered through interviews and data requests, board or committee meetings, annual reports, meeting minutes, an All-Boards meeting hosted by the Select Board in 2017, and a series of facilitated Master Plan informational meetings held in the latter part of 2018. Citizen input was gathered from the Master Plan meetings and a survey that was made available at the library and Senior Center in hard copy and on the OSIC town web page, and a web-based survey (Survey Monkey). OSIC hosted an Open Space and Recreation Public Forum in April 2017 attended by town officials and residents. Information about the survey and the Public Forum was publicized on the town website and in the *Sterling Meetinghouse News* and *Holden Landmark* newspapers, and OSIC members invited town departments and board member participation and other Sterling based groups including but not limited to the Sterling Land Trust, Garden Club, informal hiking groups and the local sportsmen's club.

B. STATEMENT OF OPEN SPACE AND RECREATION GOALS

Sterling residents have expressed a desire for a Town meet the needs of the community, including but not limited to providing a safe, healthy environment and quality recreation programs and facilities, while encouraging planning for future sustainable residential and commercial activity.

The overall open space and recreation vision for Sterling is to improve the Town's current open space and recreation opportunities to enhance quality of life, expand opportunities for active and passive recreation, and promote efforts to keep the rural, farmland character of the town. Achieving this vision includes:

- Encouraging responsible protection and stewardship of publicly accessible lands and waters for natural resource conservation, recreation, and water supply protection;
- Increasing the quantity, improving the quality and access to athletic fields and other recreation facilities;
- Improving transparency and communication between departments and to the community on open space and recreation issues;
- Review Sterling's protective bylaws and other rules, regulations and procedures as they relate to the community's open space and recreation priorities and needs.

SECTION 7 – ANALYSIS OF NEEDS

A. SUMMARY OF RESOURCE PROTECTION NEEDS

- Current “default” option of 2 acres zoning leads to more sprawl. Perhaps look at Natural Resource Protection kinds of zoning options. Environmentally responsible zoning design... (April 2018 Forum)
- Educate public and town boards on the economic value of land protection. (April 2018 Forum)
- Lack of public awareness of conservation issues in towns or ways people can make a contribution in this arena. (Master Plan Meeting)
- Water department's top challenges: aging asbestos/concrete water mains in many older parts of town; educating citizens that water withdrawal permissions from state DEP are premised on meeting growth in demand for water through conservation efforts, need for new water sources. (Email communication to OSIC member)
- Protection of Wekepeke Aquifer (from 2011 OSRP plan)
- Vernal Pool Certification (Letter from MassWildlife NHESP)
- Invasive Species Management (from 2011 OSRP plan)

B. SUMMARY OF COMMUNITY NEEDS

1. Community Outdoor Recreation Needs

- Need for dedicated, permanent space for Sterling Recreation Dept. programs. They have moved from Butterick Municipal building to 1835 Town Hall and with repairs on 1835 have moved back to Butterick. Need storage space.
- Access to indoor and outdoor space -- Access to indoor and outdoor space would enhance programs and allow for consistency when it comes to outdoor programming. Inclement weather can force the Recreation Department to cancel outdoor programs, which is difficult for parents or care-givers who can't make last minute schedule changes. Indoor space for the programs would allow the Recreation Department to provide reliable programming regardless of the weather.
- Update and renovation of Sholan Park Facilities. Currently (2018) a committee is working on improvements at Sholan Park and the Town Beach. These improvements will include: overhaul of the drainage system to improve water quality and property erosion, better accommodations for individuals with disabilities, removal of unnecessary items on the property, and upgrades to existing structures. Potential for more covered pavilions allowing for rain activities at the day camp conducted in the summer time. Enhanced facilities for people with disabilities.
- West Sterling tennis court/pickle ball and basketball courts in serious need of renovation, restoration. Grants and bids are currently being sought by a group of citizens who have met

with various departments. Efforts to place project on Town Warrant for 2019 are also underway.

- Recreation programming might consider audiences with various disabilities and intergenerational programming
- Some people are unaware of the current outdoor recreation opportunities in town. Need to do better marketing. (April 2018 Forum)

C. MANAGEMENT NEEDS, POTENTIAL CHANGE OF USE

- Need for Master Plan—Well-attended facilitated public meetings began in 2018.
- Need for stewardship or management plans for more conservation lands and town forests
- Concern about the need to protect and utilize some of the prime agricultural lands in town with the aging of farmers. Sterling is in the yellow “danger zone” (Losing Ground report, MassAudubon) in the area just to the west of the metropolitan Boston expansion. The Town is faced with creeping suburbanization, and land in Sterling that has prime agricultural potential is being lost to development. (April 2018 Forum)
- Additional resources needed for recreational facilities maintenance. DPW has been very helpful with Recreation Department, but they have limited staff and capacity. (All Boards Meeting and Recreation Committee meeting)
- Need for Playing Fields Rest and Rehab—Due to both demand from within town and out of town organizations, playing fields getting so much use there isn’t time for them to “rest and rehab”
- Sterling Conservation Agent Availability: Currently the Conservation Commission Agent is working 20 hours/week but he is also full time Conservation Administrator for another town. This could have a negative impact on Conservation Commission business and efficiency.
- Town Planner position discussed and approved in 2018 by Board of Selectmen and Planning Board. Hired in late 2018.
- Lack of coordinated communication between boards and committees. Sometimes appears there are opposing goals and priorities. In the past two years, Selectmen have hosted an All Boards meeting which have been well attended. Each Board and Committee offered a brief summary of Board responsibilities, 2-3 goals for the future year, what was accomplished for the goals of the previous year.
- Sterling’s Industrial Zone overlaps with a high quality Water Resource Protection Zone, this is problematic – development could jeopardize groundwater quality and quantity which may affect not only Sterling residents, but Leominster which draws from the area. Need to explore mitigation options that limit these effects
- Need expressed by citizens to re-examine zoning/planning bylaws and explore more environmentally informed bylaws and options that have arisen in other communities (April 2018 Forum, Master Plan Facilitated Meetings)

SECTION 8 – GOALS AND OBJECTIVES

The following goals and objectives have been formulated for the OSRP Update. They are not listed in order of importance, but are meant to reflect the analysis of Sterling's needs. Given past experience with OSRP goals and objectives, OSIC made a conscious decision to set goals and objectives that are achievable, given the voluntary nature of efforts by departments, boards and committees and whatever resources which may or may not be available in the future

GOAL A -- Encourage responsible protection and stewardship of publicly accessible lands and waters for natural resource conservation, recreation, and water supply protection.

- Objective 1: Continue to increase awareness of open space and recreation opportunities in Sterling.
- Objective 2: Promote or host events, activities and programs that address stewardship needs on publicly accessible properties

GOAL B -- Enhance athletic fields and other recreation facilities.

- Objective: Improve quality and accessibility to town-owned lands, athletic fields, and other outdoor recreation facilities and programs.

GOAL C: Improve transparency and communication between town boards, committees, and departments and with the community on open space and recreation issues.

- Objective 1: Enhance communication between town departments/boards/committees regarding open space and recreation opportunities and issues
- Objective 2: Actively participate and support current Town Master Plan process

GOAL D: Identify and consider new approaches to Sterling zoning and planning and other protective bylaws that affect Sterling's open space and recreation needs.

- Objective: Review administrative procedures that inform decision making about the community's open space and recreation priorities and needs.

SECTION 9 – SEVEN-YEAR ACTION PLAN**GOAL A: Encourage responsible protection and stewardship of publicly accessible lands and waters for natural resource conservation, recreation, and water supply protection.**

Objective 1: Continue to increase awareness of open space and recreation opportunities in Sterling.

Objective 2: Promote or host events, activities and programs that address stewardship needs on publicly accessible properties

<i>Action:</i>	Responsible Parties	Resources	Funding	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1. Continue to develop and make available current and new Sterling Trails. Prepare brochures in both print and electronic media.	OSIC Members, with assistance from Con Com, DPW, Sterling Land Trust	Mapping tool, trail clearing equipment. Printing services	Town budget	An ongoing effort						
2. Utilize social media and public events to promote recreation and open space related opportunities	OSIC	Sterling Trail website. Information tent	OSIC member Time	An ongoing effort						
3. Prepare a summary version of the OSRP that is searchable and readily accessible				To be carried out during year 1 and 2						

Goal B: Increase the quantity and improve the quality of athletic fields and other recreation facilities.

Objective 1: Improve quality and accessibility to town-owned lands, athletic fields, and other outdoor recreation facilities and programs

Action:	Responsible Parties	Resources	Funding	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1. Improve "walkability" in Sterling town center area.	OSIC, DPW, Historic Com., BOS	Historic info, signage	Town budget, grants							
2. Address recreation playing fields management and condition concerns	OSIC, DPW Recreation Dept.,		Town budget, grants	Write a 5-year capital plan for facilities improvement	Implement capital plan through Year 5					
3. Improve or create parking access to conservation, town forest properties and hiking trails	OSIC, DPW Recreation Dept., ConCom, Town Forest Com									
4. Integrate recreation programming and events for people with disabilities	OSIC, DPW Recreation Dept.									

GOAL C: Improving transparency and communication between town boards, committees, and departments and with the community about open space and recreation issues.

Objective 1: Enhance communication between town departments/boards/committees regarding open space and recreation opportunities and issues.

<i>Action:</i>	Responsible Parties	Resources	Funding	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1. Develop or enhance a Master List Contact database of committee members for interdepartmental electronic communication.	Town clerk, town boards and committee chairs	Town Dept								
2. Enhance OSIC content on the Town Website	OSIC	Training	OSIC members and volunteers	Ongoing						
3. Promote and participate in periodic town-wide departmental-committee meetings and Master Plan activities	All town boards and committees			Complete Master Plan						

Objective 2: Enhance communication about open space and recreation opportunities and issues to the community.

<i>Action:</i>	Responsible Parties	Resources	Funding	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1. Continue to increase awareness of open space and recreation opportunities in Sterling	OSIC, Rec. Dept, Econ Dev Com.			Ongoing						
2. Utilize Sterling oriented social media platforms and website to promote recreation and conservation events or meetings	OSIC, Rec. Dept, Ag Com, ConCom			Ongoing						
3. Promote coordination/part	OSIC, Rec. Dept, Land			Ongoing						

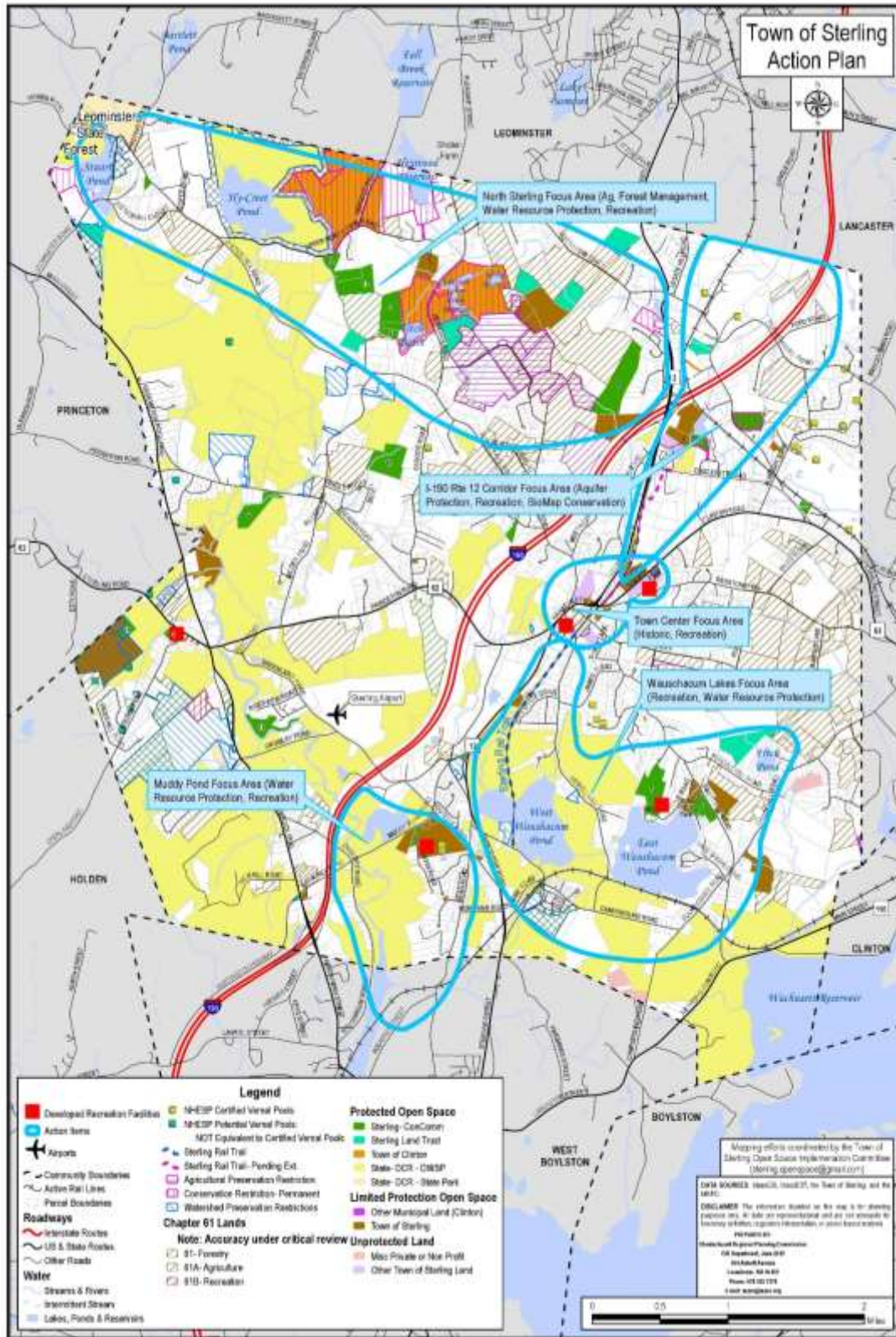
nerships between various civic, agricultural, and natural resource organizations in Sterling regarding open space and recreation opportunities and issues	Trust, Ag Com, ConCom			
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GOAL D: Conduct a comprehensive review of town bylaws and procedures that affect decisions about open space and recreation.

Objective 1: Identify Sterling protective bylaws and board/committee processes impacting decision making relative to the community's open space and recreation priorities and needs.

<i>Action:</i>	Responsible Parties	Resources	Funding	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1. Identify key bylaws or procedures that need updating	Master Plan Comm			Ongoing over 3 years						
2. Update & change key bylaws or procedures that need updating	All Town Boards			Ongoing over 3 years						

See Map 9-1. Town of Sterling Action Plan



Map 9-1. Town of Sterling Action Plan

SECTION 10 – PUBLIC COMMENTS

(review by various boards needed before submittal of Update to DCS for approval)

SECTION 11 – REFERENCES

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Sterling Board of Assessors

Sterling Water Department -- William Tuttle, *Annual Consumer Confidence Reports 2010-2016*

Sterling Conservation Commission Members and Matt Marro, Conservation Agent

Sterling DPW -- William Tuttle Superintendent; Mark Semenuk Waterforeman

Sterling Historical Commission -- Jim French

Sterling Land Trust -- Marion Larson, Jim French, Peder Pedersen

Sterling Meetinghouse News

Sterling Municipal Light Department -- Sean Hamilton

Sterling Planning Board

Sterling Police Department -- Chief Gary Chamberland

Sterling Recreation Department -- Kristen Dietl, Recreation Committee members

Sterling General Bylaw

Sterling Protective Bylaw

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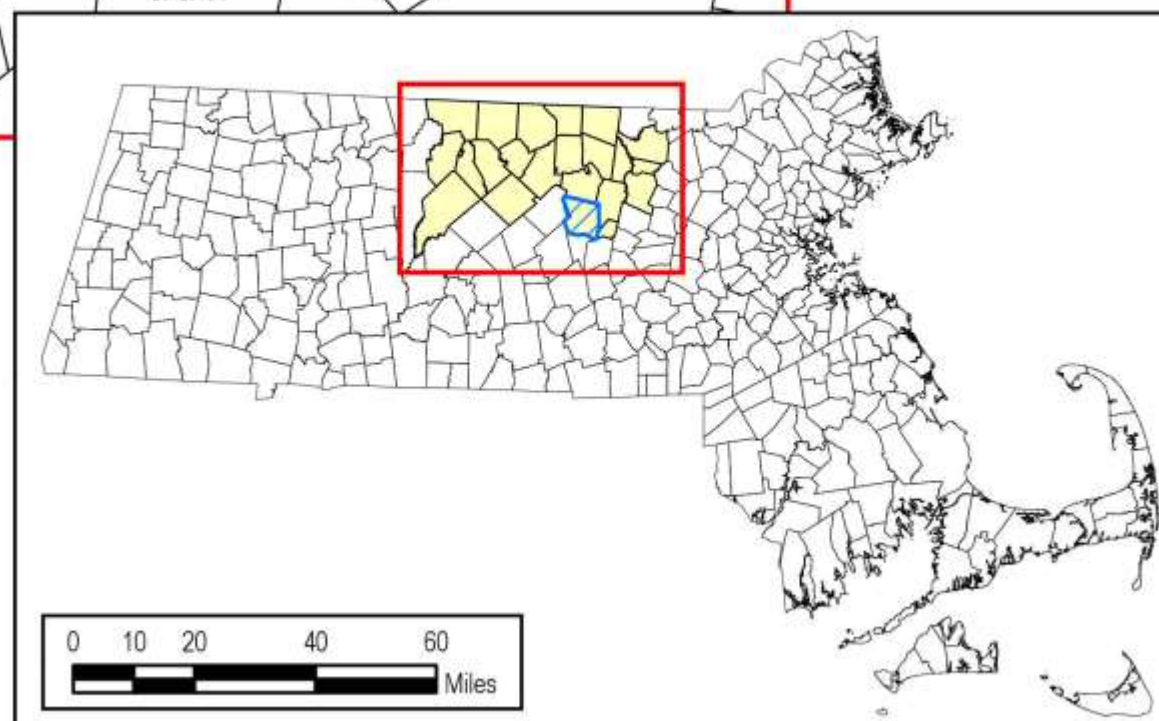
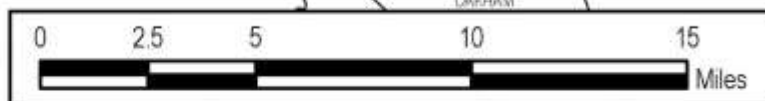
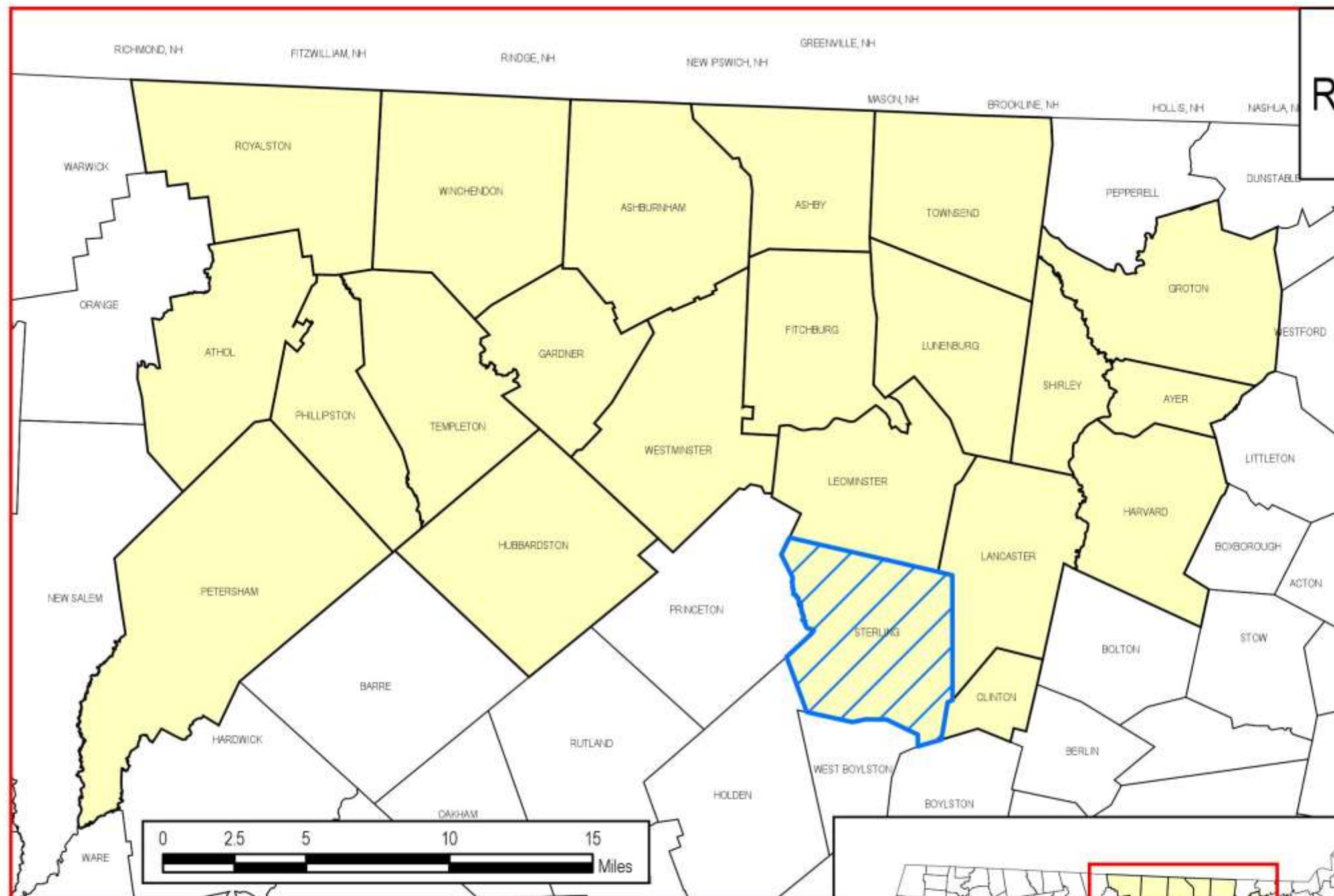
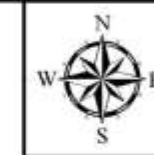
US Census 1970, 1980, 1990, 2000, 2016

US Census data as compiled by City-Data.com <http://www.city-ata.com/city/Massachusetts.html>

SECTION 12 – APPENDICES

APPENDIX A – MAPS

Sterling, MA: Regional Context Locus Map



DATA SOURCES: MassGIS, MassDOT, the Town of Sterling and the MRPC.

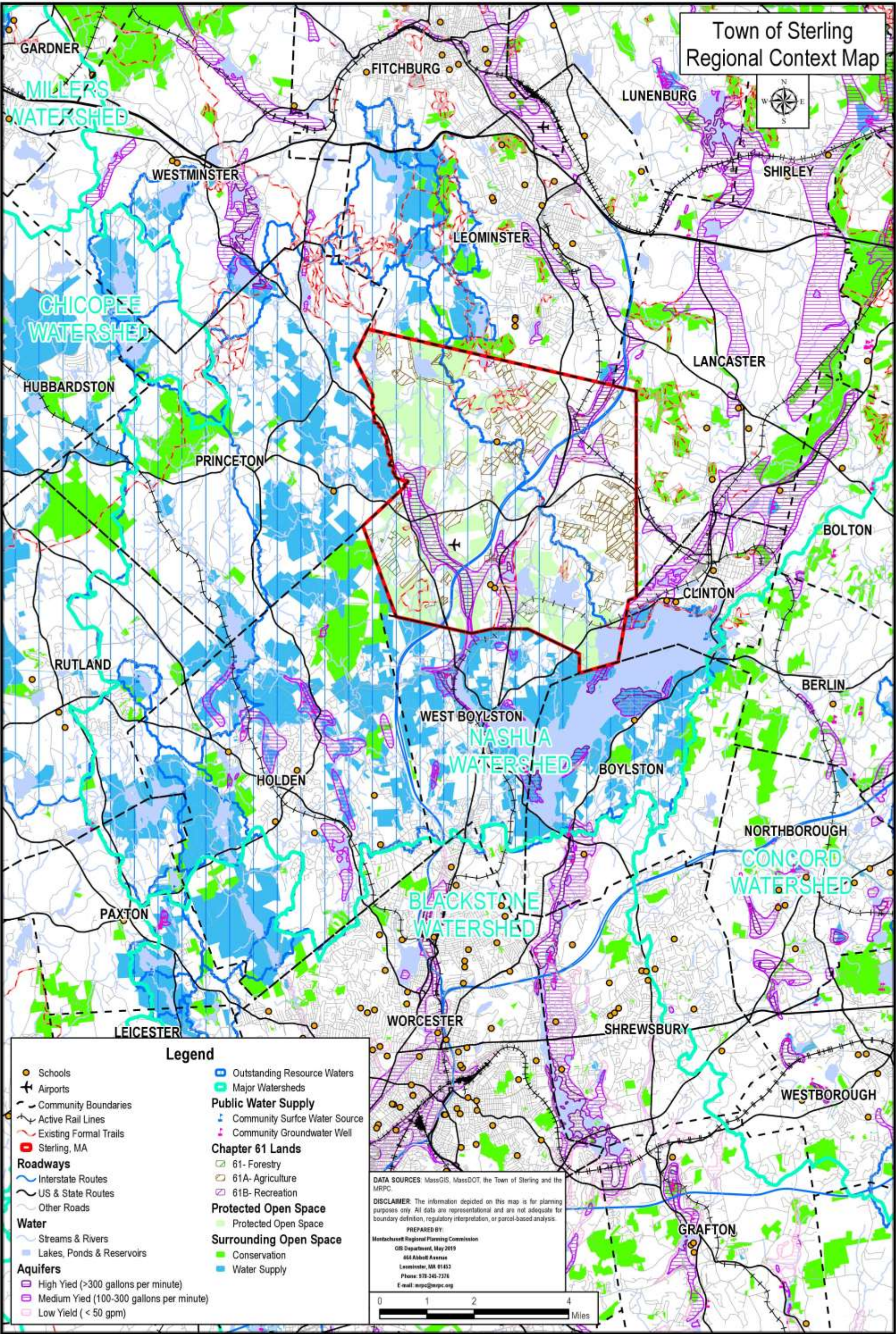
DISCLAIMER: The information depicted on this map is for planning purposes only. All data are representational and are not adequate for boundary definition, regulatory interpretation, or parcel-based analysis.

PREPARED BY:
Montachusett Regional Planning Commission
GIS Department, April 2019
464 Abbott Avenue
Leominster, MA 01453
Phone: 978-345-7376
E-mail: mrpc@mrpc.org

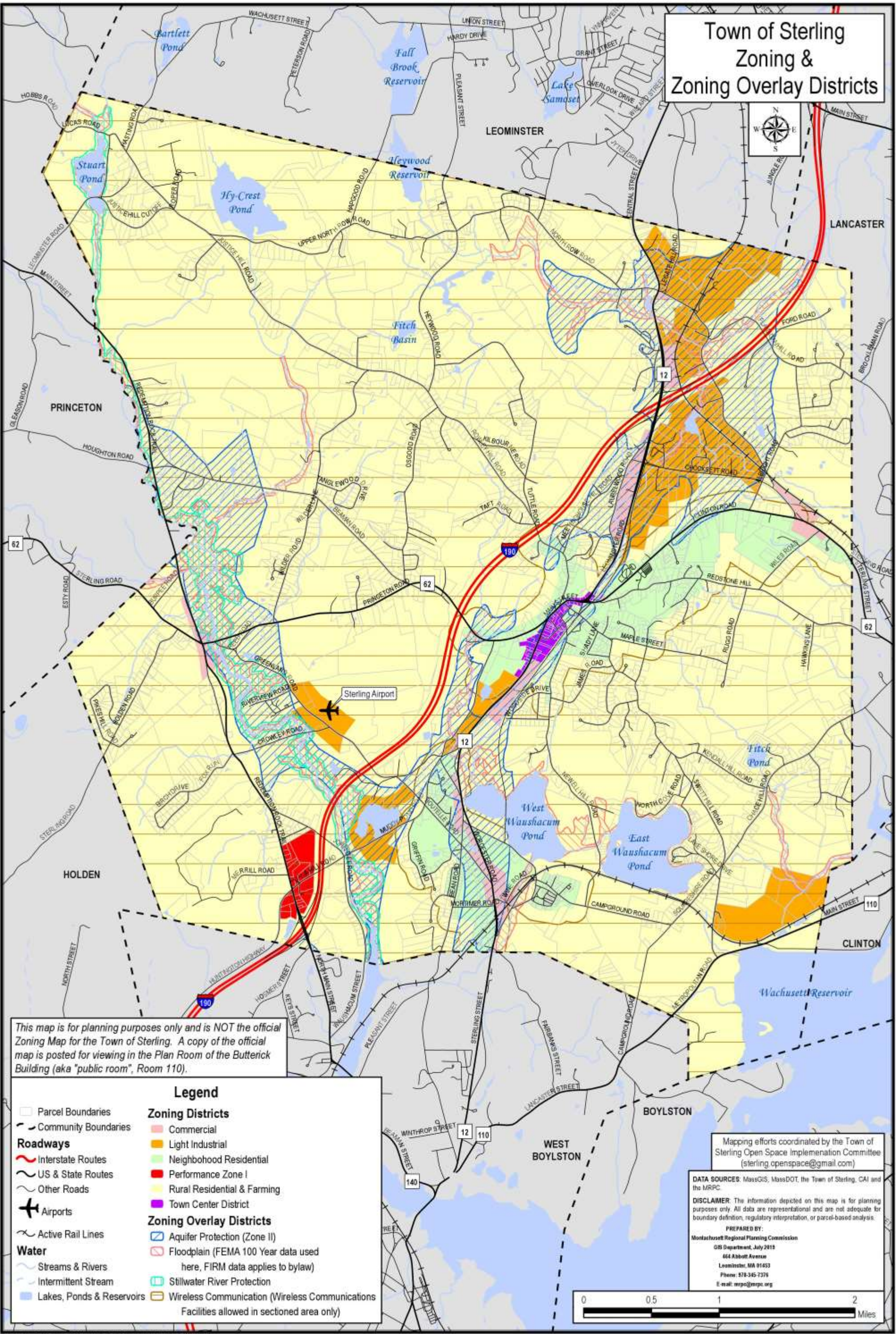


Legend

- MA Community Boundaries
- MRPC Communities
- Sterling, MA



Town of Sterling Zoning & Zoning Overlay Districts



This map is for planning purposes only and is NOT the official Zoning Map for the Town of Sterling. A copy of the official map is posted for viewing in the Plan Room of the Butterick Building (aka "public room", Room 110).

- Legend**

 - Parcel Boundaries
 - Community Boundaries
 - Roadways**
 - Interstate Routes
 - US & State Routes
 - Other Roads
 - Airports
 - Active Rail Lines
 - Water**
 - Streams & Rivers
 - Intermittent Stream
 - Lakes, Ponds & Reservoirs
- Zoning Districts**

 - Commercial
 - Light Industrial
 - Neighborhood Residential
 - Performance Zone I
 - Rural Residential & Farming
 - Town Center District

Zoning Overlay Districts

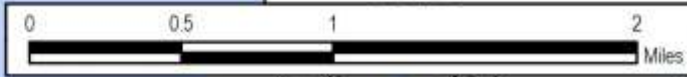
 - Aquifer Protection (Zone II)
 - Floodplain (FEMA 100 Year data used here, FIRM data applies to bylaw)
 - Stillwater River Protection
 - Wireless Communication (Wireless Communications Facilities allowed in sectioned area only)

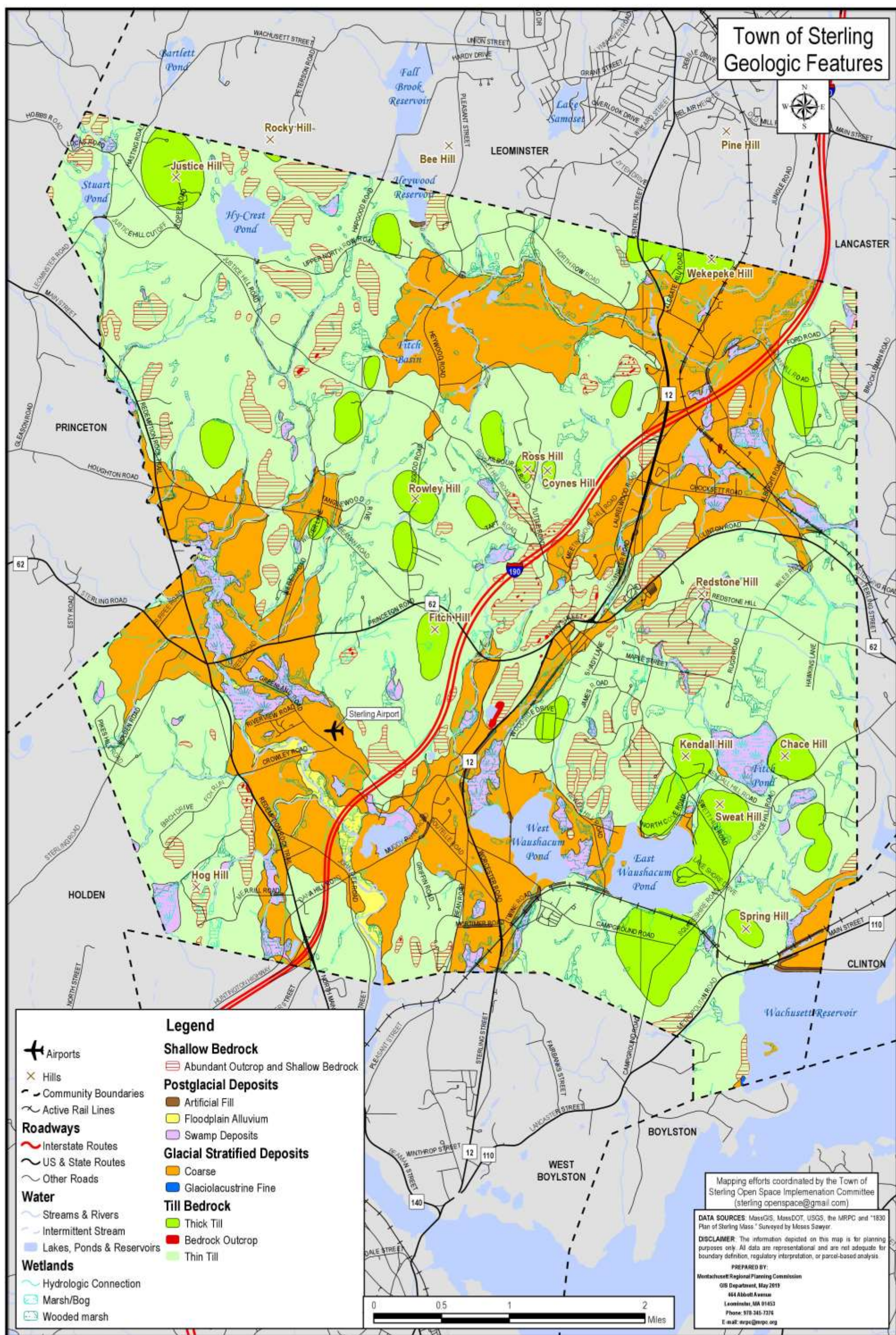
Mapping efforts coordinated by the Town of Sterling Open Space Implementation Committee (sterling.openspace@gmail.com)

DATA SOURCES: MassGIS, MassDOT, the Town of Sterling, CAI and the MRPC

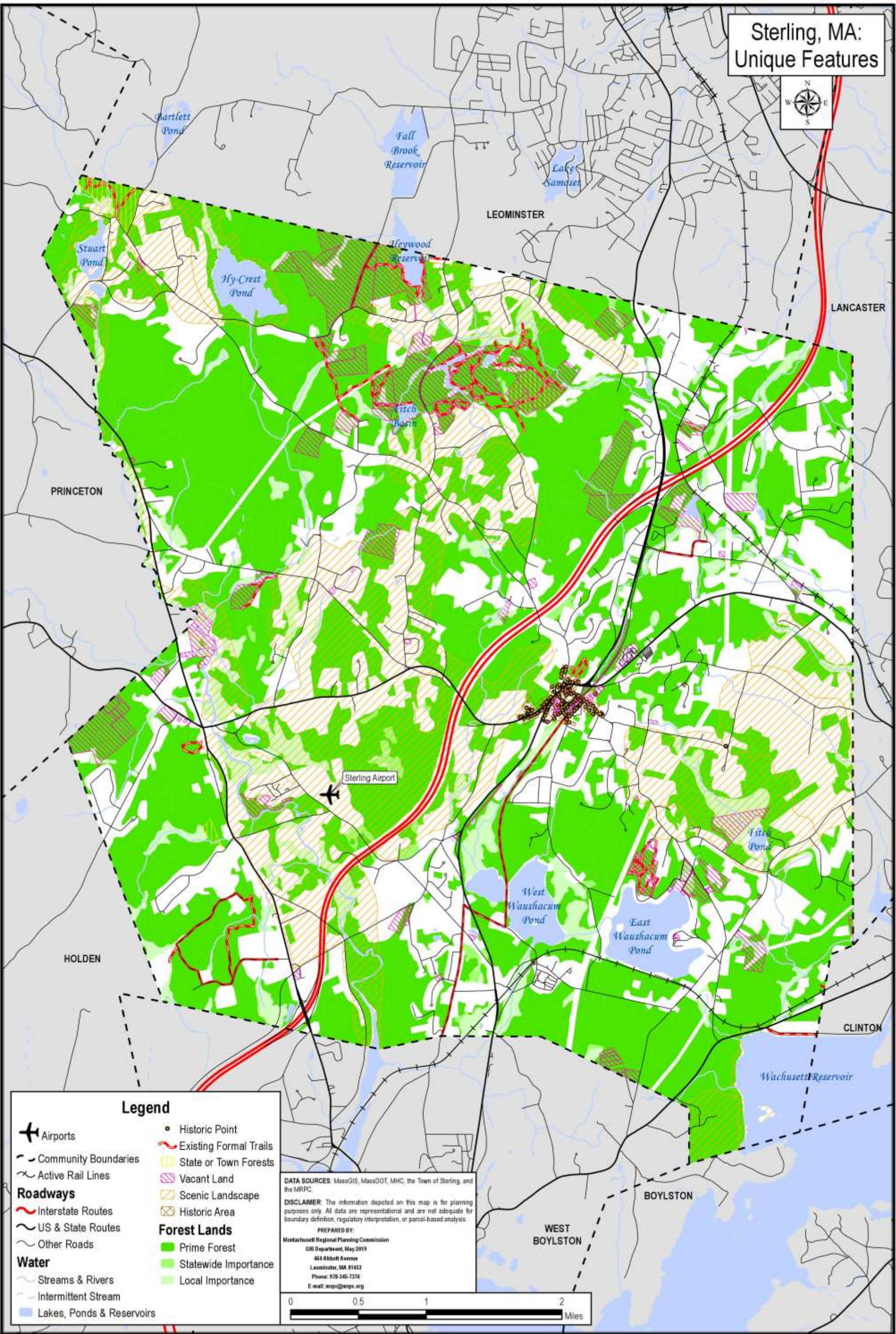
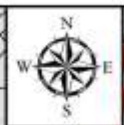
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PREPARED BY:
Montachusett Regional Planning Commission
GIS Department, July 2015
464 Abbott Avenue
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Phone: 578-345-7376
E-mail: mrpc@mrpc.org





Sterling, MA: Unique Features



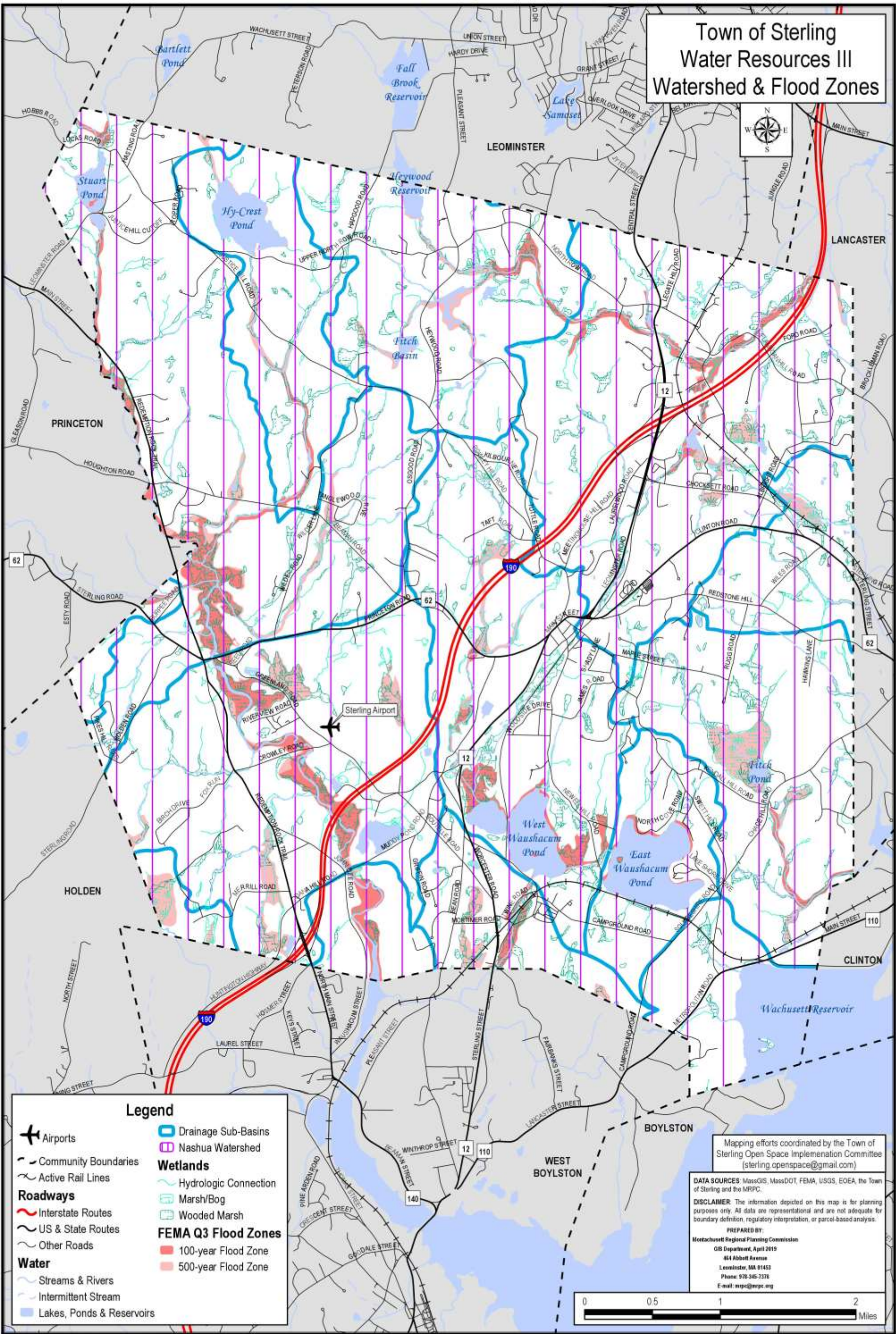
DATA SOURCES: MassGIS, MassDOT, MHC, the Town of Sterling, and the MRPC.

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Town of Sterling Water Resources III Watershed & Flood Zones



Airports

Community Boundaries

Active Rail Lines

Roadways

Interstate Routes

US & State Routes

Other Roads

Water

Streams & Rivers

Intermittent Stream

Lakes, Ponds & Reservoirs

Legend

Drainage Sub-Basins

Nashua Watershed

Wetlands

Hydrologic Connection

Marsh/Bog

Wooded Marsh

FEMA Q3 Flood Zones

100-year Flood Zone

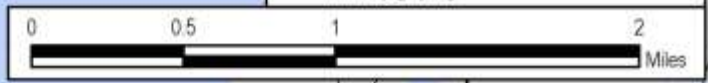
500-year Flood Zone

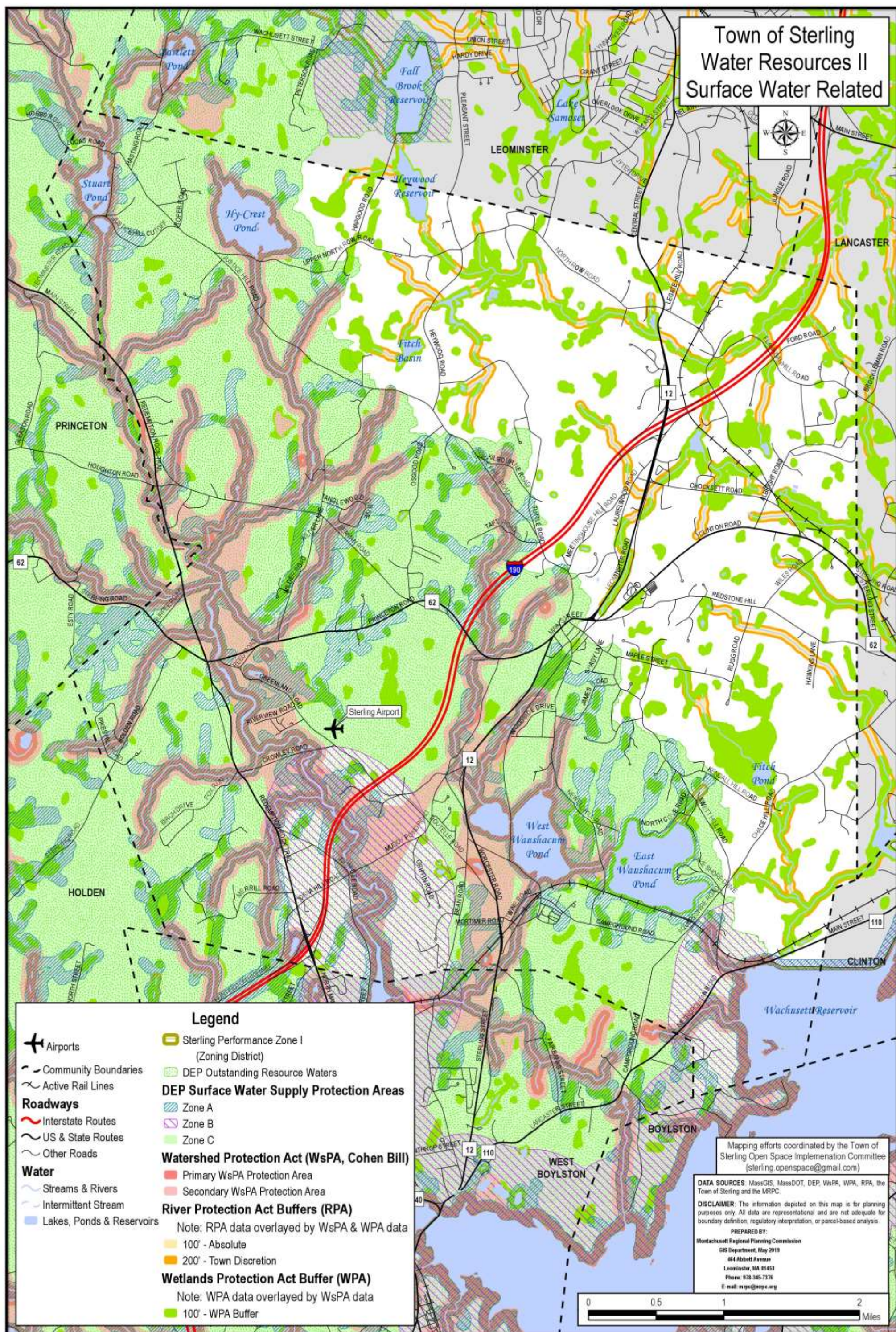
Mapping efforts coordinated by the Town of Sterling Open Space Implementation Committee (sterling.openspace@gmail.com)

DATA SOURCES: MassGIS, MassDOT, FEMA, USGS, EOE, the Town of Sterling and the MRPC.

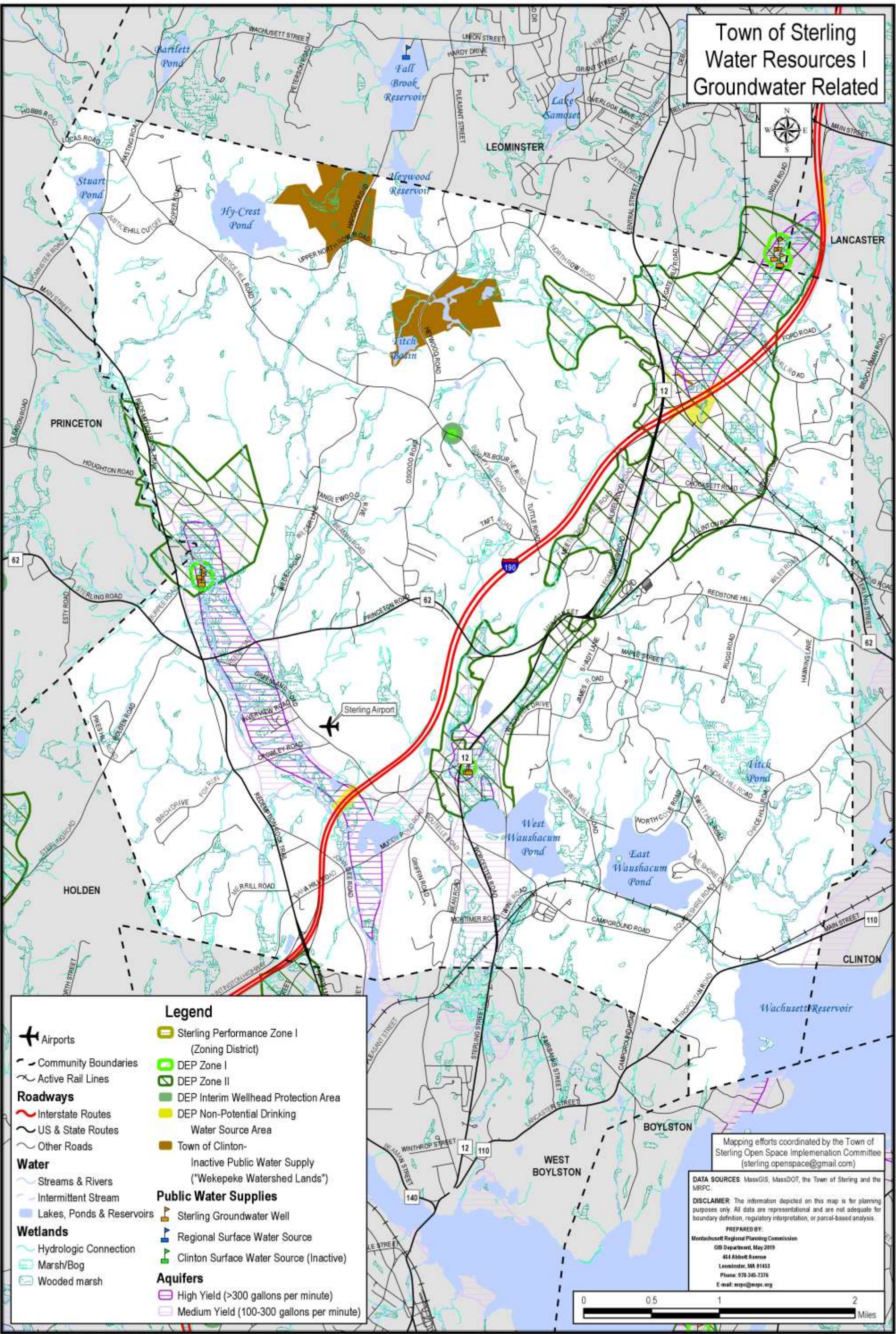
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Northwest Regional Planning Commission
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Town of Sterling Water Resources I Groundwater Related

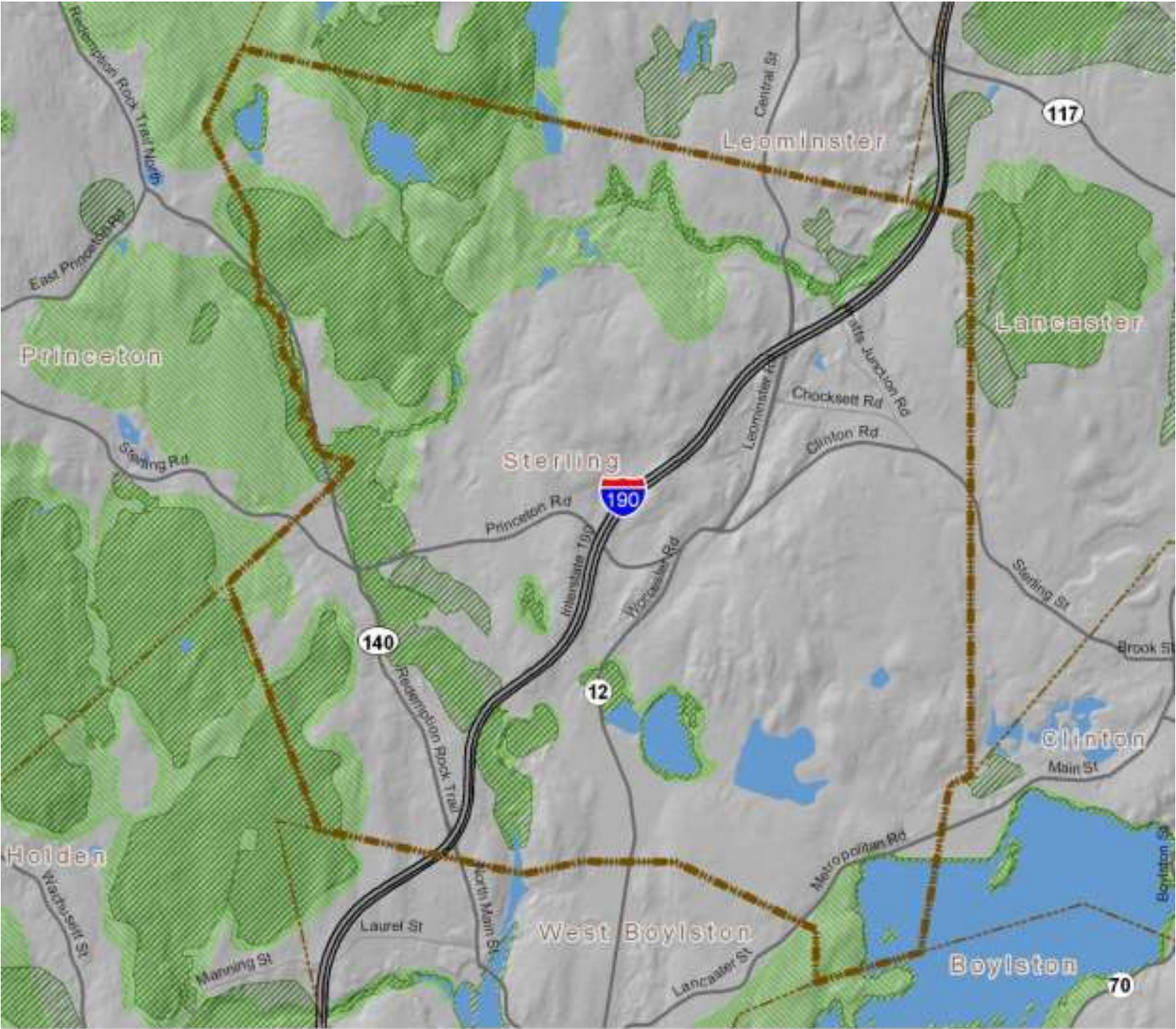


Mapping efforts coordinated by the Town of Sterling Open Space Implementation Committee (sterling.openspace@gmail.com)

DATA SOURCES: MassGIS, MassDOT, the Town of Sterling and the MRPC.

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GIS Department, May 2019
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BioMap2 Core Habitat

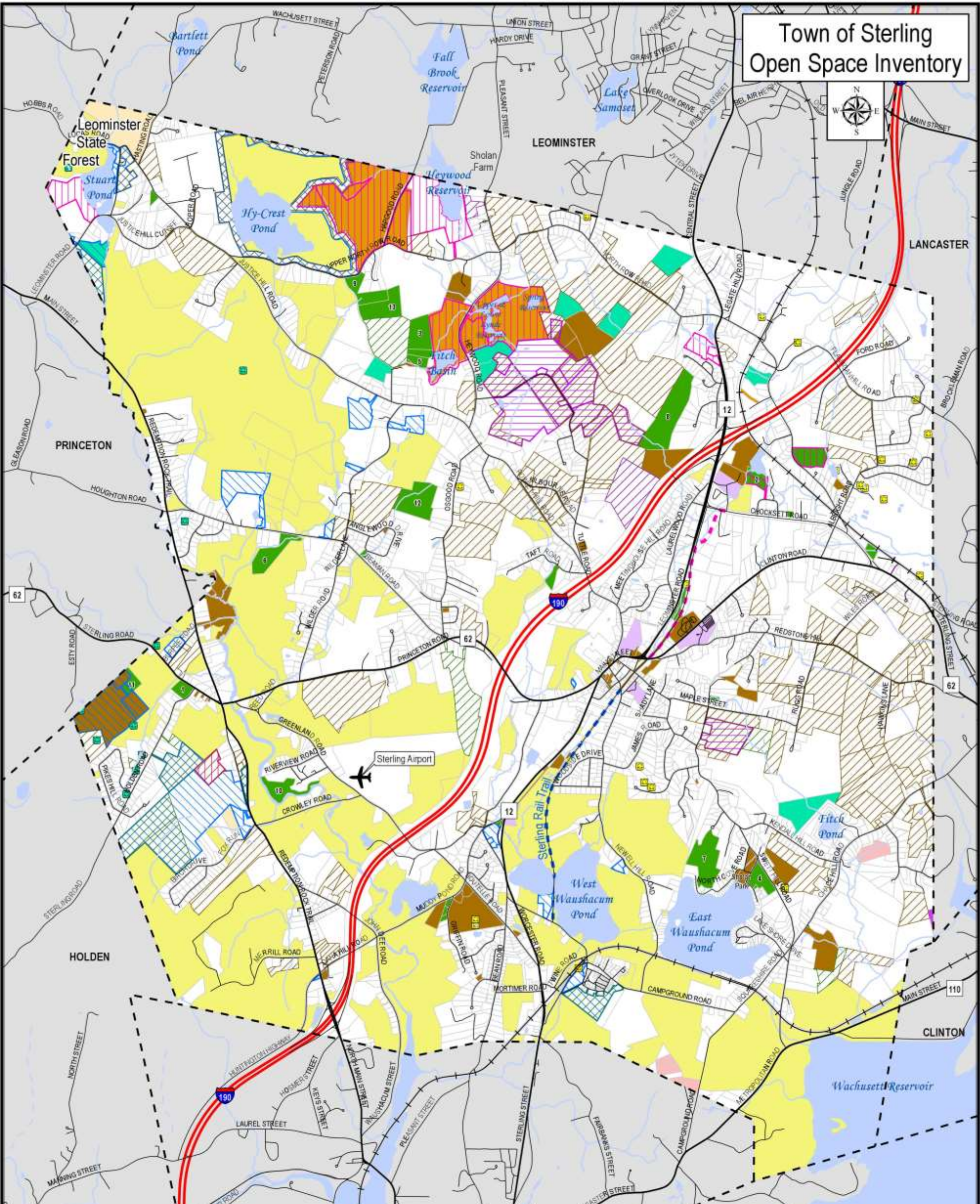
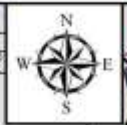


BioMap2 Critical Natural Landscape

1 Mile



Town of Sterling Open Space Inventory



Legend

Airports

Community Boundaries

Active Rail Lines

Parcel Boundaries

Roadways

Water

Chapter 61 Lands

Note: Accuracy under critical review

Protected Open Space

Limited Protection Open Space

Unprotected Land

NHESP Certified Vernal Pools

NHESP Potential Vernal Pools:

NOT Equivalent to Certified Vernal Pools

Other Municipal Land (Clinton)

Town of Sterling

Misc Private or Non Profit

Other Town of Sterling Land

61- Forestry

61A- Agriculture

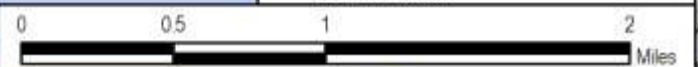
61B- Recreation

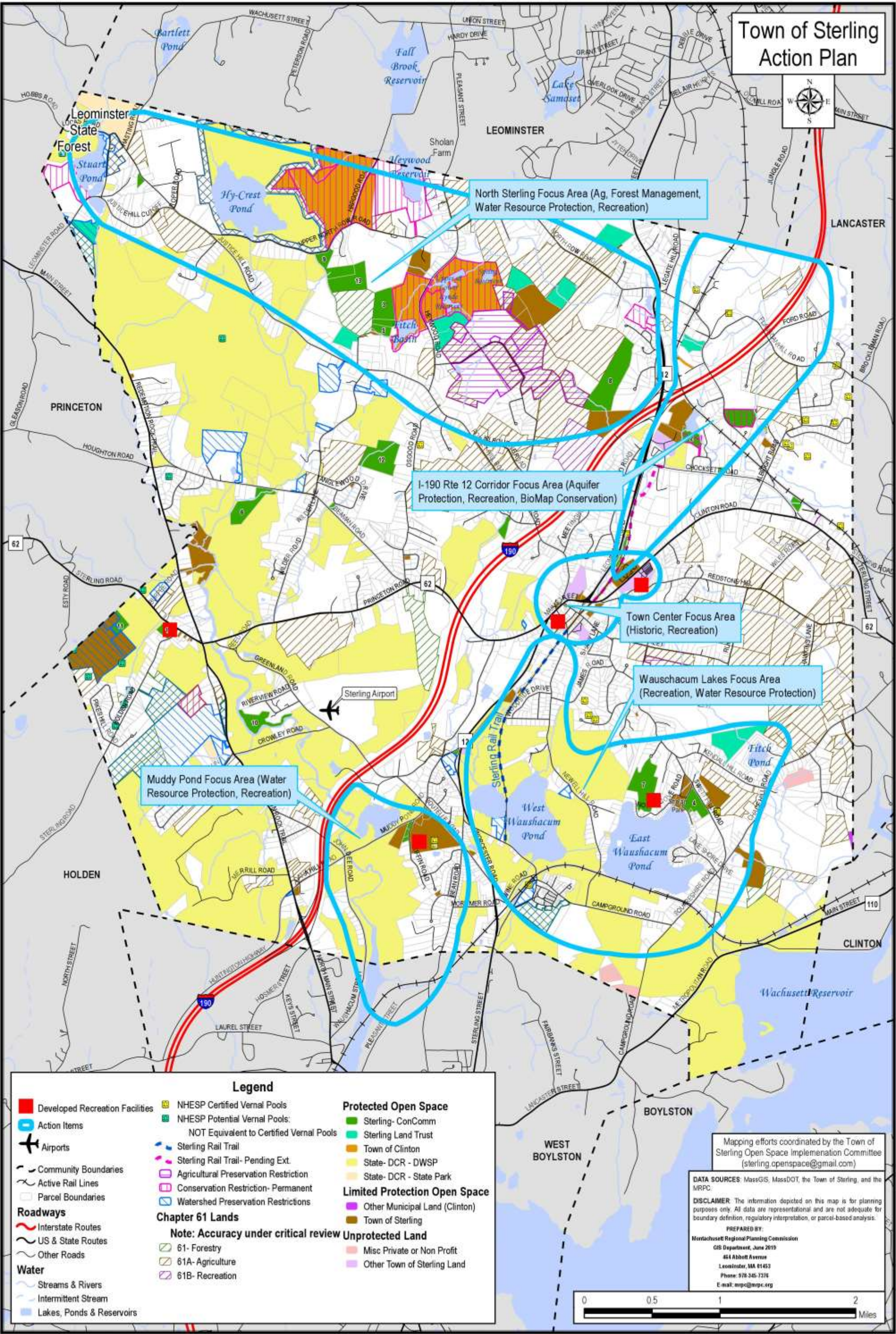
Mapping efforts coordinated by the Town of Sterling Open Space Implementation Committee (sterling.openspace@gmail.com)

DATA SOURCES: MassGIS, MassDOT, the Town of Sterling, and the MRPC.

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PREPARED BY:
Massachusetts Regional Planning Commission
GIS Department, May 2013
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E-mail: mrpc@mrpc.org





APPENDIX B – PUBLIC PARTICIPATION

Included in this appendix are email invitations to the April 2018 public forum, Forum PowerPoint presentation, news article publicizing the Forum and the summary of the OSIC Public Survey Results

Joint Email from OSIC and Select Board to Town Officials re: Public Forum on April 20, 2018

To: Sterling Board and Committee Members and Town Employees

From: Open Space Implementation Committee and Board of Selectmen

Subject: Public Forum on Sterling's open space and recreation priorities, Your Feedback Critical

The Sterling Open Space Implementation Committee (OSIC) is currently updating Sterling's 7-year *Open Space and Recreation Plan (OSRP)* and is seeking input not only from Sterling citizens but also from town boards, committees, and town employees at a **Public Forum to be held on Saturday April 28, 2018 from 9-11 AM at the Sterling Senior Center** located on Muddy Pond Road. Some boards and committees have been contacted by OSIC in the past year for information, but there are still information gaps that need to be filled in order to meet the state's OSRP requirements.

This comprehensive document contains information about demographics, history, geology, soil, water resources, recreation, wildlife, open space inventory along with environmental challenges. [A Summary of the 2010 ORSP](#) is on the town website to give you some background. After incorporating comments from the public from a recent survey and from the Public Forum, the Open Space Plan should reflect what the Sterling community sees as its priorities and needs for the next 7 years, distilled into an action plan. A completed, state-approved Plan will also make the town eligible to apply for state grants enhancing recreational facilities, parks, fields, and land protection.

As you are probably aware, Sterling is also taking steps to develop a new Master Plan for the town. A state approved Open Space Plan constitutes about 30% of what is needed in a Master Plan. Therefore, your comments will have a particularly significant impact this year. Please try to have someone from your board, committee or department represented at this meeting. Be prepared to provide an answer to this question: What are the top 3 challenges that your board, committee or staff face in the next 7 years?

This is an important opportunity to help shape the future of Sterling. The Public Forum program will include:

- OSIC mission; purpose of Open Space Plan; Forum Goals
- Overview of OSIC activities
- ‘Hidden Gems of Sterling’ Presentation
- Results of 2017-18 Open Space Survey
- It's Your Turn: Small group discussion on topics related to recreation infrastructure and activities, open space and environmental challenges in Sterling
- Small Group recommendations and feedback from each group.

Refreshments will be served and a packet of Sterling Trail maps will be available.

We look forward to meeting and hearing from you at the Forum.

The Open Space Implementation Committee (OSIC) --Jeff Keay, Marion Larson, Peder C. Pedersen, Chuck Plaisted, Robert Protano, Erin Rehrig, Jim Wilkinson

Emailing sent by OSIC members to Sterling groups, organizations and neighborhood email lists

To: Sterling Residents

From: Open Space Implementation Committee

Subject: Public Forum on Sterling's open space and recreation priorities, Your Feedback Critical

The Sterling Open Space Implementation Committee (OSIC) is currently updating Sterling's 7-year *Open Space and Recreation Plan (OSRP)* and is seeking input not only from Sterling citizens but also from town boards, committees, and town employees at a **Public Forum to be held on Saturday April 28, 2018 from 9-11 AM at the Sterling Senior Center** located on Muddy Pond Road.

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The Open Space Implementation Committee (OSIC) --Jeff Keay, Marion Larson, Peder C. Pedersen, Chuck Plaisted, Robert Protano, Erin Rehrig, Jim Wilkinson

Sterling Open Space and Implementation Committee
OSRP Update Survey 2017-18

TOTAL SURVEY PARTICIPANTS: 81 — roughly .01% of town population

I. The following tasks are critical for Sterling's Open Space Implementation:

Averages on a 5 point scale, 5 is highest, 1 is lowest.

1. Protect our water resources: Average = 4.85
2. Maintain Sterling's rural/historic character:. Average = 4.7
3. Provide access to open space lands & trails: Average = 4.72
4. Preserve natural habitats:. Average = 4.68
5. Preserve farms & active agriculture:. Average = 4.61
6. Provide adequate recreation facilities, fields, courts: Average = 4.3

II. The following actions should be taken regarding the protection of open space resources & recreation opportunities in Sterling.

1. Maintain existing recreational facilities: 4.48
2. Support initiatives to protect open space resources: 4.45
3. Implement conservation restrictions on critical parcels: 4.38
4. Improve regional trail connections (rail trail, etc.): 4.29
5. Improve access to public land: 4.28
6. Increase awareness of recreational opportunities: 4.23
7. Provide more recreational facilities and programs: 4.19
8. Purchase land for conservation open space & recreation: 4.15

9. Create safer streets for pedestrians: 4.14
10. Improve parking access at open space and rec. facilities: 3.87
11. Improve universal access at open space facilities: 3.83
12. Enable more water-based activities: 3.67
13. Continue current zoning and land use policies: 3.60
14. Consider residential zoning concepts: 3.53

III. Which of Sterling's recreational resources do you use? Check all that apply.

1. Rail Trail: 75
 2. Walking on road: 67
 3. Hiking trails: 57
 4. Public lands: 56
 5. Town Beach: 51
 6. Ponds/streams/rivers: 45
 7. Playgrounds: 34
 8. Playing fields: 29
 9. Tennis or basketball courts: 7
- Other: _Bicycling on roads; attending to the needs of younger women

IV. What are your top five recreational interests?

- | | |
|-----------------------------|--------------------------|
| 1. Hiking/walking: 55 | 8. Team sports: 18 |
| 2. Nature observation: 54 | 9. Fishing: 17 |
| 3. Canoeing/Kayaking: 39 | 10. Ice skating: 14 |
| 4. Swimming: 35 | 11. Camping: 14 |
| 5. Bicycling: 34 | 12. Running: 14 |
| 6. Picnicking: 21 | 13. Golfing: 11 |
| 7. Cross country skiing: 19 | 14. Motorized boating: 9 |

15. Snowmobiling: 9

16. Mountain biking: 8

17. Hunting: 5

18. Skateboarding: 4

19. OHV riding: 4

20. Horseback riding: 3

Other:

Snowshoeing: 1

Photography: 1

Sleeping: 1

V. Which of the following organized events for adults (A) or youth (Y) would you like to see in Sterling? (Ranked in order of response)

1. Nature Programs

Adult: 55

Youth: 45

Total: 100

5. Town Picnics

Adult: 38

Youth: 25

Total: 63

2. Historical Programs

Adult: 51

Youth: 32

Total: 84

6. Guided Hikes

Adult: 36

Youth: 26

Total: 62

3. Concerts

Adult: 47

Youth: 32

Total: 79

4. Agriculture Programs

Adult: 38

Youth: 31

Total: 69

7. Fitness Programs

Adult: 32

Youth: 25

Total: 57

Youth: 13

Total: 30

8. Water-Based Activities

Adult: 26

Youth: 28

Total: 54

9. Trips & Tours

Adult: 34

Youth: 14

Total: 48

10. Drama/Theatrical Events

Adult: 27

Youth: 21

Total: 48

11. Self-Improvement Programs

Adult: 30

Youth: 10

Total: 40

12. Organized Sports

Adult: 14

Youth: 25

Total: 39

13. Dances/Socials

Adult: 17

VI. How many years have you lived in Sterling?

Less than 5 years: 11 11-20 years: 10

5-10 years: 19 20+ years: 41

VII. Additional ideas, suggestions, or comments:

“Thank you so much for all your efforts!”

“Open spaces and trails that are dog-friendly.”

“The crosswalks and yellow lines (on the street and parking lots) could be repainted. One-way streets need more patrolling (or more signs at the bottom of Waushacum). Rout 12/Chocksett to Route 62/Chocksett needs to be fixed.”

“The attitude of the DPW must be improved if Sterling hopes to grow in a supportive and well-planned manner. They do not respond to citizen concerns, do not respond to citizens’ emails, and seem to have their own agenda.”

“Canine-friendly trails are strongly encouraged as they offer a safer alternative to walking on Sterling’s often narrow winding roads — particularly during the winter months.”

“Open spaces, clean water, and access to recreational opportunities are critical to keeping Sterling a great place to live.”

“Please add snowshoeing to major recreational activities.”

“We appreciate your volunteer efforts!”

Publicity on Public Forum

The Landmark

Open Space Committee seeks citizen input

Posted Apr 26, 2018 at 12:01 AM

The Sterling Open Space Implementation Committee (OSIC) is currently updating Sterling's Open Space and Recreation Plan and is seeking input from Sterling citizens at a Public Forum to be held on April 28 from 9-11 a.m. at the Sterling Senior Center. This comprehensive document contains information about demographics, history, geology, soil, water resources, recreation, wildlife, open space inventory along with environmental challenges.

After incorporating comments from the public, the Open Space Plan will reflect what the Sterling community sees as its priorities and needs for the next 7 - 10 years, distilled into an action plan. A completed, state-approved Plan Sterling will also make the town eligible for state grants enhancing recreational facilities, parks, fields, and land protection. Sterling is taking steps to develop a new Master Plan for the town, and the updated Open Space Plan will be integrated into this master plan. Therefore, your comments will have a particularly significant impact this year.

This public forum will be an opportunity for residents to help shape the future of Sterling. To provide an interesting and informative meeting and to promote accurate feedback on the wide range of OSIC activities from the Sterling community, the program will include:

- *- OSIC mission; purpose of Open Space Plan; public forum goals
- *- Overview of recent OSIC activities
- *- Photo presentation of 'Hidden Gems of Sterling'
- *- 2017-18 Open Space Survey Results
- *- Introduction of group discussion topics on recreation, open space and environmental challenges in Sterling
- *- It's Your Turn - Small Group discussions and recommendations

Refreshments will be served, and a packet of Sterling Trail maps will be available for free.

Public Forum presentation

**Open Space Implementation Committee
Public Forum, April 28, 2018**

Members of the Open Space Implementation Committee
(OSIC) Town of Sterling:

Jeff Keay, Marion Larson, Peder C. Pedersen
Chuck Plaisted, Robert Protano, Erin Rehrig, Jim Wilkinson

**Open Space Implementation
Committee (OSIC)**

- Broaden awareness of and enhance public access to Sterling's open space, recreational, cultural and historical resources
- Maintain an updated Open Space & Recreation Plan

Agenda for this Public Forum

- Review OSIC activities over the last 5 years
- Summarize result the 2017-18 Open Space Survey
- Present 'Hidden Gems of Sterling'
- Receive input and ideas through group discussion of broad topic categories

OSIC Activities: Trail development

- Identify candidate 'Sterling Trails'
- Secure access permission
- Promote trails through guided hikes



OSIC Activities: Trail Work

- Selecting, mapping and preparing trail descriptions
- Constructing and placing trail kiosks, with DPW help
- Trail clean-up events with volunteers



OSIC Activities: Community Outreach

- Information about OSIC (Farmer's Market)
- Trail brochure distribution and web posting
- Letters of support for grant applications



Trail clearing with Boy Scouts



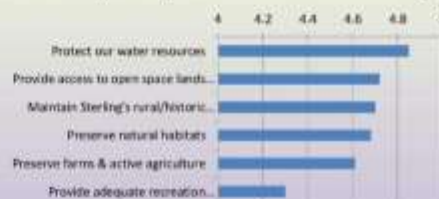
Purpose of Open Space Plan

- Protect open space for conservation purpose
- Serve as a resource guide for the Sterling community
- Allows Sterling to be eligible to apply for funding to improve or enhance recreation facilities

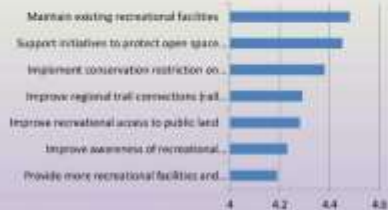
What do we want to learn from the survey?

- Identify the most critical open space-related challenges
- Determine the recreational interest and actual usage of recreational resources
- Prioritize actions to protect open space and create recreational opportunities

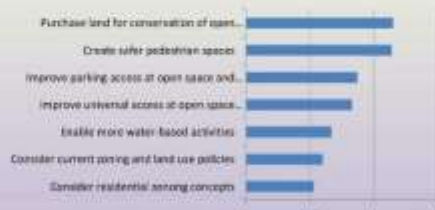
Critical Open Space Related Challenges

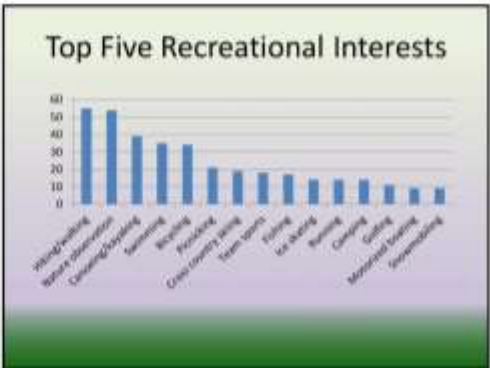


Actions regarding Sterling's Recreational Resources



Actions regarding Sterling's Open Space Resources





How well do you know Sterling?

Watch the next few images for a sample of some of the hidden (or not so hidden) gems of Sterling.







Group Topics #1:
Recreation: What are the needs and what may the challenges be?

- Playing fields
- Fitness trails with exercise stations
- Nature & interpretive trails
- Equestrian routes

Group Topics #2:
Open Space Conservation: How to formulate priorities?

- Land use
- Water resources
- Wildlife protection

Group Topics #3:
Environmental awareness: What are the trade-offs?

- Lifestyle choices
- Transportation options
- Energy conservation
- Smart development

Group Topics #4:
Economic benefits of Open Space

- Quality of life
- Attract new businesses to Sterling
- Healthy living

Thank You!
Now time for hearing your opinions

APPENDIX C – NHESP COMMUNICATION



DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

Jack Buckley, Director

January 10, 2017

Marion Larson
Sterling Open Space Committee
Town of Sterling
1 Park St.
Sterling, MA 01564

RE: Sterling Open Space and Recreation Plan

Dear Ms. Larson:

Thank you for contacting the Massachusetts Natural Heritage and Endangered Species Program (NHESP) regarding the Open Space and Recreation Plan for the Town of Sterling. Enclosed is information on species listed under the Massachusetts Endangered Species Act (MESA), as well as on Priority Natural Communities, Certified and Potential Vernal Pools, Coldwater Fishery Resource streams and rivers, and other aspects of biodiversity documented in our database for the Town of Sterling. The Town is encouraged to include this letter and associated materials in the Open Space and Recreation Plan.

MESA-listed Species

According to the NHESP database, the Town of Sterling currently has habitat for the following rare species listed under MESA:

- American Bittern (*Botaurus lentiginosus*, Endangered)
- Least Bittern (*Ixobrychus exilis*, Endangered)
- Alternate-flowered Water-milfoil (*Myriophyllum alterniflorum*, Endangered)
- Endangered Plant, name not released (NHESP does not release the names of species deemed particularly susceptible to collection)
- Blanding's Turtle (*Emydoidea blandingii*, Threatened)
- Bald Eagle (*Haliaeetus leucocephalus*, Threatened)
- Algae-like Pondweed (*Potamogeton confervoides*, Threatened)
- Common Loon (*Gavia immer*, Special Concern)
- Wood Turtle (*Glyptemys insculpta*, Special Concern)
- Spine-crowned Clubtail (*Gomphus abbreviatus*, Special Concern)
- Terete Arrowhead (*Sagittaria teres*, Special Concern)
- Water Shrew (*Sorex palustris*, Special Concern)
- Eastern Box Turtle (*Terrapene carolina*, Special Concern)

MASSWILDLIFE

Fact sheets on each of these species may be downloaded from our website at <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/list-of-rare-species-in-massachusetts.html>. The Town is encouraged to include these fact sheets in its Plan.

Priority Natural Communities

There is one Priority Natural Community documented to NHESP from Sterling:

- Acidic Shrub Fen

There are exemplary occurrences of two more common natural communities documented to NHESP from Sterling:

- Shrub Swamp
- White Pine-Oak Forest

Fact sheets on each of these natural communities may be downloaded from our website at <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/natural-communities/natural-community-fact-sheets.html>. The Town is encouraged to include these fact sheets in its Plan.

Vernal Pools

As of this date, there are 23 Certified and 128 Potential Vernal Pools documented from Sterling. Most of the Potential Vernal Pools are likely able to be certified; the Town is encouraged to certify vernal pools on its own properties and to require developers in town to certify pools on any property requiring permits from the town.

Coldwater Fishery Resources

There are thirteen Coldwater Fisheries Resource streams in Sterling:

- Ball Brook
- East Wachusett Brook
- Goodridge Brook
- Lynde Brook
- Rocky Brook
- Scanlon Brook
- South Meadow Brook
- Steam Mill Brook
- Stillwater River
- Wekepeke Brook
- Unnamed brook in southwest corner of town
- Unnamed tributary to Wekepeke Brook, following north parallel to Rt. 12
- Unnamed brook draining to South Meadow Pond, originating near Redstone Hill Road

BioMap2

Fifteen areas within Sterling are *BioMap2* Core Habitat. They include 4 Forest Cores, 8 Aquatic Cores, 5 Wetland Cores, 1 Priority Natural Community Core, and areas for 13 Species of Conservation Concern. Some of these areas overlap.

Adjacent to some of these Core Habitats in Sterling are 6 areas of *BioMap2* Critical Natural Landscape, including 7 Aquatic Buffers, 4 Landscape Blocks, and 6 Wetland Buffers, some of which overlap. For an explanation of *BioMap2* and the Core Habitats within Sterling, please see the attached *BioMap2* Town Report.

Discussion

In a town like Sterling, which is almost entirely either developed or protected, it can be hard to see how to conserve the remaining biodiversity. Yet there are still many avenues for conservation actions left:

- **Land Protection:** In the northeastern corner of the town, Wekepeke Brook supports a largely unprotected population of Wood Turtles. Wood Turtles are considered to be at risk across New England. This particular population in Sterling and Leominster is robust; conserving land here will reduce sources of mortality for these long-lived reptiles.
- **Habitat Management:** The Town should assess its conservation areas for the presence of invasive species. If invasives are present in substantial numbers or areas, consider removing them. (Note that the Division of Fisheries and Wildlife has offered grants to fund such activities in the past and is hoping to do so again in the future).
- **Regulation:** The Town should support and encourage its Conservation Commission to enforce the provisions of the Massachusetts Wetlands Act. While there is no local board or official charged with enforcing the provisions of the Massachusetts Endangered Species Act, the Town could consider having the Conservation Commission and the Building Inspector notify development applicants of the presence/absence of Priority Habitat of Rare Species on the applicant's property.
- **Education and Outreach:** Developing community support for conservation of biodiversity is essential for successful efforts at land protection, habitat management, and regulation. Offering field trips on Town conservation areas, writing articles on conservation for local websites and newspapers, and encouraging local students to conduct biological surveys and observations on conservation areas are a few of the low-cost ways to build support that will pay off in the future.

The Town of Sterling is to be commended for undertaking production of an Open Space and Recreation Plan. Please do not hesitate to call me at 508-389-6351 if you have any further questions.

Sincerely,



Lynn C. Harper

Habitat Protection Specialist

Massachusetts Natural Heritage & Endangered Species Program

MASSWILDLIFE

BioMap2

CONSERVING THE BIODIVERSITY OF
MASSACHUSETTS IN A CHANGING WORLD

Sterling

Produced in 2012

This report and associated map provide information about
important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is
not intended for use in state regulations.





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What is *BioMap2* – Purpose and applications

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Core Habitat and Critical Natural Landscape Summaries

Elements of *BioMap2* Cores

Core Habitat Summaries

Elements of *BioMap2* Critical Natural Landscapes

Critical Natural Landscape Summaries





Introduction

The Massachusetts Department of Fish & Game, through the Division of Fisheries and Wildlife's Natural Heritage & Endangered Species Program (NHESP), and The Nature Conservancy's Massachusetts Program developed *BioMap2* to protect the state's biodiversity in the context of climate change.

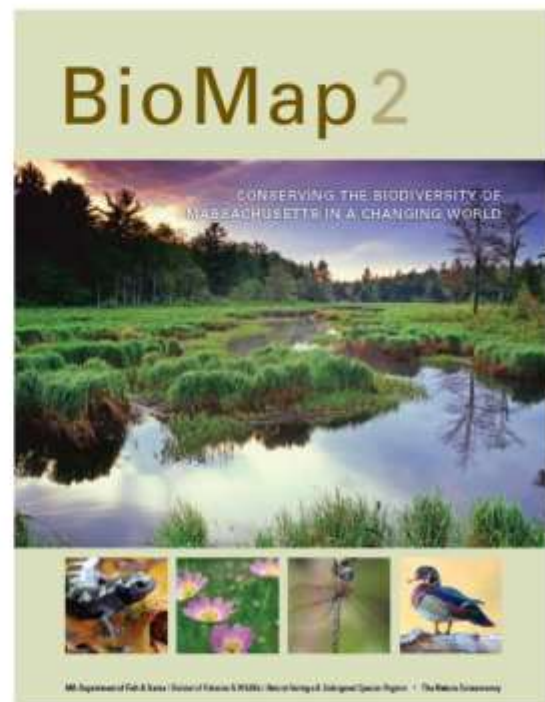
BioMap2 combines NHESP's 30 years of rigorously documented rare species and natural community data with spatial data identifying wildlife species and habitats that were the focus of the Division of Fisheries and Wildlife's 2005 State Wildlife Action Plan (SWAP). *BioMap2* also integrates The Nature Conservancy's assessment of large, well-connected, and intact ecosystems and landscapes across the Commonwealth, incorporating concepts of ecosystem resilience to address anticipated climate change impacts.

Protection and stewardship of *BioMap2* Core Habitat and Critical Natural Landscape is essential to safeguard the diversity of species and their habitats, intact ecosystems, and resilient natural landscapes across Massachusetts.

What Does Status Mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations 321 CMR 10.00. Rare species are categorized as Endangered, Threatened or of Special Concern according to the following:

- Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.



Get your copy of the *BioMap2* report! Download from www.nhesp.org or contact Natural Heritage at 508-389-6360 or natural.heritage@state.ma.us.

- Threatened species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- Special Concern species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition NHESP maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated by any law or regulations, but they can help to identify





ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 sites or few remaining acres in the state.
- Vulnerable communities typically have 21-100 sites or limited acreage across the state.
- Secure communities typically have over 100 sites or abundant acreage across the state; however, excellent examples are identified as Core Habitats to ensure continued protection.

In 2005 the Massachusetts Division of Fisheries and Wildlife completed a comprehensive State Wildlife Action Plan (SWAP) documenting the status of Massachusetts wildlife and providing recommendations to help guide wildlife conservation decision-making. SWAP includes all the wildlife species listed under the Massachusetts Endangered Species Act (MESA), as well as more than 80 species that need conservation attention but do not meet the requirements for inclusion under MESA. The SWAP document is organized around habitat types in need of conservation within the Commonwealth. While the original BioMap focused primarily on rare species protected under MESA, *BioMap2* also addresses other Species of Conservation Concern, their habitats, and the ecosystems that support them to create a spatial representation of most of the elements of SWAP.

BioMap2: One Plan, Two Components

BioMap2 identifies two complementary spatial layers, Core Habitat and Critical Natural Landscape.

Core Habitat identifies key areas that are critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth. Protection of Core Habitats will contribute to the conservation of specific elements of biodiversity.

Critical Natural Landscape identifies large natural Landscape Blocks that are minimally impacted by development. If protected, these areas will provide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience to natural and anthropogenic disturbances in a rapidly changing world. Areas delineated as Critical Natural Landscape also include buffering upland around wetland, coastal, and aquatic Core Habitats to help ensure their long-term integrity.

The long-term persistence of Massachusetts biological resources requires a determined commitment to land and water conservation. Protection and stewardship of both Critical Natural Landscapes and Core Habitats are needed to realize the biodiversity conservation vision of *BioMap2*.

Components of Core Habitat

Core Habitat identifies specific areas necessary to promote the long-term persistence of rare species, other Species of Conservation Concern, exemplary natural communities, and intact ecosystems.

Rare Species

There are 432 native plant and animal species listed as Endangered, Threatened or Special Concern under the Massachusetts Endangered Species Act (MESA) based on their rarity, population trends, and threats to survival. For





Table 1. Species of Conservation Concern described in the State Wildlife Action Plan and/or included on the MESA List and for which habitat was mapped in *BioMap2*. Note that plants are not included in SWAP, and that marine species such as whales and sea turtles are not included in *BioMap2*.

Taxonomic Group	MESA-listed Species	Non-listed Species of Conservation Concern
Mammals	4	5
Birds	27	23
Reptiles	10	5
Amphibians	4	3
Fish	10	17
Invertebrates	102	9
Plants	256	0
Total	413	62

BioMap2, NHESP staff identified the highest quality habitat sites for each non-marine species based on size, condition, and landscape context.

Other Species of Conservation Concern

In addition to species on the MESA List described previously, the State Wildlife Action Plan (SWAP) identifies 257 wildlife species and 22 natural habitats most in need of conservation within the Commonwealth. *BioMap2* includes species-specific habitat areas for 45 of these species and habitat for 17 additional species which was mapped with other coarse-filter and fine-filter approaches.

Priority Natural Communities

Natural communities are assemblages of plant and animal species that share a common environment and occur together repeatedly on the landscape. *BioMap2* gives conservation

priority to natural communities with limited distribution and to the best examples of more common types.

Vernal Pools

Vernal pools are small, seasonal wetlands that provide important wildlife habitat, especially for amphibians and invertebrate animals that use them to breed. *BioMap2* identifies the top 5 percent most interconnected clusters of Potential Vernal Pools in the state.

Forest Cores

In *BioMap2*, Core Habitat includes the best examples of large, intact forests that are least impacted by roads and development, providing critical habitat for numerous woodland species. For example, the interior forest habitat defined by Forest Cores supports many bird species sensitive to the impacts of roads and development, such as the Black-throated Green Warbler, and helps maintain ecological processes found only in unfragmented forest patches.

Wetland Cores

BioMap2 used an assessment of Ecological Integrity to identify the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores

To delineate integrated and functional ecosystems for fish species and other aquatic





Species of Conservation Concern, beyond the species and exemplary habitats described above, *BioMap2* identifies intact river corridors within which important physical and ecological processes of the river or stream occur.

Components of Critical Natural Landscape

Critical Natural Landscape identifies intact landscapes in Massachusetts that are better able to support ecological processes and disturbance regimes, and a wide array of species and habitats over long time frames.

Landscape Blocks

BioMap2 identifies the most intact large areas of predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes.

Upland Buffers of Wetland and Aquatic Cores

A variety of analyses were used to identify protective upland buffers around wetlands and rivers.

Upland Habitat to Support Coastal Adaptation

BioMap2 identifies undeveloped lands adjacent to and up to one and a half meters above existing salt marshes as Critical Natural Landscapes with high potential to support inland migration of salt marsh and other coastal habitats over the coming century.

The conservation areas identified by *BioMap2* are based on breadth and depth of data, scientific expertise, and understanding of Massachusetts' biodiversity. The numerous sources of information and analyses used to

Legal Protection of Biodiversity

BioMap2 presents a powerful vision of what Massachusetts would look like with full protection of the land most important for supporting the Commonwealth's biodiversity. While *BioMap2* is a planning tool with *no regulatory function*, all state-listed species enjoy legal protection under the [Massachusetts Endangered Species Act \(M.G.L. c.131A\)](#) and its implementing regulations ([321 CMR 10.00](#)). Wetland habitat of state-listed wildlife is also protected under the [Wetlands Protection Act Regulations \(310 CMR 10.00\)](#). The *Natural Heritage Atlas* contains maps of [Priority Habitats](#) and [Estimated Habitats](#), which are used, respectively, for regulation under the Massachusetts Endangered Species Act and the Wetlands Protection Act. For more information on rare species regulations, and to view Priority and Estimated Habitat maps, please see the [Regulatory Review](#) page at www.mass.gov/dfwele/dfw/nhesp/regulatory_review/reg_review_home.htm.

***BioMap2* is a conservation planning tool that does not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the *BioMap2* vision is fully realized, we must continue to protect our most imperiled species and their habitats.**

create Core Habitat and Critical Natural Landscape are complementary, and outline a comprehensive conservation vision for Massachusetts, from rare species to intact landscapes. In total, these robust analyses define a suite of priority lands and waters that, if permanently protected, will support Massachusetts' natural systems for generations to come.





Understanding Core Habitat Summaries

Following the Town Overview, there is a descriptive summary of each Core Habitat and Critical Natural Landscape that occurs in your city or town. These summaries highlight some of the outstanding characteristics of each Core Habitat and Critical Natural Landscape, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific fact sheets at www.nhesp.org.

Additional Information

For copies of the full *BioMap2* report, the Technical Report, and an [interactive mapping tool](#), visit the *BioMap2* [website](#) via the Land Protection and Planning tab at www.nhesp.org. If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program

By phone 508-389-6360
By fax 508-389-7890
By email natural.heritage@state.ma.us
By Mail 100 Hartwell Street, Suite 230
West Boylston, MA 01583

The GIS datalayers of *BioMap2* are available for download from MassGIS at www.mass.gov/mgis.



**Natural Heritage
& Endangered
Species Program**

Massachusetts Division of Fisheries and Wildlife
100 Hartwell Street, Suite 230, West Boylston, MA 01583
phone: 508-389-6360 fax: 508-389-7890

For more information on rare species and natural communities, please see our fact sheets online at www.nhesp.org.



Town Overview

Sterling lies on the border of the Southern New England Coastal Plains and Hills and the Worcester Plateau Ecoregions. The Southern New England Coastal Plains and Hills Ecoregion is comprised of plains with a few low hills. Forests are mainly central hardwoods with some transition hardwoods and some elm-ash-red maple and red and white pine. Many major rivers drain this area. The Worcester Plateau Ecoregion is an area that includes the most hilly areas of the central upland of Massachusetts with a few high monadnocks and mountains. The dominant forest types present are transition hardwoods and some northern hardwoods. Forested wetlands are common. Surface waters are acidic. Many major rivers drain this area.



Sterling at a Glance

- Total Area: 20,264 acres (31.7 square miles)
- Human Population in 2010: 7,808
- Open space protected in perpetuity: 6,932 acres, or 34.2% percent of total area*
- BioMap2 Core Habitat: 3,689 acres
- BioMap2 Core Habitat Protected: 2,837 acres or 76.9%
- BioMap2 Critical Natural Landscape: 5,758 acres
- BioMap2 Critical Natural Landscape Protected: 4,037 acres or 70.1%.

BioMap2 Components

Core Habitat

- 1 Exemplary or Priority Natural Community
- 4 Forest Cores
- 5 Wetland Cores
- 8 Aquatic Cores
- 14 Species of Conservation Concern Cores**
 - 1 mammal, 4 birds, 2 reptiles, 1 insect, 1 mussel, 3 plants

Critical Natural Landscape

- 4 Landscape Blocks
- 6 Wetland Core Buffers
- 7 Aquatic Core Buffers

* Calculated using MassGIS data layer "Protected and Recreational Open Space—March, 2012".

** See next pages for complete list of species, natural communities and other biodiversity elements.

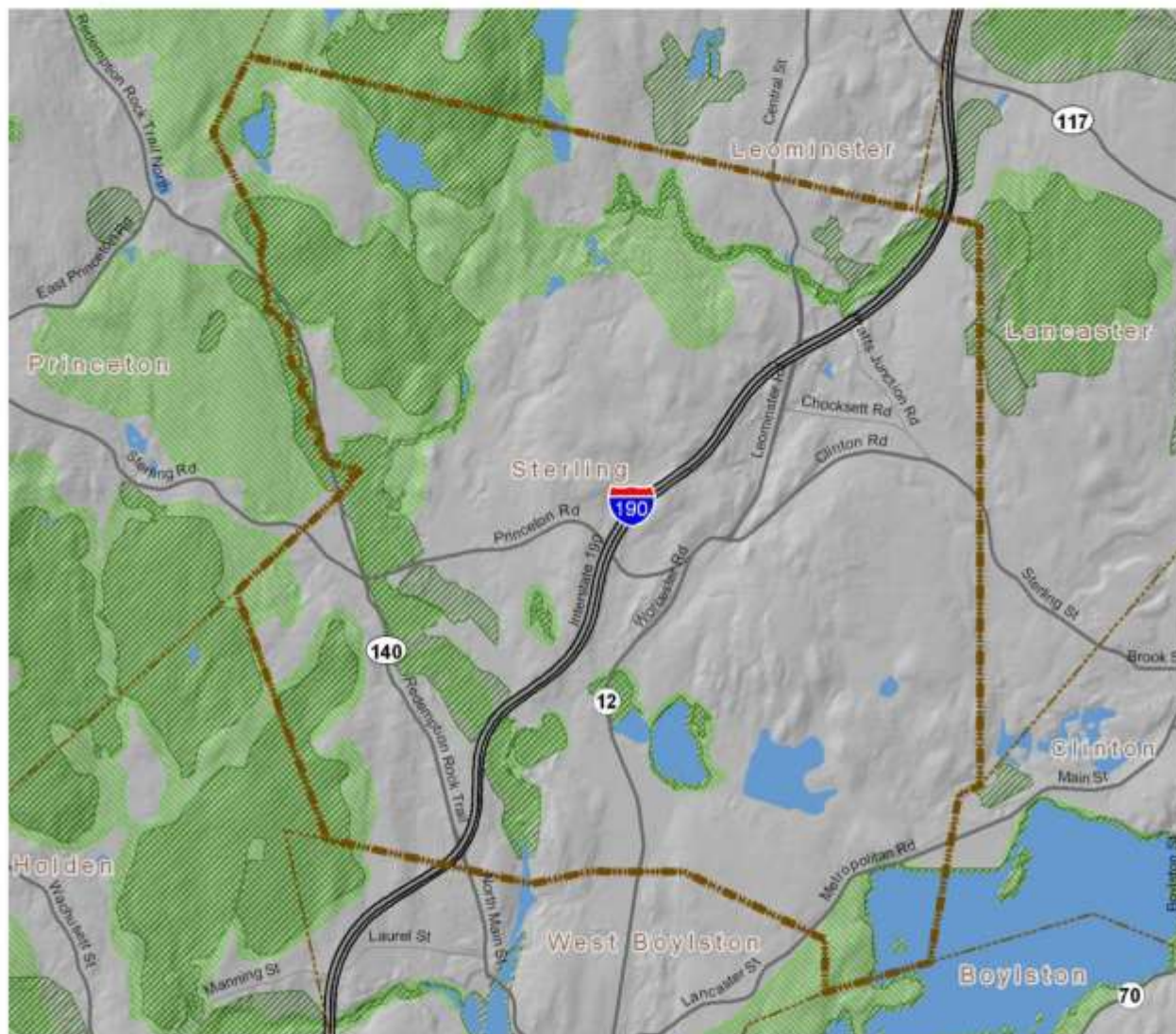




BioMap2

Conserving the Biodiversity of Massachusetts in a Changing World

BioMap2 Core Habitat and Critical Natural Landscape in Sterling



BioMap2 Core Habitat



BioMap2 Critical Natural Landscape

1 Mile



Natural Heritage
& Endangered
Species Program

Massachusetts Division of Fisheries and Wildlife
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phone: 508-389-6360 fax: 508-389-7890

For more information on rare species and natural communities, please see our fact sheets online at www.nhesp.org.



**Species of Conservation Concern, Priority and Exemplary Natural Communities,
and Other Elements of Biodiversity in Sterling**

Mussels

[Triangle Floater](#), (*Alasmidonta undulata*), Non-listed SWAP species

Insects

Dragonflies

[Spine-crowned Clubtail](#), (*Gomphus abbreviatus*), SC

Reptiles

Spotted Turtle, (*Clemmys guttata*), Non-listed SWAP

[Wood Turtle](#), (*Glyptemys insculpta*), SC

Birds

[American Bittern](#), (*Botaurus lentiginosus*), E

[Least Bittern](#), (*Ixobrychus exilis*), E

[Common Loon](#), (*Gavia immer*), SC

[Bald Eagle](#), (*Haliaeetus leucocephalus*), T

Mammals

[Water Shrew](#), (*Sorex palustris*), SC

Plants

[Alternate-flowered Water-milfoil](#), (*Myriophyllum alterniflorum*), E

[Terete Arrowhead](#), (*Sagittaria teres*), SC

[Algae-like Pondweed](#), (*Potamogeton confervoides*), T

Priority Natural Communities

[Acidic Shrub Fen](#), S3

Other BioMap2 Components

[Forest Core](#)

[Aquatic Core](#)

[Wetland Core](#)

[Landscape Block](#)

[Aquatic Core Buffer](#)

[Wetland Core Buffer](#)





E = Endangered

T = Threatened

SC = Special Concern

S1 = Critically Imperiled communities, typically 5 or fewer documented sites or very few remaining acres in the state.

S2 = Imperiled communities, typically 6-20 sites or few remaining acres in the state.

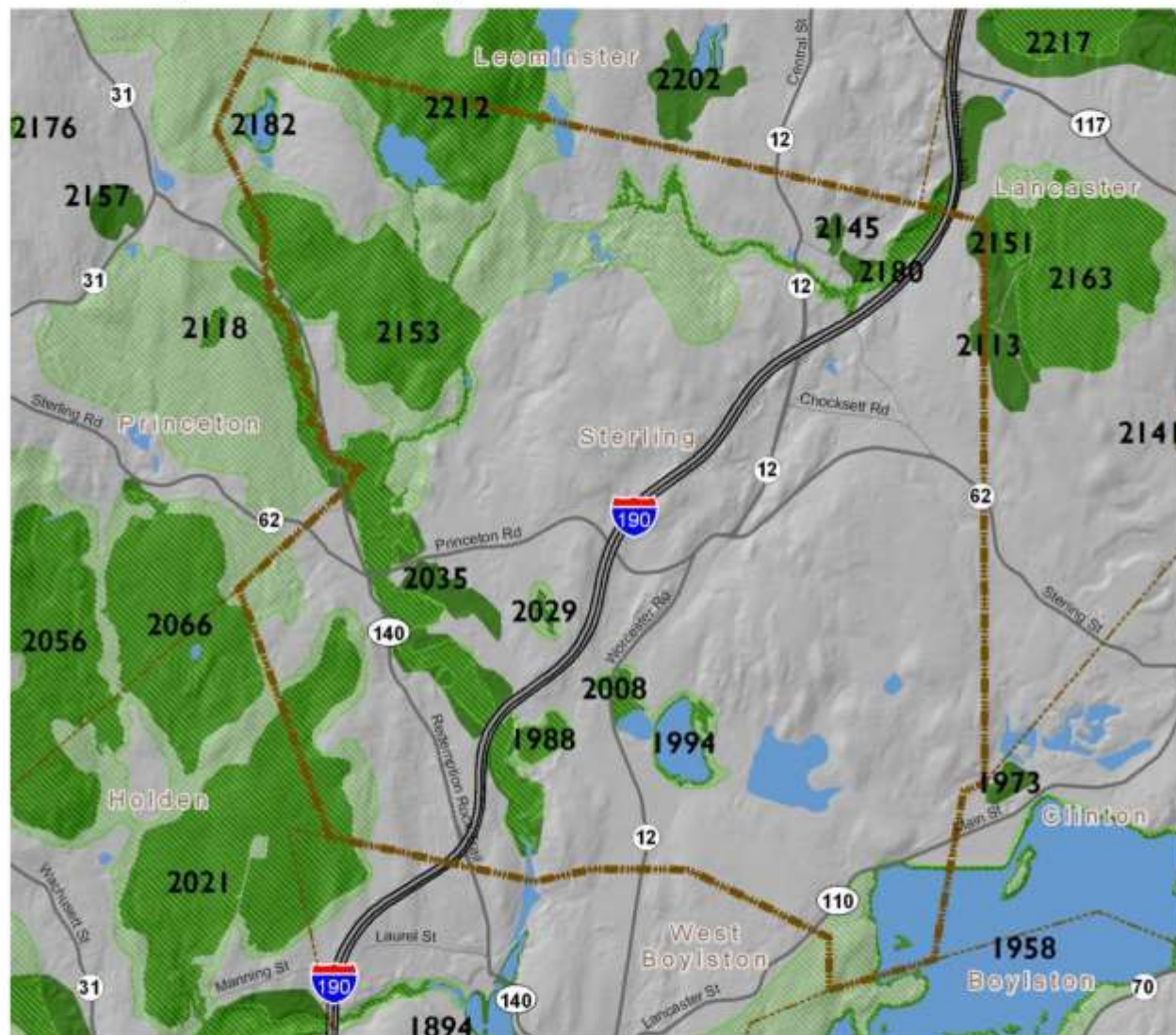
S3 = Vulnerable communities, typically have 21-100 sites or limited acreage across the state.





BioMap2 Core Habitat in Sterling

Core IDs correspond with the following element lists and summaries.



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile



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Species Program

Massachusetts Division of Fisheries and Wildlife
100 Hartwell Street, Suite 230, West Boylston, MA 01583
phone: 508-389-6360 fax: 508-389-7890

For more information on rare species and natural communities, please see our fact sheets online at www.nhesp.org.

Elements of BioMap2 Cores

This section lists all elements of BioMap2 Cores that fall *entirely or partially* within Sterling. The elements listed here may not occur within the bounds of Sterling.

Core 1958

Aquatic Core

Species of Conservation Concern

Dwarf Bulrush	<i>Lipocarpa micrantha</i>	T
Orange Sallow Moth	<i>Pyrrhia aurantiago</i>	SC
Eastern Hognose Snake	<i>Heterodon platirhinos</i>	Non-listed SWAP
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T
Common Loon	<i>Gavia immer</i>	SC

Core 1988

Aquatic Core

Species of Conservation Concern

American Bittern	<i>Botaurus lentiginosus</i>	E
Least Bittern	<i>Ixobrychus exilis</i>	E

Core 1994

Aquatic Core

Wetland Core

Species of Conservation Concern

Alternate-flowered Water-milfoil	<i>Myriophyllum alterniflorum</i>	E
Terete Arrowhead	<i>Sagittaria teres</i>	SC

Core 2008

Aquatic Core

Species of Conservation Concern

American Bittern	<i>Botaurus lentiginosus</i>	E
------------------	------------------------------	---

Core 2021

Forest Core

Aquatic Core

Wetland Core

Species of Conservation Concern

Brook Snaketail	<i>Ophiogomphus aspersus</i>	SC
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	Non-listed SWAP
Wood Turtle	<i>Glyptemys insculpta</i>	SC

Core 2029

Wetland Core



**Core 2035**

Species of Conservation Concern

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Core 2066

Forest Core

Aquatic Core

Wetland Core

Priority & Exemplary Natural Communities

Level Bog

S3

Species of Conservation Concern

Dwarf Mistletoe

Arceuthobium pusillum

SC

Four-toed Salamander

Hemidactylium scutatum

Non-listed SWAP

Core 2113

Species of Conservation Concern

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Core 2145

Species of Conservation Concern

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Core 2151

Species of Conservation Concern

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Core 2153

Forest Core

Aquatic Core

Species of Conservation Concern

Triangle Floater

Alasmidonta undulata

Non-listed SWAP

Spine-crowned Clubtail

Gomphus abbreviatus

SC

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Wood Turtle

Glyptemys insculpta

SC

Water Shrew

Sorex palustris

SC

Core 2180

Aquatic Core

Species of Conservation Concern

Spotted Turtle

Clemmys guttata

Non-listed SWAP

Wood Turtle

Glyptemys insculpta

SC

Core 2182

Aquatic Core

Species of Conservation Concern

Algae-like Pondweed

Potamogeton confervoides

T





Core 2212

Forest Core

Aquatic Core

Wetland Core

Priority & Exemplary Natural Communities

Acidic Shrub Fen

S3

Species of Conservation Concern

Common Loon

Gavia immer

SC



**Natural Heritage
& Endangered
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Core Habitat Summaries

Core 1958

A 5,214-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Dwarf Bulrush is a tiny, wiry, annual sedge, which inhabits sandy to peaty shores of low-nutrient ponds and lakes.

Orange Sallow Moths inhabit dry, open oak woodlands on rocky uplands. Their eggs are laid on false foxgloves (*Aureolaria* spp.) where the larvae feed on the flowers and developing seeds.

Eastern Hognose Snakes are shy, slow-moving, thick-bodied snakes that specialize in feeding on toads, although they eat other amphibians or other small animals as well. They require sandy soils in their habitat; both wooded and open habitats are known.

Bald Eagles nest in tall trees along large lakes and rivers. The bulk of their diet consists of fish. Large lakes and rivers also support important winter congregations of Bald Eagles.

Common Loons rely upon large, clear lakes as breeding habitat. They only leave the water to tend to their nests, which are either placed in shoreline vegetation, or upon specially designed nesting platforms built for them by conservationists. Their diet consists primarily of fish, and Common Loons have been shown to be particularly vulnerable to human disturbance and toxins, especially mercury.

Core 1988

A 67-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

American Bitterns are heron-like birds that nest primarily in large cattail, tussock or shrub marshes and are very sensitive to disturbance.

Least Bitterns are heron-like birds that typically nest in cattail marshes interspersed with open water and are very sensitive to disturbance.

Core 1994

A 154-acre Core Habitat featuring Wetland Core, Aquatic Core, and Species of Conservation Concern.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are





most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Alternate-flowered Water-milfoil, an aquatic plant with feather-like leaves, is found in slow waters of rivers or lakes.

Terete Arrowhead is a perennial emergent aquatic plant of the water-plantain family, which grows in shallow water along the muddy, sandy, or peaty margins of coastal plain ponds.

Core 2008

A 58-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

American Bitterns are heron-like birds that nest primarily in large cattail, tussock or shrub marshes and are very sensitive to disturbance.

Core 2021

A 2,962-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, and Species of Conservation Concern.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.

This 1,701-acre Forest Core is the seventh largest in the ecoregion and is clustered with two other relatively large Forest Cores. All three are relatively well protected, primarily as a drinking water supply.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Brook Snaketails are dragonflies whose nymphs can be found in clear, sand-bottomed streams with intermittent rapids, often flowing through dense woodland.

Spring Salamander adults inhabit clean, cold, high-gradient brooks and headwater seeps in forest habitat, usually at elevation >100 m. Larvae are entirely aquatic and largely nocturnal, spending daylight hours buried below the streambed or hidden under stones. Adults are semi-aquatic and spend most of their





time under cover objects along the margins of brooks, springs, and seeps; however, they will venture into upland forest during rainy weather.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early successional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

Core 2029

A 17-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 2035

A 118-acre Core Habitat featuring a Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Core 2066

A 1,057-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Level Bogs are dwarf-shrub peatlands, generally with pronounced hummocks and hollows in sphagnum moss. These wetland communities are very acidic and nutrient-poor because the peat isolates them from nutrients in groundwater and streams. This example of Level Bog is in good condition and is well buffered by naturally forested upland.





A member of the Christmas Mistletoe family, Dwarf Mistletoe is a very small fleshy shrub, usually no more than 0.8 inch tall, that parasitizes conifer trees. In Massachusetts, Dwarf Mistletoe occurs in peatlands varying from kettlehole peat bogs to spruce-fir-birch headwater swamps, generally on the branches of black spruce (*Picea mariana*).

Four-toed Salamanders live in forested habitats surrounding swamps, bogs, marshes, vernal pools, and other fish-free waters that are used as breeding sites. Most breeding sites in Massachusetts are characterized by pit-and-mound topography with significant sphagnum-moss cover. Eggs are typically laid in mounds or patches of sphagnum moss that overhang water. Upon hatching, the larvae wriggle through the moss and drop into the water, where they will develop for several weeks prior to metamorphosis.

Core 2113

A 110-acre Core Habitat featuring a Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Core 2145

A 28-acre Core Habitat featuring a Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Core 2151

A 197-acre Core Habitat featuring a Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Core 2153

A 2,020-acre Core Habitat featuring Forest Core, Aquatic Core, and Species of Conservation Concern.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.





Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Triangle Floaters are freshwater mussels commonly found in low-gradient river reaches with sand and gravel substrates and low to moderate water velocities, although they are found in a wide range of substrate and flow conditions.

Larvae of Spine-crowned Clubtail dragonflies are aquatic and burrow just under the top of silty to sandy bottom sediments in medium to large rivers.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early successional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

The Water Shrew habitat is near water - most commonly the banks of a swift rocky-bedded stream in a dense conifer or mixed forest.

Core 2180

A 343-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early successional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

Core 2182

A 56-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.





Algae-like Pondweed is an aquatic plant with fine thread-like leaves. This plant is endemic primarily to the Atlantic coast plain and can be found in acidic lakes and ponds.

Core 2212

A 1,169-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Acidic Shrub Fens are shrub-dominated acidic peatlands found primarily along pond margins in the eastern and central part of the state. These wetland communities experience some groundwater and/or surface water inputs, but no calcareous seepage. This example of Acidic Shrub Fen, though small, is in good condition, with a well-developed sphagnum peat mat, and is fairly well buffered by natural vegetation.

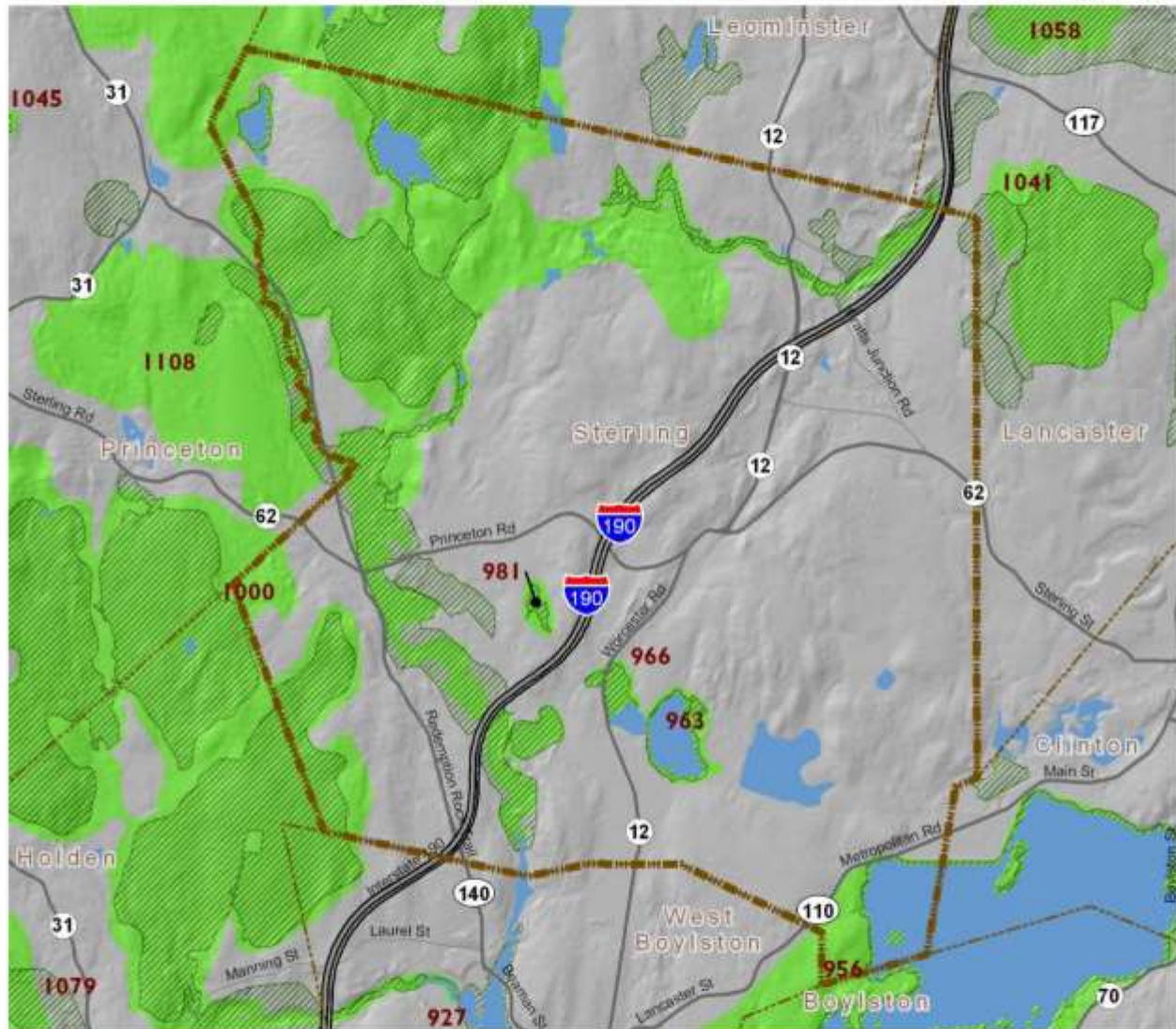
Common Loons rely upon large, clear lakes as breeding habitat. They only leave the water to tend to their nests, which are either placed in shoreline vegetation, or upon specially designed nesting platforms built for them by conservationists. Their diet consists primarily of fish, and Common Loons have been shown to be particularly vulnerable to human disturbance and toxins, especially mercury.





BioMap2 Critical Natural Landscape in Sterling

Critical Natural Landscape IDs correspond with the following element lists and summaries.



BioMap2 Core Habitat



BioMap2 Critical Natural Landscape

1 Mile



Natural Heritage
& Endangered
Species Program

Massachusetts Division of Fisheries and Wildlife
100 Hartwell Street, Suite 230, West Boylston, MA 01583
phone: 508-389-6360 fax: 508-389-7890

For more information on rare species and natural communities, please see our fact sheets online at www.nhesp.org.



Elements of BioMap2 Critical Natural Landscapes

This section lists all elements of BioMap2 Critical Natural Landscapes that fall *entirely or partially* within Sterling. The elements listed here may not occur within the bounds of Sterling.

CNL 956

Aquatic Core Buffer
Landscape Block

CNL 963

Aquatic Core Buffer
Wetland Core Buffer

CNL 966

Aquatic Core Buffer

CNL 981

Wetland Core Buffer

CNL 1000

Aquatic Core Buffer
Landscape Block
Wetland Core Buffer

CNL 1108

Aquatic Core Buffer
Landscape Block
Wetland Core Buffer





Critical Natural Landscape Summaries

CNL 956

A 6,156-acre Critical Natural Landscape featuring Aquatic Core Buffer and Landscape Block.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of *BioMap2* to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that *BioMap2* includes the best of the best in each ecoregion.

This 5,949-acre Landscape Block is the seventh largest of 62 Blocks in the ecoregion. Unlike Landscape Blocks in much of the state that are dominated by upland forests, the upland forest in this Block is complemented by the vast expanse of open water of the Wachusett Reservoir.

CNL 963

A 204-acre Critical Natural Landscape featuring Aquatic Core Buffer and Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.



**CNL 966**

An 83-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 981

A 54-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 1000

A 6,794-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of *BioMap2* to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were





defined by major roads, and minimum size thresholds differed among ecoregions to ensure that *BioMap2* includes the best of the best in each ecoregion.

This mostly forested 5,943-acre Landscape Block is the eighth largest of 62 Blocks in the ecoregion.

CNL 1108

A 14,637-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of *BioMap2* to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that *BioMap2* includes the best of the best in each ecoregion.



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