Open Space and Recreation Plan Update
Southborough, Massachusetts
2019

The Conway School, Winter 2016
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Contents

Section 1: Executive Summary

In the spring of 2015 at the Breakneck Hill Conservation Land in Southborough, Massachusetts, Robert Gegear, Assistant Professor of Biology and Biotechnology at the Worcester Polytechnic Institute, was out walking the trails. He was heading back to his car to escape the falling rain when out of the corner of his eye he spotted a small bumblebee, which turned out to be *Bombus fervidus*, also known as the yellow bumblebee. The bee was thought to no longer exist in the Commonwealth, and so began his research at Breakneck Hill.

Two other bees listed in the 2015 conservation action plan as no longer existing in Massachusetts (*Bombus perplexus* and *Bombus vagans*) have since been identified on the property. Gegear is studying the interrelationships between pollinators and the plants they feed on, and the project has just secured funding for its second year of study (Barnes, 2015).

Breakneck Hill is one of the many conserved open spaces in Southborough that are so valued by the town. It's a place where many people go to enjoy the views, walk through the buzzing pollinator garden, hike the trails, and eat their lunch with views of the reservoir. Preserving open space such as Breakneck Hill for residents to enjoy while providing valuable habitat for wildlife is one of the goals of this OSRP Update.

HISTORY OF THE TOWN

Remnants of Southborough's agrarian past remain in its stone walls and small-town atmosphere. After adapting to the industrial age and ultimately becoming a residential community, it has proven itself to be a resilient town. As Southborough passes through a period of rapid population growth and faces the challenges of global climate change, this resilience may allow the town to adapt to new challenges. Today, the small suburban town in eastern Massachusetts is within a convenient commuting distance to both Worcester and Boston. Despite the rapid growth and development that its location has prompted in the last two decades, it has managed to maintain many of its rural characteristics, which are highly valued by the people who live there.

Yellow bumblebee (Bombus fervidus)

In the 1990s and early 2000s, Southborough experienced a population explosion whose momentum has continued through the present day with continued construction of new development. According to regional population projections, this growth will continue as the millennial generation ages and begins to settle down. This influx of young families could make preservation of open space even more challenging. Concerns have increased about strains on town resources and threats to ecological integrity from land fragmentation.

Humans settled in Southborough in part because of its fertile soils. Today, the same qualities that make the soil excellent for agriculture and healthy natural communities make it attractive to development. Soil also serves the important ecological functions of filtering water, sequestering carbon, regulating streamflow, and providing nutrients to plants that form the basis of human and terrestrial ecosystems. The community has stated that it would like to

protect prime farm soil in town, and this report will identify where the unprotected farm soil is and suggest strategies for its protection.

EXISTING CONDITIONS

Southborough's landscape typifies the Southern New England Coastal Plains and Hills Ecoregion with its plains and low hills. As with many other areas of New England, the forests were cleared for agriculture and grazing. A variety of successional oak and oak-pine forests cover the town, along with some elm, ash, and red maple that are typical of southern New England's forested wetlands. Although attempts were made to farm much of the Northeastern Coastal Zone during European settlement, land use now consists mainly of forests, woodlands, and urban and suburban development, with a few areas of pasture and cropland. The town's undeveloped land is largely forested. Some forests grew in abandoned farm fields, while some were planted by the DCR for protection of the reservoir (Scannell and Zimmerman, 2010). Forests deliver a wide variety of ecosystem services for humans and wildlife, such as provision of habitat, purification of air and water, moderation of stream flow, and sequestration of carbon (EOEEA, 2011). In Massachusetts, forests sequester approximately 10% of the carbon we emit (EOEEA, 2011).

Many of Southborough's open spaces are well connected to each other and to open spaces in adjacent towns. Continuing to preserve land near or adjacent to existing open space would strengthen the ecological integrity of the area, provide habitat for a wider variety of species, and promote genetic diversity among species by connecting isolated populations.
Southborough shares many resources with its six adjacent towns, from drinking water sources to protected open space to schools and recreational facilities. Regional goals for protected land are important in protecting shared natural resources and may help to mitigate the impacts of development and foster quality of life in this fast-growing region.

Southborough is a water-rich town with many resources from the Sudbury Reservoir to wetlands, vernal pools, and the Sudbury River. It is one of the thirty-six towns in the SuAsCo watershed (for Sudbury, Assabet, and Concord Rivers). The water quality of these rivers is impacted by the land use within the watershed. It is important to protect land, such as areas containing wetland systems, that provide valuable ecological services that maintain clean water, and also to effectively address aspects of development that threaten water quality. As the flow of the rivers continue on their paths to the sea, the actions of one town have effects on water quality far beyond its borders. Efforts towards water quality protection can be strengthened by regional partnerships, to protect the natural resources that keep drinking water clean for the residents of the region.

The Recreation Commission offers programs for various ages and many interests, giving individuals the opportunity to develop a sense of community and improve their physical and mental health. The town is awaiting the completion of a Recreational Facilities Study that will help determine the specific needs of the community, and ways to meet them.

The Trails Committee is now working to promote the goals of the community in strengthening and expanding the trails networks in Southborough and its regional connections. Established as a result of the action plan from the 2009 OSRP, the Committee has made progress towards connecting Southborough with regional trail networks such as the Bay Circuit Trail, the Boroughs Loop Trail, and developing a website that lists the available trail resources in Southborough. Its next step is to develop a single document that contains all of these trail resources.

MOVING FORWARD: GOALS & ACTIONS

A summary of the Town's needs outlines the elements of resource protection and recreation and served as the basis for determining the goals and objectives of the community, from which actions were identified.

The open space parcels and recreation facilities already in place are maintained and/or improved as needed, and when applicable they are expanded. Southborough aims to take the proper steps to meet the community's growing needs for sufficient recreation facilities and infrastructure. Results of the OSRP survey indicate that residents are interested in expanded recreational facilities, particularly trails for either multi-use or passive recreation, and a new indoor recreation and community center. With this strong local interest in trails, the work of the Trails Committee will continue to be vital in supporting the town's needs.

Parcels of priority conservation interest are identified and protected to support ecological integrity and connectivity of open space for people and wildlife. Protecting land adjacent to already protected contiguous open areas around the reservoir and undeveloped land in the southeastern corner of town could provide an important connection for wildlife between large open spaces in neighboring Hopkinton and Ashland. These lands are vital for the survival and migration of plant and animal communities in the town and the region and should be prioritized for protection.

Agriculture is preserved and promoted as an important aspect of community character. Interest in local agriculture has been growing in Southborough, with the expansion of the community gardens and the first season of the Chestnut Hill CSA. If this trend continues, it will be important to Southborough to preserve soils suitable for agriculture. Preserving these soils can also help the town adapt to the impacts on food systems that is forecasted with climate change. Food prices are projected to rise over the long term due to the extreme weather patterns caused by climate change. By reducing the distance food travels from farm to table which reduces carbon emissions, Southborough could simultaneously be helping to mitigate the effects posed by climate change. Protecting prime farmland soil is also valuable from a conservation standpoint, as fertile conditions may improve the quality of habitat for plants and wildlife.

Groundwater and surface water are protected as clean and abundant resources. Water resources are some of Southborough's most visible and celebrated natural resources, and also some of its most endangered. These important natural resources must be better protected with larger wetland buffers and stricter enforcement of local wetland bylaws in order to protect water quality in local rivers and streams and the habitat of local wildlife. Southborough's valuable natural resources are increasingly under pressure from development, making conserving Southborough's crucial remaining open spaces more difficult.
Prioritizing conservation efforts based on the analyses of the landscape across town and regional scales can help effectively channel the work of the town's residents and committees.

Section 2: Introduction

A. STATEMENT OF PURPOSE

This Open Space and Recreation Plan (OSRP) is based on a comprehensive analysis of Southborough. The recommendations that are presented in the concluding sections are derived from the analysis, input from residents, and review and suggestions from the OSRP Working Group. Through the next seven years, this document can guide committees through structured steps to fulfill the community's goals and objectives.

OUTLINE OF PURPOSE

Southborough has experienced rapid population growth, increasing by 32% percent between 1990 and 2000, and an additional 11% between 2000 and 2010, with close to a thousand new residents over that time, all drawn to its convenient location close to Boston and Worcester and its scenic rural landscapes. Increasing development has caught the attention of Southborough residents, and concern for the protection of the remaining open space is now more evident than ever.

This planning document summarizes the town's natural and cultural resources, open space and recreation goals, and a plan to meet them. It includes a narrative of the community setting, environmental analysis and an inventory of currently protected open space lands and a priority list for future protection. The process of identifying conservation priorities also provides the community with an opportunity to engage in a conversation about development, conservation, and recreation, and can make the Town eligible for various state-funded grants.

COMPLETED GOALS

Many of the goals that the community identified in the last OSRP have been met. These include creating additional conservation areas and recreational facilities, expanding trail and sidewalk systems, creating partnerships and agreements with private landowners for conservation and recreation lands, and providing outreach and education programs. Since the publication of the last OSRP in 2009, the community has:

Added recreational and open spaces, and extended existing ones:

- ☐ Completed construction at Triangle Park
- ☐ Explored the possibility of leasing land for athletic fields
- ☐ Located areas for creating small "tot lots"
- ☐ Expanded the Southborough Community Gardens
- ☐ Explored the possibility of lighting additional fields for nighttime use

Engaged in research and restoration:

- ☐ Encouraged flora and fauna inventories and research on open spaces

Facilitated educational and outreach programs:

- ☐ Hired a naturalist to host nature walks
- ☐ Offered workshops on identifying, monitoring, and controlling invasive species
- ☐ Held nature-based recreational activities
- ☐ Promoted and led "Big Night" vernal pool amphibian crossings
- ☐ Worked with local land trusts, Southborough Open Land Foundation (SOLF) and The Trustees of Reservations (TTOR), to expand recreational opportunities and educate the public
- ☐ Participated in the SuAsCo Cooperative Invasive Species Management Area (CISMA) partnership in a science class at a local school
- ☐ Included trail maps and information on the town website
- ☐ Continued stewardship program of Breakneck Hill

Improved organization and partnership:

☐Working with abutting communities, developed a MetroWest Regional Open Space Plan to identify valuable parcels of mutual interest to create interconnected trail networks and preserve wildlife corridors.

☐ Established a "Friends Of" recreation group

☐ Formed a Trails Committee

☐ Formed a Town Forest Stewardship Sub-committee

☐ Created a database of subdivision open space

☐ Researched and identified open space set- asides within approved subdivisions

LOST OPPORTUNITIES

Although there were many accomplishments, there have also been many missed opportunities since 2009:

☐ No priority parcels have been protected.

☐A few hundred acres of land prioritized for recreation potential or priority habitat have been developed or slated for development.

☐ Prime wildlife habitat has been lost

☐ Prime farm soils have been lost

LOOKING TO THE FUTURE

Following a process of public participation with the efforts of OSRP Working Group, this document summarizes what Southborough wants to accomplish and outlines the necessary actions to take in the next seven years. It serves as a guide to meet the open space and recreational needs of the community, and to preserve what residents love most about their town.

B. PLANNING PROCESS AND PUBLIC PARTICIPATION

This Open Space and Recreation Plan is designed to serve the community of Southborough, and should reflect the wishes of its many and diverse constituents.

This report represents a collaborative effort. The town of Southborough assembled an OSRP Working Group consisting of two graduate students from the Conway School, who worked alongside a group of Town employees and volunteers engaged in various stakeholder groups within the community.
This group consisted of:

- ☐ Beth Rosenblum, *Conservation Administrator*
- ☐ Doreen Ferguson, *Recreation Director*
- ☐ Meme Luttrell, *Open Space and Preservation Commission*
- ☐ Freddie Gillespie, *Open Space and Preservation Commission; Stewardship Committee*
- ☐ Sally Watters, *Southborough Open Land Foundation*
- ☐ Dan Guilford, *Trails Committee*
- ☐ Dan Frank, *Trails Committee*
- ☐ Bob Sykes, *Town Engineer*
- ☐ Allison Gramolini, *The Conway School*
- ☐ Helmi Hunin, *The Conway School*

The committee met three times to discuss the needs of the community, the goals of the plan and the process it would follow. The group also communicated through phone and email.

OPEN SPACE AND RECREATION SURVEY

The Town created and distributed an online survey. It was made available on the town website, and distributed through the Southborough Recreation Department, Southborough K-8 Public Schools, and the Southborough Council on Aging list serves. The survey received 207 responses. It is attached in full in Appendix #2.

PUBLIC FORUM #1:

Data Gathering

The first public forum was held at Cordaville Town Hall/Southborough Senior Center on February 3, 2016. Thirty participants attended. At the first meeting, the Working Group gave a presentation outlining the purpose and utility of the OSRP, as well as accomplishments since the last update, published in 2009. Participants also worked together in breakout groups to identify the places in town most valued, and to identify their recreation and open space goals.

PUBLIC FORUM #2:

Responses to Draft Goals and Objectives

The second forum, also held at Cordaville Town Hall, occurred March 4, 2016. The seven participants evaluated the goals and objectives the students and Working Group had identified, and proposed actions to achieve these goals.

The results of both forums were incorporated into the goals, objectives, and seven-year action plan delineated at the end of this report.

ENVIRONMENTAL JUSTICE POPULATIONS

There are no state-recognized Environmental Justice Populations in Southborough, and thus, no enhanced outreach to such a community was made in creating this plan.

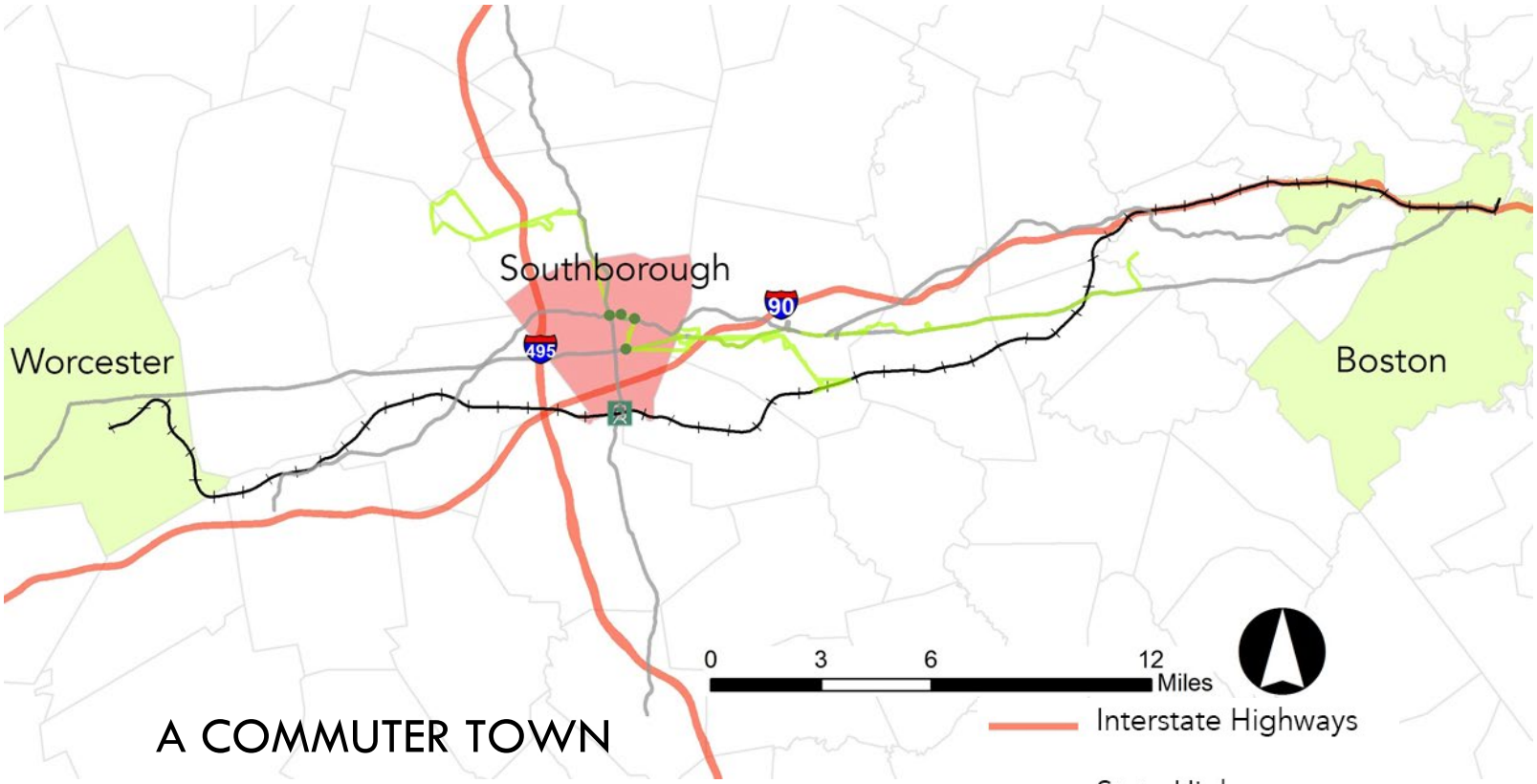
PUBLIC COMMENT

The public forums and online surveys helped to identify the needs and desires within the Town of Southborough and help us enhance and improve upon our recreational areas.

Section 3: Community Setting

A. REGIONAL CONTEXT

Southborough is a small suburban town in eastern Massachusetts with a convenient commuting location fifteen miles east of Worcester, and twenty-five miles west of Boston. Southborough is a member of the Metro West Regional Collaborative (MWRC), one of the eight subregions of the Metropolitan Area Planning Council (MAPC) of greater Boston. Despite its rapid growth in the last two decades, it has managed to maintain many of its rural characteristics, which are highly valued by the people who live there. The town shares many resources with its six adjacent towns, from drinking water sources to protected open space to schools and recreational facilities. Regional goals for protected land are important in protecting shared natural resources. Working with regional partnerships to create these goals may help to mitigate the impacts of development and foster quality of life in this fast-growing region.



A COMMUTER TOWN

Southborough is within a convenient commuting distance to Boston and Worcester, has a high-quality school system, and maintains characteristics of its agricultural past. These elements make the town a desirable place to live, while also making it a desirable location for development.

LOCATION

Southborough is at the eastern edge of Worcester County, and is also one of the westernmost 101 towns of greater Boston. Southborough covers 15.7 square miles and has six adjacent towns of Marlborough to the north, Framingham and Ashland to the east, Westborough and Northborough to the west and Hopkinton to the south. Two of the top reasons why many residents now move to Southborough are at odds: they like it because of its great commuting location as well as the rural character that it has retained (according to the OSRP Survey). Both qualities make the town a very desirable place to live. It is a challenge to retain the rural characteristics of a town with this kind of development pressure.

Because of the limited number of stores and restaurants in Southborough, residents mostly shop and dine in the surrounding communities. There is no supermarket in town.

WATER RESOURCES

Southborough is in the SuAsCo Watershed (for the Sudbury, Assabet and Concord Rivers). The watershed encompasses 377 square miles and includes thirty-six Massachusetts towns. Portions of the three rivers have been federally designated as "wild and scenic rivers" based on their free-flowing condition and outstanding scenic, recreational, historical, cultural, and wildlife values. Due to rapid growth and development of the area and its proximity to Metropolitan Boston, retaining the natural beauty and rural character of the watershed is a challenge.

RECREATION AND SCHOOLS

The public-school system of Southborough is highly ranked. Boston Magazine's 2011 ranking of the best schools in Massachusetts put the Northborough-Southborough district in eighth (Fitzgerald, 2011). According to the OSRP survey, one of the top reasons that residents now move to Southborough is for its excellent public schools. Three private schools are also located in Southborough. The schools are not only an important asset to the community for their quality, but also because they share their physical resources with the community, such as ball fields and playground equipment, providing the community with areas of open space and recreation. In addition, many residents use the school facilities in adjacent towns for recreational purposes.

Residents of Southborough attend Algonquin Regional High School in Northborough, which recently finished an expansion in 2006 to make room for the growing number of incoming students.

Table 1: Public and Private Schools in Southborough

Mary Finn School	Pre K-1	Public
Albert S. Woodward School	2-3	Public
Margaret A. Neary School	4-5	Public
P. Brent Trottier Middle School	6-8	Public
Algonquin Regional High School (located in Northborough)	9-12	Public
Fay School	1-9	Private
St. Mark's School	9-12	Private
New England Center for Children	Special Needs	Private

REGIONAL OPEN SPACE & RECREATION

There are many scenic open space and recreational opportunities surrounding Southborough including Hopkinton State Park, located less than a mile south of town; Cedar Swamp, near the southwestern edge of Town in Westborough whose trail system extends into Southborough; Marlborough State Forest to the north; Ashland Town Forest to the east; and Richard Callahan State Park to the northeast in Marlborough.

REGIONAL PLANNING AND PARTNERSHIPS

The Metropolitan Area Planning Council (MAPC) is the regional planning agency that serves the 101 municipalities of Metropolitan Boston. The council promotes Smart Growth and regional collaboration and provides technical assistance and policy guidance on a range of environmental issues to promote sustainable land use and protection of natural resources (www.mapc.org/environment). MAPC works with its cities and towns through eight sub regional committees, including Southborough's committee, the MetroWest Regional Collaborative (MWRC). It serves as a think tank and advocate for locally initiated regional solutions to policy and planning challenges shared by the nine MetroWest municipalities which run from I-95 to I-495 along the Route 9 Corridor: Ashland, Framingham, Holliston, Marlborough, Southborough, Natick, Wayland, Wellesley, and Weston. It facilitates

inter-local collaborative planning and problem solving to enhance the quality of life and economic competitiveness of the MetroWest region, promoting inter-municipal cooperation and guiding regional growth and change.
MWRC focuses on issues such as land use, transportation, municipal governance, mitigation of development impacts, and coordination of municipal services.

Local representatives of MetroWest meet monthly to address growth management, traffic, and regional open space issues. In 2011, the MWRC received funds through the Sustainable Communities grant program to create a Smart Growth plan for future development along the Route 9 MetroWest Corridor. The towns included were Southborough, Framingham, Natick, and Wellesley. The study aimed to provide alternative development scenarios to prevent traffic congestion from worsening along Route 9. A summary report by MAPC in June 2010 concluded that if the region were to continue building to the maximum extent allowed by current zoning regulations, the resulting traffic could eventually exceed the remaining capacity on Route 9, leading to gridlock and adversely impacting businesses.

Route 9 MetroWest Corridor Study

The MetroWest Regional Open Space Connectivity Plan was initiated by Southborough with funding from the District Local Technical Assistance Program. It is a collaborative effort between the MWRC, the MAPC, and representatives from the nine member municipalities of the MWRC. The first phase of the plan was completed in 2010.

The plan illustrates how the open space and trails in each town can become linked into an interconnected regional network, crossing municipal boundaries and connecting to other trails and open space in the surrounding communities. The plan also identifies unprotected land of potential conservation interest that would enhance the connectivity and conservation value of the existing open space. Phase II was completed in December 2011. With input from the municipalities, MAPC has updated its open space database to better define ownership and level of protection of existing open space.

The Boroughs Loop Trail is one of the major projects that has come out of the MetroWest

Regional Open Space connectivity plan. It connects the hiking trail networks of Marlborough, Northborough, Southborough, and Westborough to create a regional trail that encourages the exploration and protection of these towns' natural resources. In 2013, a plan was put together to provide a roughly thirty- mile loop that links these communities together. Most of the trail segments within Southborough already exist, but not all.

The Bay Circuit Alliance is a coalition of state, town, and federal agencies, non-profit organizations, and individuals whose primary endeavor is overseeing the Bay Circuit Trail, a 230-mile multi-use route that links parks, open spaces and communities in 37 outer-Boston towns.

In the fall of 2012, the Appalachian Mountain Club (AMC) and The Trustees of Reservations (TTOR), two of Massachusetts' largest and oldest conservation organizations, began working together to lead the Bay Circuit Alliance in the completion, enhancement, and long-term protection of this recreational trail and greenway. The Southborough Trails Committee has been working diligently with the Bay Circuit Alliance towards the official completion of the segment of the Bay Circuit Trail that intersects the northeast corner of the town. The trail is now open for use.

Utilizing the many available regional partnerships and organizations to work towards conservation of open space and recreational areas can help Southborough to collectively determine the future of their town's valued resources. More information about different organizations that Southborough is working with to conserve parcels in town can be found in Section 5.

B. HISTORY OF THE COMMUNITY

Southborough has historically been an agricultural community, and remnants of that history remain in its stone walls and small-town feel. Through adaptation to the industrial age and ultimately becoming a residential community, it has proven itself to be a resilient town. As Southborough passes through a period of rapid population growth and global climate change, this resilience may allow the town to adapt to new challenges.

NIPMUC SETTLEMENT

Prior to European settlement of the area now known as Southborough, members of the Nipmuc tribe had established planting fields to the west of an old trail in approximately the same location as Route 85 today. To the south, they made their homes in the meadows on both sides of the trail. Their burial ground was west of the principal trail (Noble 1990, 19).

By the early 1600s, European settlement had spread through much of what is now eastern Massachusetts. With it came new diseases that ravaged the Native Americans. In 1616, an outbreak of what was probably measles devastated many tribes, killing nearly all the Nipmucs. Those who did survive called the area Whipsuppenikie, "the place of sudden death" (7).

EARLY EUROPEAN SETTLEMENT

In 1643, native tribes were forced to submit to English authority, and inland expansion by Europeans increased. The English government restricted colonies from printing money, and corn became the only legal tender. Thus, there was an emphasis on agriculture in the new settlement as the early farmers were among those who could afford to buy land, and settlements far from Boston were forced to be self-sufficient (13).

The region between the Nipmuc burial ground and the Sudbury River was named Stony Brook because of the rocky nature of Stony Brook's shoreline. The new settlers built in many of the same places as the Nipmucs had, including establishing their burial grounds on the same hill. This settlement was incorporated as Marlborough in 1660 (22).

In 1726, landowners of the Stony Brook region petitioned at the Marlborough Town Meeting to allow them to become a separate town, with its own church. The legislature consented in 1727.

FIRST YEARS AS SOUTHBOROUGH

Among Southborough's first town officials were David Fay and Isaac Amsden, who were elected Fence Viewers— "responsible for the miles of stone wall and fence which ran through the area. A breach of fallen stone might mean a wandering animal, resulting in unnecessary damage and a needless dispute" (41). Southborough still has Fence Viewers today. The Meeting House was built on a hill facing south, overlooking Main Street. Just east of the church was the burial ground, surrounded by its stone wall. Behind the church was an open meadow—the town's training field for the militia, as well as public grazing land for livestock (47).

GROWTH OF TRANSPORTATION AND INDUSTRY

In 1805, construction of the Worcester Turnpike began and in 1835, the Boston & Albany Railroad brought rail service, running north and south through the eastern sector of town. The Southborough Jail was built in the town's southern section, near the railroad line (136).
The railroad also made possible the emergence of small factories in Southborough. The period between 1845 and 1850 saw a tremendous increase in industrial enterprises. In Southville, there was a boot and shoe factory. Farther to the east was a large factory for processing cotton and woolen goods, along with houses for the factory owner and workers. In little more than a year, it was a self-sustaining village named Cordaville. This little village along the Sudbury River and the Boston & Worcester railroad attracted growth. By the end of this decade there were thirty-one different industries within Southborough (147-148).

It was during this time that the population of the town had grown to the point that it needed a new cemetery. The Rural Cemetery, which still defines the approach to the town center from Route 9, was established (145).

In 1850, the Agricultural Branch Railroad became the third railroad in town, and there were four stations: Southborough, Fayville, Southville and Cordaville. Those same areas were the focal points for the town's burgeoning industrial enterprises, including five grist mills, three saw mills, six boot and shoe factories, three cotton and wool factories, three tanneries, two sash and blind factories, two brick kilns, a brush factory, a wire factory, a peg mill, a flour mill, a currier shop, a bonnet factory, a carriage factory, and a cordage factory (153).

SOUTHBOROUGH'S DEFINING FEATURES

1892 saw the beginning of what was easily the most significant event to affect Southborough as the nineteenth century wound down to a close. That year, the Boston Water Supply Department bought part of Fayville and flooded it to create a reservoir. The advent of the reservoir system brought many changes to Southborough.

The Water Supply Department later claimed 2,000 acres of prime farmland by eminent domain. Sixty homes were displaced or destroyed and twenty were moved to new locations. During this time, Southborough citizens took the City of Boston to court over a number of conflicts arising from the eminent domain takings. Part of the settlement required Boston to pay for any and all road modifications and maintenance directly resulting from the reservoir project. The settlement also required the creation of and payment for Southborough's first-ever police department to deal with the influx of outside workers into the community (242). The Sudbury Reservoir was completed in 1897.

GROWTH AS A RESIDENTIAL COMMUNITY

In 1903, passenger trolley service came to town, with a station stop at Whites Corner. By 1925, Southborough was turning its back on the industrial boom of the previous decades. Growth after this time consisted of small businesses and residences. In 1928 the railroad from Fitchburg was stopped and in 1931, the electric trolley was phased out. In the early 1940s, the Southborough railroad station was closed. It was razed in 1977. During the 1950s, the station in Cordaville stopped being used, and in 1970, it was dismantled and moved to Dublin, N.H., where it became the public library (253-336).

Also, during the 1940s, the Sudbury Reservoir system became the backup water supply for the city of Boston, after the construction of the Quabbin Reservoir.

The new transportation of this era, interstate highways, cut through the town, the Mass Turnpike in the 1950s and Interstate 495 in the 1960s.

In 1973, the MDC talked about building a 200-million-gallon-per-day water treatment plant for Southborough and reactivating the Sudbury Reservoir system. In 1984 the idea was dropped but a hydro-electric plant was built in Fayville in 1988 (338, 343).

C. POPULATION CHARACTERISTICS

In the 1990s and early 2000s, Southborough experienced a population explosion whose momentum has continued through the present day, with continued construction of new development. According to regional population projections, this growth will continue as the millennial generation ages and begins to settle down. This influx of new residents could make preservation of open space even more challenging.

POPULATION DENSITY

With a total land mass of nearly 13.9 square miles (excluding the 15.4 square miles the Sudbury Reservoir occupies), the population density is 696 people per square mile according to the 2010 US Census. The total population is 10,169 according to population estimates from the 2018 Census with a change of 4.1% in overall population from 2010.

INCOME & LABOR FORCE

The median household income in 2017 was $142,426 with 69.5% of the residents, ages 16+, are in the labor force. In 2016 almost all of the industries within Southborough were able to reach the historic highs as seen in 2009. According to the Executive Office of Labor and Workforce Development (EOLWD) employment in each industry has begun to decrease since 2016.

POPULATION TRENDS

Southborough is part of MetroWest, a region of 45 communities in east-central Massachusetts on the outskirts of Boston. Southborough's population has experienced rapid growth in recent decades, particularly in the 1990s and early 2000s. Its population grew 32% between 1990 and 2000 (from 8,781 to 9,767) and the town added an additional 986 residents between 2000 and 2010, a growth of 11%. The population increase between 2010 and 2014 estimated by the American Community Survey was 102 residents, an increase of about 1%. The population boom has slowed somewhat, although Southborough's population continues to grow.

This may continue, according to predictions offered by UMass' Donahue Institute of Economic and Public Policy Research, which predicts steady population growth between 2015 and 2035 in MetroWest (Renski and Strate, 2015). Because MetroWest tends to attract young adults beginning to buy homes and start families, the report projects a regional increase in population beginning in 2015 as the millennial generation reaches their late 20s and 30s, increased further by anticipated births to these couples. This gain is offset by the out- migration of college students and adults in their early 20s, as well as the aging of the baby boomer generation, as retirees often move out of MetroWest. However, the region is likely to have a net population increase: in the 2030- 2035 period, the Donahue Institute predicts "there will be an estimated 4,088 more people coming into the region than leaving it" (49).

The projected gain in the population of young adults, many of whom will likely begin families, suggests there will be an increase in the demand for recreational programs and facilities in Southborough. While recreation programs serve the entire community, the town's programming tailored to school-aged children and teenagers is particularly robust. According to the Recreation Department, during the 2014- 2015 school year, 2,069 public school students participated in the recreation department's after-school programs, and an additional 1,516 community members of all ages participated in its town-wide programs. Southborough also has numerous volunteer-run youth sports leagues. If the projected population gains are realized, these programs will likely expand, suggesting that investment in recreational facilities is a forward-thinking decision.

ENVIRONMENTAL JUSTICE POPULATION

There is no Environmental Justice population mapped in Southborough. They do exist in the surrounding towns of Westborough, Marlborough, Framingham, and Ashland.

EMPLOYMENT TRENDS

Southborough enjoys a low unemployment rate and high median income, and its residents are primarily employed in professional and management positions. Between 2010 and 2014, the average unemployment rate was

3.8%, compared to 5.7% in Massachusetts and 5.8% nationwide. Median household income in Southborough during the same time period was $149,375, compared to the state's median income of $67,846 and the nation's $53,482 (US Census Bureau).

INDUSTRY TRENDS

The total number of Southborough businesses was found to have increased by 230% from 1980 to 2012 (from 120 to 430) and employs more than 7,400 people (MetroWest Research Center). Currently there are eight major sectors of employment: education & health – 23%; professional and business services – 21%; manufacturing – 18%; trade, transportation, and utilities – 11%; public – 10%; leisure & hospitality – 5%; construction – 4% and financial activities – 4% (MetroWest Research Center). Based on the location of Southborough and its proximity to several transportation routes, businesses are expected to continue to increase in Southborough.

D. GROWTH AND DEVELOPMENT PATTERNS

In recent decades, Southborough's excellent commuting location relative to Boston and Worcester has attracted hundreds of new residents, and many new homes have been built to accommodate them. Population growth has expanded the community, but residents have raised concerns about strains on town resources and the threat to ecological integrity from the increased fragmentation of open space.

OVERVIEW

Since 1990, Southborough has faced intense growth and development pressure. During the period from 1990-2000, its population increased 32% (Census, 2010, 2000). Since 2000, development has steadily continued. The Town issued an average of 31 building permits per year between 2000 and 2012 (Goldson, 2015). The year of greatest development was 2002, with 86 permits issued, and the slowest was 2009, during the economic recession, when only 6 permits were issued (Goldson, 2015). Recent residential development has almost exclusively taken the form of single-family homes.

However, there have been a few notable exceptions, namely, two large developments constructed under Massachusetts' Chapter 40B. Madison Place was completed in 2014 and was largely supported by the community (Petrishen, 2013). However, a second, larger development, still in the permitting process, has faced much greater public scrutiny. The Residences at Park Central has caused controversy within the town due to anticipated strains on municipal services and an increase in traffic.

DEVELOPMENT TRENDS

In recent years, large developments built under Massachusetts' affordable-housing program have led to concerns about strains on the town's resources and the area's ecological integrity. Massachusetts' Comprehensive Permit Act, known as Chapter 40B, applies to cities and towns whose current affordable-housing stock comprises less than 10% of its total. Under the law, a municipality's Zoning Board of Appeals may approve a development under a single comprehensive permit if at least 25% of the new units meet state affordable housing guidelines. The law is controversial because allowing a developer to file one single comprehensive permit often means the project can bypass local zoning regulations, or that it is not subject to the same environmental-stewardship scrutiny that it otherwise would be. As of March 2014, 286 of Southborough's 3,433 housing units were subsidized to be affordable, a total of 8.33%. To meet Chapter 40B's goal of 10%, an additional 58 affordable units would be needed.

One recent 40B development in Southborough was built with virtually no opposition from the community, while a second has proved highly controversial. The Residences at Madison Place, completed in 2014, contributed 140 apartments and 28 townhouses for rent to Southborough's affordable-housing stock. Southborough residents largely supported its construction. Madison Place does not disrupt local wildlife corridors or wetland areas, and does not abut any other residential neighborhoods. However, a second development has met strong opposition, with

residents citing both social and ecological concerns. The Residences at Park Central has not yet been constructed as of this writing, but will consist of 180 apartments and 150 townhouses. The large development would create a substantial increase in population, and residents are concerned about the impact on local services such as schools and public safety. Traffic from the development would also flow exclusively onto one residential street, Flagg Road (Phelps, 2015). The site is also ecologically valuable: it contains 5.7 acres of wetlands and five potential vernal pools (MassGIS), and was identified in a 2007 Mass Audubon report commissioned by the town as crucial to local wildlife because it provides wildlife with a critical buffer from nearby I-495. However, the contribution of both developments does bring Southborough closer to the Commonwealth's 10% guideline.

THE COSTS OF DEVELOPMENT

Some in Southborough support increased development, and one argument often made is that development results in reduced property taxes. However, extensive research into the economic benefits of open space as compared to development has concluded that preservation of farmland, forest land, and open space has numerous positive impacts on a municipality's tax base.

For example, the presence of open space may substantially increase home property values. Studies in diverse locations including Boulder, CO; Portland, OR; Howard County, MD; Austin, TX; Minneapolis-St. Paul, MN; and others have concluded that proximity to preserved natural land or park land has substantial positive impact on home property values (Active Living Research, 2010). The gains are substantial: in Portland in 2001, for example, buyers were willing to pay between $845 and $2,662 more for a home within 1,500 feet of a park than a home further away (Active Living Research 2010, 3). In three Boulder neighborhoods, properties within 3,200 walking feet of a greenway were worth an average of 32% more than properties further away. In fact, in one neighborhood, the presence of the greenway raised the neighborhood's combined property value by $5.4 million in 1978, which would be substantially more in today's dollars (Correll et al. 1978). The act of protection itself may be important: one Maryland study found that homes near land protected in perpetuity were worth an average of $3,307 more than homes near unprotected pasture, since potential buyers feared the land could potentially be developed in the future (Shoup and Ewing, 2010). In order to reap the full financial benefits of open space, Southborough should move to protect land in perpetuity.

Studies also show that larger parcels of protected space are more highly valued by homeowners, which has a positive impact on nearby home prices. Larger open spaces also improve ecological integrity; provide more public goods, such as air and water filtration; support wildlife habitat; create opportunities for education and spiritual reflection; and have numerous other intangible benefits (Faulsold and Lilieholm, 1996).

Unlike residential or commercial development, preserved open space actually generates a fiscal surplus because very little is needed in infrastructure and community services (Fausold and Lilieholm, 1996). The American Farmland Trust has created case studies of at least 151 communities nationally to analyze the fiscal contributions of various land use types. These are presented as revenue-to-expenditure ratios in dollars (American Farmland Trust, 2010). In 1997, Southborough became one of thirteen Massachusetts towns studied. That analysis found that residential development costs more in municipal services than its tax revenues provide, while both commercial development and farm, forest, or open space contribute more in taxes than they consume (American Farmland Trust, 2010, Faushold and Lilieholm, 1996).

However, a review conducted by Active Living Research of numerous fiscal impact studies found that some commercial development attracts further residential development, which may ultimately result in a net fiscal deficit (Shoup and Ewing, 2010). In order to provide maximum ecological benefits to a growing population, it is in Southborough's best interest to preserve as much land as possible.

LONG-TERM DEVELOPMENT PATTERNS

In 2012, the Metropolitan Area Planning Council (MAPC) completed a Zoning Bylaw Review and Build-Out Analysis for the Southborough Planning Board. The evaluation looked at three distinct types of build out, which included implementing the Open Space Residential Design (OSRD)

bylaw, updating zoning for commercial areas along Route 9 (updating the previous MAPC analysis), and changing the Business Village district zonings.

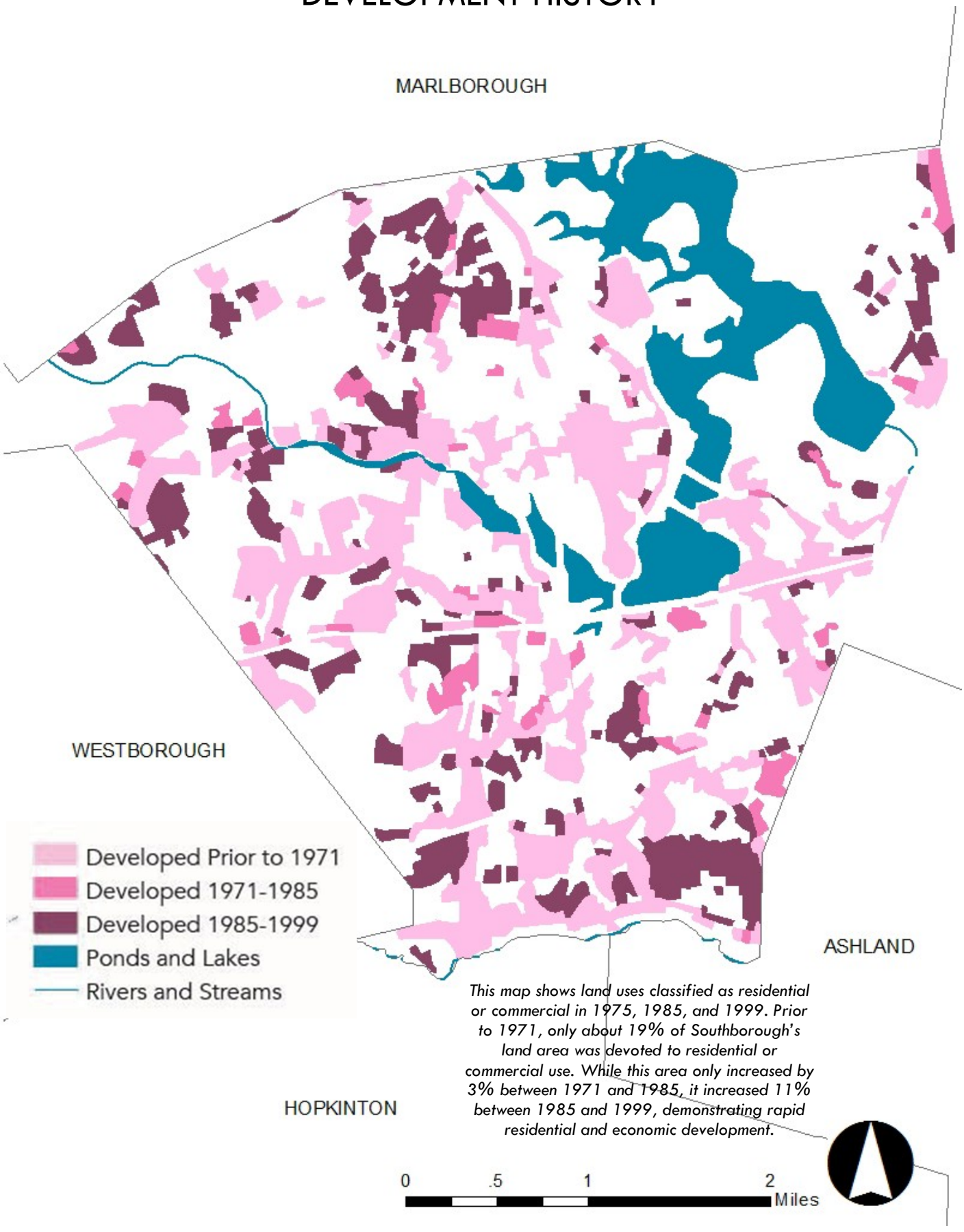
It was found that under existing zoning, a total build-out of 1,108 lots could be created in Southborough. With the proposed OSRD zoning, 1,675 lots could be created, which at an assumed 2.9 persons per household, could create an additional 4,857 residents at this full build-out. The methodology used in this analysis was to analyze the existing vacant land with the current zoning regulations and compare them to potential developments under the proposed OSRD bylaw using recently approved subdivisions under the existing bylaw. Tabular calculations were then created to show possible outcomes under current and proposed outcomes on the town-wide level. GIS and Assessor's data was used to identify parcels within the existing Residential A & B zoning districts that were vacant or largely vacant.

If we were to update the Zoning along Route 9 to promote growth, we could except a build-out of 6,282,395 net potential commercial square feet and 528 new potential dwelling units. This was determined by using the proposed zoning and environmental data developed from a previous MAPC 2010 Route 9 Build-out Study for the Route 9 Corridor.

MAPC also reviewed the current zoning and a redevelopment analysis for the Business Village (BV) districts and to calculate the development potential for these areas. There is a potential for both development and redevelopment within the BV districts for commercial and residential.

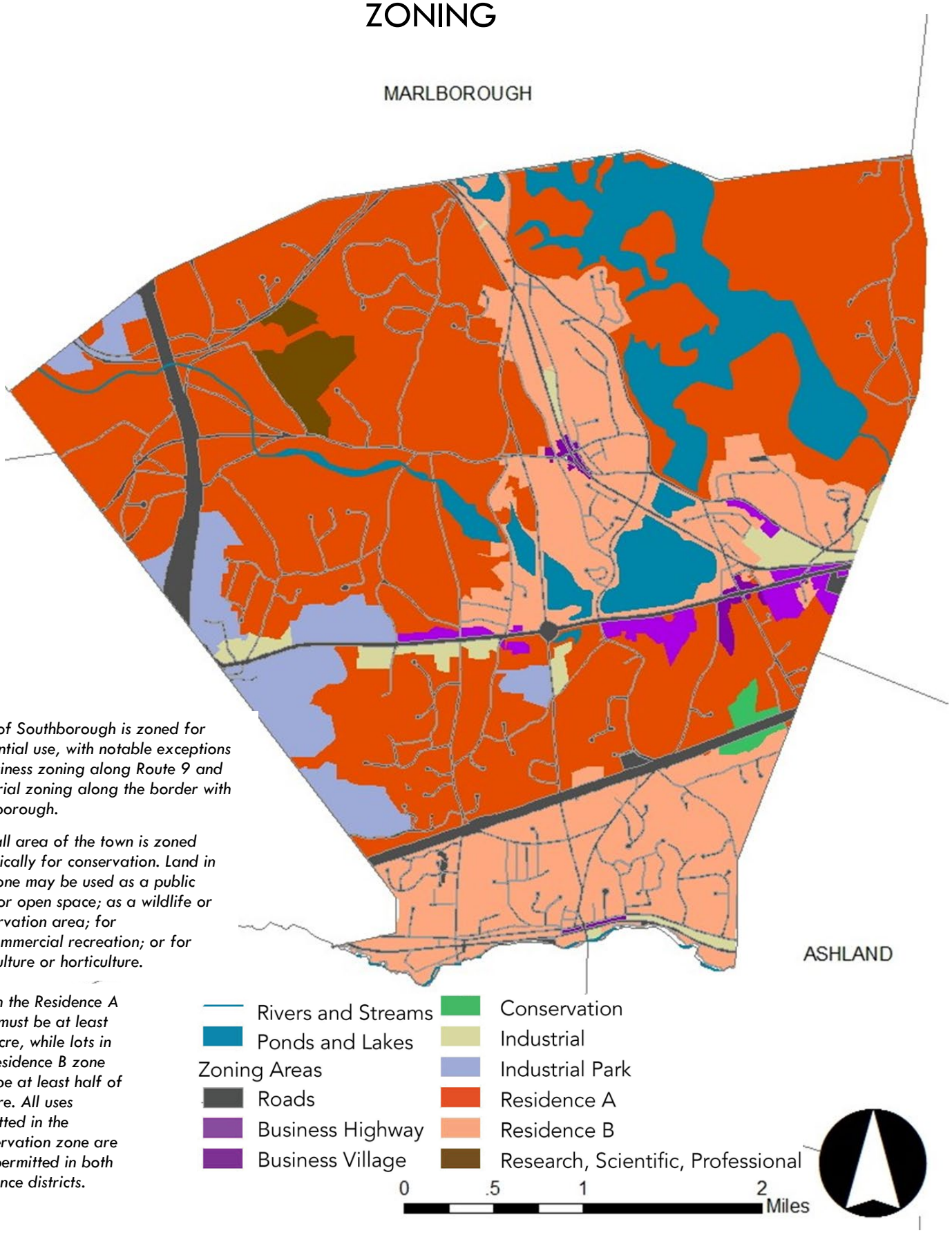
Using the Assessor's Database, MAPC and the Economic Development Committee found that approximately 5% of land area in town is developable or potentially developable. Residential land uses and properties account for 44% of total properties with commercial holding 9%, mixed use at 1%, exempt accounting for 37%, chapter 61 land with 1%, and other at 8%. One third of Southborough is water with additional lands being owned by the Department of Conservation and Recreation (DCR). Other exempt land is owned by non-profit organizations such as the housing authority, churches, and private schools. While these uses contrivute to the unique character and quality of life in Southborough, the ownership pattern certainly affects the Town's tax base.

DEVELOPMENT HISTORY



This map shows land uses classified as residential or commercial in 1975, 1985, and 1999. Prior to 1971, only about 19% of Southborough's land area was devoted to residential or commercial use. While this area only increased by 3% between 1971 and 1985, it increased 11% between 1985 and 1999, demonstrating rapid residential and economic development.

ZONING



Most of Southborough is zoned for residential use, with notable exceptions of business zoning along Route 9 and industrial zoning along the border with Westborough.

A small area of the town is zoned specifically for conservation. Land in this zone may be used as a public park or open space; as a wildlife or conservation area; for noncommercial recreation; or for agriculture or horticulture.

Lots in the Residence A zone must be at least one acre, while lots in the Residence B zone must be at least half of an acre. All uses permitted in the Conservation zone are also permitted in both residence districts.

INFRASTRUCTURE

Transportation

Within Southborough three types of roadways can be found: regional and interstate highways, old town roads, and new subdivision roads. The highways include Interstate 495, the Mass Turnpike (I-90), and Routes 9 and 85. The old town roads are often narrow and winding, and usually lined with shade trees and stone walls. These roads give the town much of the rural character that residents want to preserve. Many of the new subdivision roads have stone walls built along them in an attempt to match the character of the old town roads. The major roads carry high volumes of traffic and separate the town into segments that wildlife cannot safely cross. Route 495 and the Mass Turnpike are uncrossable for pedestrians. Route 9 essentially cuts the town into northern and southern sections with very limited opportunity for safe pedestrian crossing. There is a desire among residents expressed at the second public forum on March 4, 2015 to address this issue, perhaps by creating some type of bridge or raised crossing.

There are two active railroads in town. A diesel freight line owned and operated by CSX runs only occasionally through the grade-crossing in the center of town. The MBTA Framingham/Worcester line runs along the Sudbury River at the southern edge of town on the border of Hopkinton and Ashland. This busy rail line is shared by CSX (carrying freight), Amtrak and MBTA commuter trains, operating throughout the day and night.

The MBTA Commuter Rail's Framingham/ Worcester Line train stops at Southborough Station, which opened to commuters on June 22, 2002, and is heavily used. The station has parking for 364 spaces and is consistently full. A new private pay lot with 74 spaces received approval from the Planning Board in September 2015 and is not yet constructed. Although the station lot is often filled, many residents also choose to commute by car for many reasons. Southborough to Boston by train takes over an hour and costs between $19 and $25 (and an additional $4 in parking at the Southborough T). By car the trip takes around 33 minutes and $3 to $4 in gas. It is not surprising that the 2014 American Community Survey (Census) found that 87% of Southborough residents drive alone to work. The 2008 Southborough Master Plan Survey found that only 1% commute by rail.

There are three bus stops along the MWRTA line which connect Southborough to adjacent towns, but the scope of travel connections is limited.

Water Supply Systems

Besides several private wells in town, most of the residents of Southborough depend on the drinking water supplied by the Massachusetts Water Resources Authority (MWRA). The water originates from the Quabbin Reservoir via an aqueduct to the Wachusett Reservoir and is treated at the John J. Carroll Treatment Plant in Marlborough. In operation since 2005, it also treats the water for forty other Metro West Boston communities via the MetroWest Tunnel, an aqueduct completed in 2004 that runs beneath Southborough. The plant has the capacity to treat up to 405 million gallons of water from the Wachusett Reservoir each day, though 270 million gallons per day is the average. Protecting the Quabbin's watershed is in the interest of not only Southborough, but for most of eastern Massachusetts.

The Quabbin and Wachusett watersheds are protected naturally with over 85% of the watersheds covered in forest and wetlands (MWRA, 2015). The entire eastern third of the Commonwealth depends on this system for its drinking water. Additionally, the Sudbury and Foss Reservoirs in Southborough and adjacent Framingham provide the only emergency drinking water source supply for over two million residents of eastern Massachusetts. The Department of Conservation Resources (DCR) owns and maintains the land around the Sudbury and Foss Reservoirs. To protect

water quality the DCR's 2008 *Watershed Protection Plan Update* identified the 2,000 acres of DCR property that surround these two water bodies over several towns as "a crucial buffer to water quality degradation in the reservoirs." The quality of water in the reservoirs has historically been below minimum standards, which is why these reservoirs have not been used as primary drinking water sources since 1976. Threats to the quality of water continue. Precipitation run-off from over a quarter of Marlborough, the most urbanized area of the watershed, drains into the Sudbury Reservoir (DCR, 2008).

Waste Water

The Town of Southborough relies almost solely on septic systems, with no plans to add sewers. The only exceptions are the several homes on Pine Hill Road which tie into the sewer system in Framingham. The 2009 Town of Southborough Open Space Plan notes: "A vote to install sewers has always been rejected because of concerns over the increase in development density that sewers historically bring." While relying on individual septic systems may decrease population density, it can also contribute to suburban sprawl.

Solid Waste Disposal

There is an inactive landfill in Southborough, which is a capped yet unlined municipal solid waste site. What was the Southborough Landfill is located on Parkerville Road, near the intersection with General Henry Knox Road? This is now a town soccer field and the town is required to perform annual testing at the site. Currently, residents can either opt to hire private companies to take care of their household waste and recycling, or they can purchase an access permit to use the transfer station located at the John Boland Public Works Facility on Cordaville Road for recycling and/or trash disposal. Recyclables are sent from the transfer station to E.L. Harvey & Sons Waste and Recycling Services in Westborough. Trash is transported for processing to the Wheelabrator Millbury energy-from-waste facility that uses up to 1,500 tons of waste from homes and businesses each day to produce electricity, reducing the regions' dependence on landfills ("Wheelabrator Millbury", 2016).

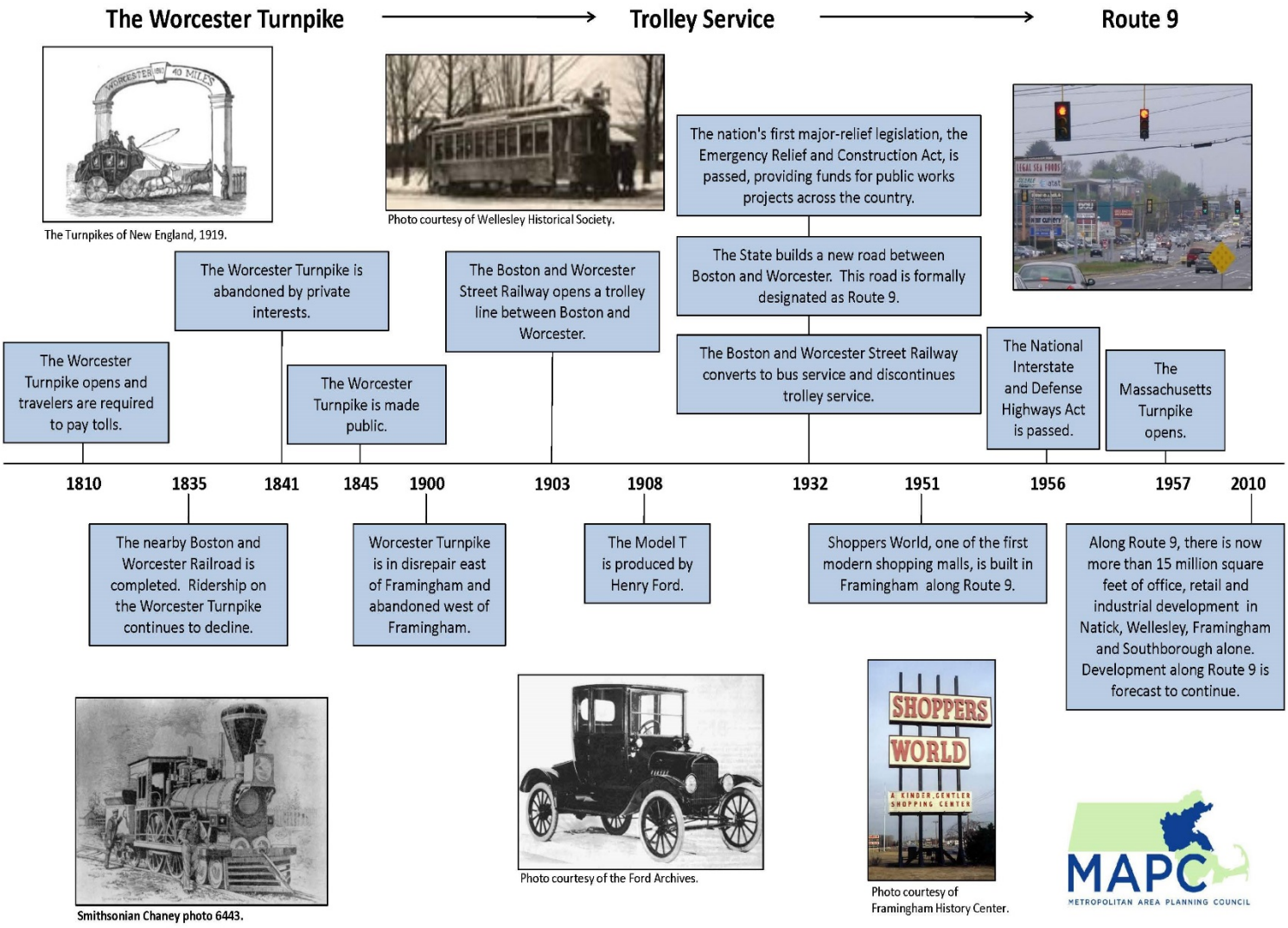
PEDESSTRIAN AND CYCLING OPTIONS

In 2015 the Southborough Sidewalk Construction Recommendation Committee was formed to develop an impartial review and evaluate streets that have a need for the construction of new sidewalks. The Committee created an evaluation matrix with ten categories: traffic volumes, pedestrian activity, safety, available right-of-way, connects to destination, connectivity, environmental impacts, construction challenges, conforms to town goals, and future needs.

From this study, the Committee identified the top 10 streets and recommended that the matrix be used in the future to rank and evaluate sidewalk construction for the optimization in use of tax dollars. The full report can be seen in Appendix #2.

The Trails Committee has been diligently working on the Boroughs Loop Trail (BLT) that connects Marlborough, Northborough, Southborough, and Westborough to create a 33-mile regional trail that has both walking and cycling options. The Grand Opening was on for October 5, 2019 and maps can be found at www.svtweb.org/blt.

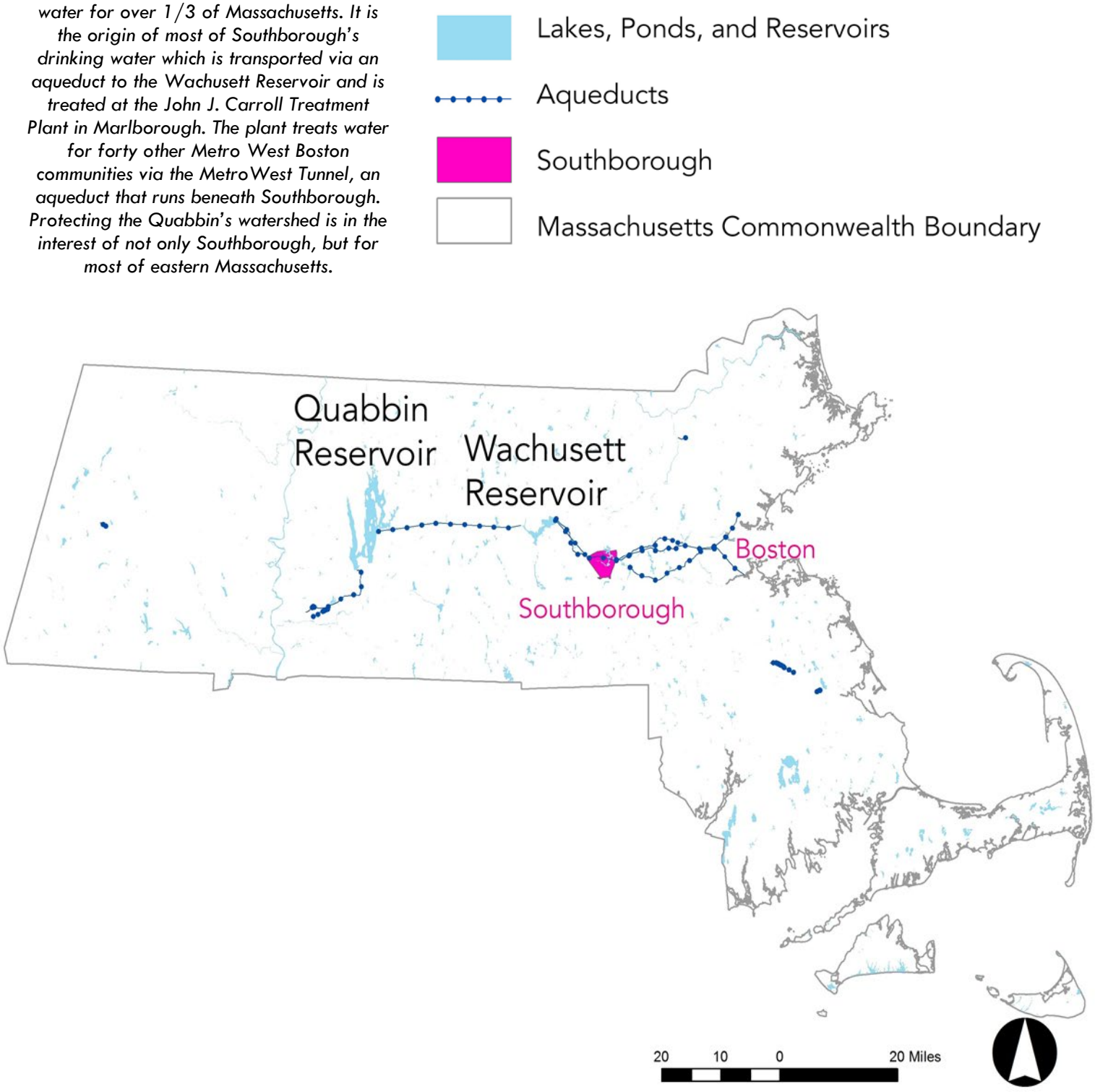
The 200 Year History of Route 9



In 2010, Route 9 turned 200 years old. For two centuries, this important east-west highway has brought development, transportation, and people from Metro Boston through the western suburbs, to the Worcester foothills, and beyond (Source: http://web.archive.org/web/20170817170241/http:/www.mapc.org/route-9)

WATER SUPPLY SYSTEMS

The Quabbin Reservoir provides drinking water for over 1/3 of Massachusetts. It is the origin of most of Southborough's drinking water which is transported via an aqueduct to the Wachusett Reservoir and is treated at the John J. Carroll Treatment Plant in Marlborough. The plant treats water for forty other Metro West Boston communities via the MetroWest Tunnel, an aqueduct that runs beneath Southborough. Protecting the Quabbin's watershed is in the interest of not only Southborough, but for most of eastern Massachusetts.



E. RECREATION

Written by the Southborough Recreation Commission

The mission of the Recreation Commission is to offer programs for all ages and interests, giving everyone the opportunity to engage in a variety of activities. Through these activities, participants will be able to make constructive use of leisure time and develop a sense of community, contribute to positive physical and mental health, and good sportsmanship. The Recreation Commission has developed an extension of the Open Space and Recreation Plan that is more directed to active and organized recreation itself and yet still supportive of the open space elements. There are several factors the Recreation Commission considers important in order to support our mission, Health and Safety, Community, Partnership and Facilities all of which overlap in many ways.

Health and safety are imperative in recreation. Offering programs that not only provide mental and physical health but take place in a safe environment is vital. Therefore, our existing facilities, including fields, playgrounds, and gyms, must be supported financially and well maintained. While Southborough does offer a host of facilities, there is room for growth, and it is paramount that the Recreation Commission strives to develop additional recreational facilities in Town.

The Town of Southborough's last comprehensive facilities plan was done in 1999 by the Ad Hoc Facilities Committee. That plan assessed the Town's fields, and it was thorough and accurate. This document, recently reviewed by the Recreation Commission, serves as a foundation for the establishment of new facilities and continuing the maintenance of existing ones. In April of 2016, the 2016 Recreation Facilities Study was completed and can be found on the Recreation website.

Activities which require indoor facilities are limited in Southborough. Securing indoor space in Southborough can be a challenge due to the number of organizations and the events and programs each offer. Recreation offers a wide range of programs, of which several are outsourced to other organizations or business locations in surrounding towns. This decreases the choice of program availability and the added burden of travel for residents. It is imperative that the Recreation Commission and the Town capture any opportunities that arise so that Recreation can rise to the growing demand of its residents.

Recreation reaches a large population and can foster a sense of community. The Commission views recreation as a host to many other committees and organizations within the Town. Creating a connection or partnership builds a sense of community and strength.

The Recreation Department publishes two seasonal brochures; spring/summer and fall/winter that offers programming for all ages. Also, after school programs are offered at all schools for grades PK-8. The department is also responsible for year-round scheduling of gyms and fields. The Recreation Department also works with the Southborough Trails Committee (STC) to oversee volunteers to create, monitor and maintain town resource trails in Southborough in coordination with both private and public entities, and will coordinate with the regional trail organizations. Additionally, the STC shall be responsible for oversight of all required monitoring and maintenance obligations under the Town's trail licensing agreements with the DCR and MWRA.

CURRENT RECREATION FACILITIES IN SOUTHBOROUGH	
Name	Facilities and Activities Available
9/11 Memorial Field	Multi-purpose field
Choate Field (lighted)	Baseball/softball, basketball, multi-purpose fields
Finn School	Playground, baseball, basketball, pavilion, gym
Harold Fay Memorial Playground	Playground, basketball, baseball, pavilion
Kallander Field	Multi-purpose field
Liberty Estate Field	Multi-purpose field
Mooney Complex	Multi-purpose field
Neary School	Playground, baseball, basketball, pavilion, gym, multi-purpose fields, outdoor volleyball, tennis
South Union	Recreation office, playground
Trottier Middle School	Track and field, baseball/softball, basketball, multi-purpose field, gym
Woodward School	Playground, wall ball, gym

The Recreation Commission has accomplished the following over the last six years:

- ☐ Improved communication
- ☐ Established a Trails Committee
- ☐ Completed the 1999 Facilities Plan with the installation of the skate park
- ☐ Established a summer concert series through partnership with Youth & Family Services
- ☐ Installed recreational features through Eagle Scout projects: outdoor volleyball court, platform and storage for community events, wall ball, obstacle course
- ☐ Installed new playground at South Union building
- ☐ Replaced lights at Choate Field
- ☐ Overseen major community events, Heritage Day, Gobble Wobble Road Race, and Summer Nights

The Recreation Commission has established goals and objectives to guide our efforts over the next three to five years which are outlined below. The 2016 Recreation Facilities Study, scheduled for completion in April, will help to narrow down more detailed goals.

2016 RECREATION GOALS	
1	Improve and maintain quality and safety of all recreational facilities
2	Provide high quality recreation programs and activities that meet the needs of residents of diverse ages to build a stronger community
3	Seek opportunities to expand recreational facilities
4	Maintain strong partnerships with committees and organizations throughout the town
5	Fulfill responsibility to maintain a budget that supports programming and facilities
6	Provide ongoing communication and education to end users
7	Build an indoor community center

Section 4: Environmental Inventory and Analysis

A. GEOLOGY, TOPOGRAPHY, SOILS

Southborough's fertile soils and gentle topography can be attributed to its glaciated past. Soil is an important natural resource that filters water, sequesters carbon, helps to regulate streamflow, and provides nutrients to plants that form the basis of human and terrestrial ecosystems. As a historically agricultural community, Southborough was founded on fertile soil. Today, the same qualities that make the soil excellent for agriculture and healthy natural communities make it attractive and vulnerable to development.

GEOLOGY AND TOPOGRAPHY

Southborough's geology provides clues to its glaciated past. Around 25,000 years ago, glaciers that covered what is now northern North America reached their fullest extent, submerging land as far south as Southern New England (Flory and Neel, 1975). The glaciers retreated and advanced several times between then and their final retreat from the region about 13,000 years ago, leaving behind weathered surface deposits composed of sand, silt, gravel, and boulders.

Southborough's surficial geology is dominated by two types of glacial deposits: stratified and unstratified deposits.

Stratified deposits are those that were transported from their original location, often by water. When sand, rocks, gravel, and other materials are transported by water, they are sorted by size, since the water is able to carry smaller particles further. This makes them excellent for water retention, meaning that there is less runoff and erosion that flows across the ground's surface into local water bodies. They are also excellent for groundwater filtration, since water passes through the ground slowly. They are therefore excellent for septic system installation (Flory and Neel, 1975). In Southborough, since many of the stratified deposits are located near the Sudbury Reservoir, caution should be taken when building very close to the reservoir itself.

Glacial till is an example of an unstratified deposit. Till is deposited in place, often as a glacier melts, and is not transported and therefore not sorted. This creates unsorted deposits composed of a random assortment of sand, silt, gravel, and larger rocks. Till tends to be compact, so it is difficult for water to pass through. Therefore, water passes quickly over the surface, often eroding the soil and carrying surface particles with it to local water bodies. These particles often contain fertilizer, gasoline, or other pollutants that can harm water quality. For these reasons, glacial till is not an especially good material in which to build septic systems, and extensive disruption of the soil can impact local water bodies (Flory and Neel, 1975).

Southborough's topographic variation is gentle. Much of the town's slopes are between 0 and 5%, which is nearly completely flat. There are few steep slopes and they are small in extent.

Exposed glacial stratified deposits at Breakneck Hill

SOIL IN SOUTHBOROUGH

Soil acts as a living filter that serves to protect and enhance our entire ecosystem; it is a dynamic and important natural resource that provides ecosystem services crucial to natural and social systems. The NRCS lists them as such:

Soil supports the growth and diversity of plants and animals by providing a physical, chemical, and biological environment where the exchange of water, nutrients, energy and air occurs. Soil regulates and partitions rainfall, regulates flow

and storage of water and solutes, including nitrogen, phosphorus, pesticides and other nutrients and compounds that are in dissolved water. Soil stores, moderates the release of, and cycles plant nutrients and other elements. (NRCS, 2011).

Southborough's soils can be grouped into eight major classifications: fine sandy loam, mucky fine sandy loam, sandy loam, silt loam, loam, loamy sand, Chatfield-Hollis rock outcrop complex, and udorthents. Of these, by far the most abundant type in Southborough is fine sandy loam. Fine sandy loam is a well-drained, deep soil formed in a loamy mantle. It is often considered Prime Farmland by the Natural Resources Conservation Service, although there are other areas of Southborough of the same soil type that are not considered prime farmland due to steep slopes or other physical characteristics. Fine sandy loam is also considered highly erodible, so if not managed carefully, it can be lost as sediment in runoff to nearby water bodies.

SOIL AND AGRICULTURE

About 48% of Southborough's soils are classified by the NRCS as Prime Farmland, Farmland of Statewide Importance, or Farmland of Unique Importance. Prime Farmland soils are those that are especially good for producing high yields of food, fiber, and other crops (SSURGO). The NRCS' Farmland of Statewide Importance classification is a secondary tier considered slightly lesser quality than Prime Farmland, although still high-yield enough to be economically productive. Farmland of Unique Importance is suitable for growing niche or specialty crops such as cranberries (MassGIS SSURGO). Prime Farmland is also an important natural resource that can shelter wildlife, supply scenic open space, and help filter impurities from our air and water (American Farmland Trust, 2002).

While Southborough was historically a farming community, today it is primarily residential. However, a recent demonstrated interest in local agriculture suggests that farming may again become more prominent. In 2006, a conservation restriction on the 109-acre Chestnut Hill Farm was purchased by the Town of Southborough. The property is now owned by The Trustees of Reservations. In 2015, a community-supported agriculture farm growing fruits and vegetables was established on part of the property. Members receive a box of fresh produce weekly from June to October, as well as access to the farm's Pick Your Own gardens, which grow flowers, peas, and beans. Chestnut Hill also runs a seasonal farm stand that offers both its own produce and products from other local vendors, and often donates excess vegetables to Southborough's food pantry. In the 2016 growing season, the farm's operators hope to expand Pick Your Own offerings (The Trustees, 2015). They'd also like to increase their CSA's membership substantially—having set a goal of 200 shares in 2016 and 350 in 2017. If these goals are met, the farm will quickly be pressed for space. Chestnut Hill will also soon be joined by a new farm in town: in March of 2016, Southborough Wicked Local reported that the 16.5-acre Stonybrook Golf Course, which has recently closed, will be converted to an organic farm. The news indicates growing local interest in expanding agricultural output.

Southborough's Community Gardens have also grown substantially in recent years and are popular among community members. The garden was initially established on a town- owned parcel off Middle Road. Because that site was difficult to access and had no water source, it remained small. However, once the garden was moved to Breakneck Hill in 2008, it quickly expanded from four plots to more than twenty. It grew again to fifty plots in 2009, once water spigots were installed. In 2012, donated topsoil from a construction project at St. Mark's School allowed the garden to expand to its current size of over sixty plots. Today, the town's volunteer Garden Coordinator helps to manage the garden by laying out the plots and collecting rental fees. By all accounts, it has been a huge success.

The upsurge in interest corresponds to a national conversation about threats to food security from changing temperature and precipitation patterns. Currently, New England produces only about 12% of the food it consumes (Donahue et al., 2014). The remainder is imported from abroad and from more farm-rich areas of the country, such as California and the Midwest. The USDA's 2012 report Climate Change and Agriculture in the United States: Effects and Adaptation outlines anticipated changes to the food system in future years due to climate change. For

example, California's produce-growing Central Valley's water stores are threatened by drought and a lessening snowpack (Walthall et al., 2012).

Reduced availability of water resources will likely result in reduced outputs, which will raise food prices, making local production more attractive (Donahue et al., 2014). In such a case, prime farmland will become a crucial resource for the region's food security.

SOILS AND DEVELOPMENT

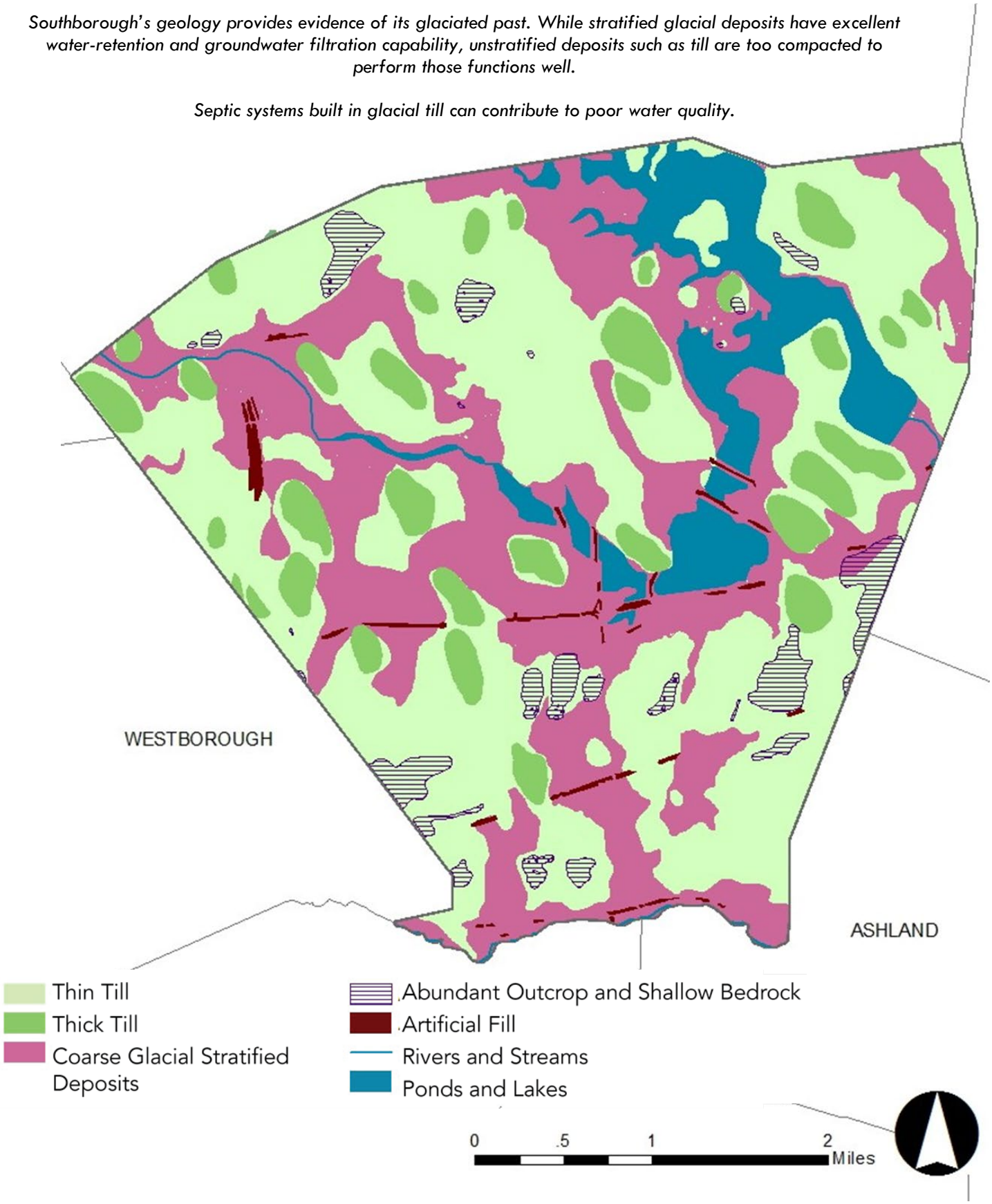
Prime farmland soils are also especially desirable for development. Their gentle slopes and good drainage make them appropriate for septic-system installation and makes them attractive places to build homes. This trend is widespread; nationwide, between 1992 and 1997, prime farm soils were developed at a 30% higher rate than less-fertile lands (American Farmland Trust, 2002). The development process can have deleterious effects on soil productivity that are not easily remedied.

Compaction of the soil by heavy equipment and building materials reduces the ability of air, water, and plant roots to move through the matrix, which increases stormwater runoff and reduces water holding capacity. Erosion is common at construction sites, since they are often left without vegetation for long periods of time (Mangiafico, 2011). While residential development is often necessary and important, development of prime farm soils forces agricultural production onto more marginal, less-appropriate land that is not as productive (American Farmland Trust, 2002). Soil–especially prime farm soil–is a valuable, but fragile resource, and care must be taken to preserve it for the future.

SURFICIAL GEOLOGY

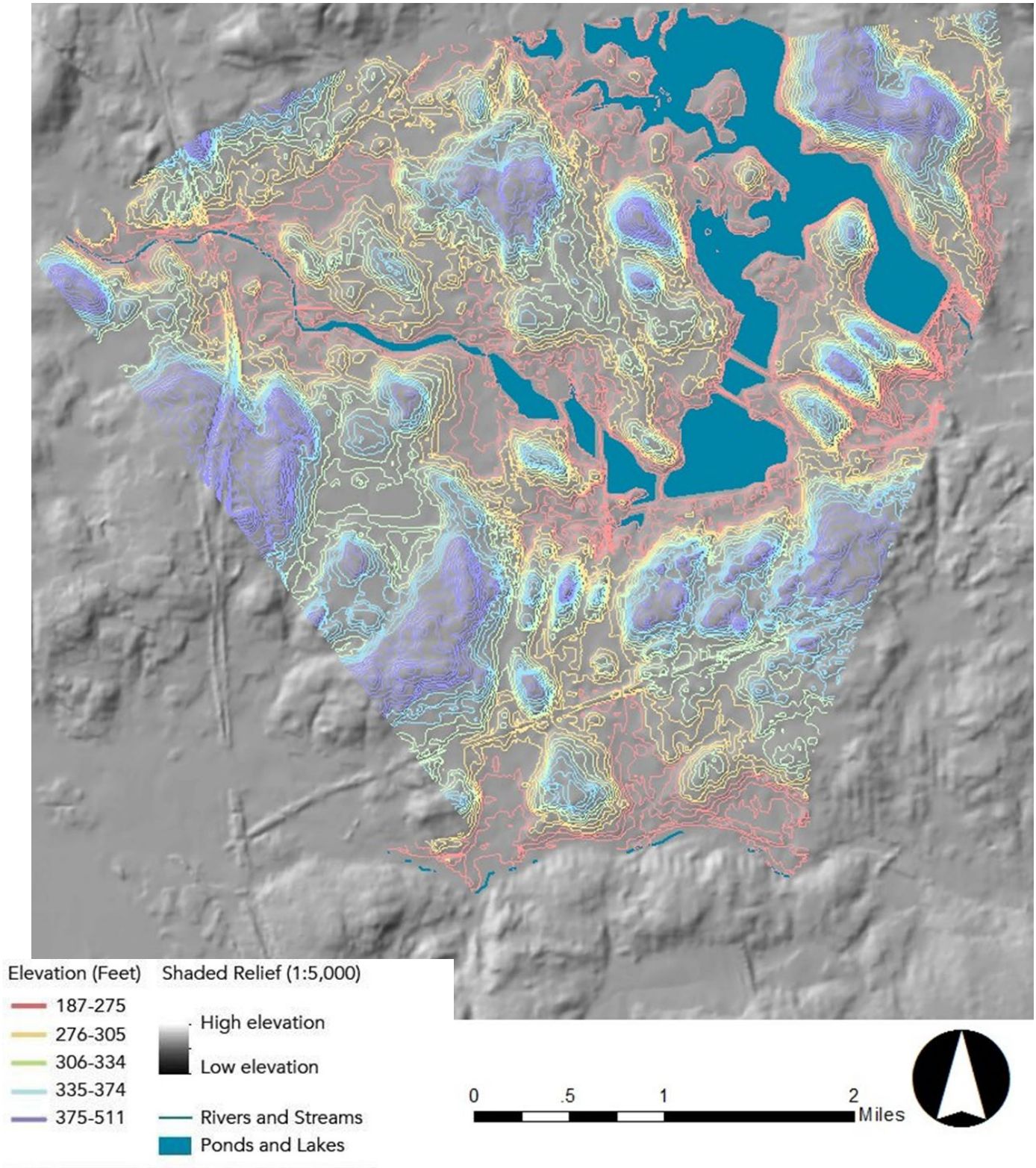
Southborough's geology provides evidence of its glaciated past. While stratified glacial deposits have excellent water-retention and groundwater filtration capability, unstratified deposits such as till are too compacted to perform those functions well.

Septic systems built in glacial till can contribute to poor water quality.



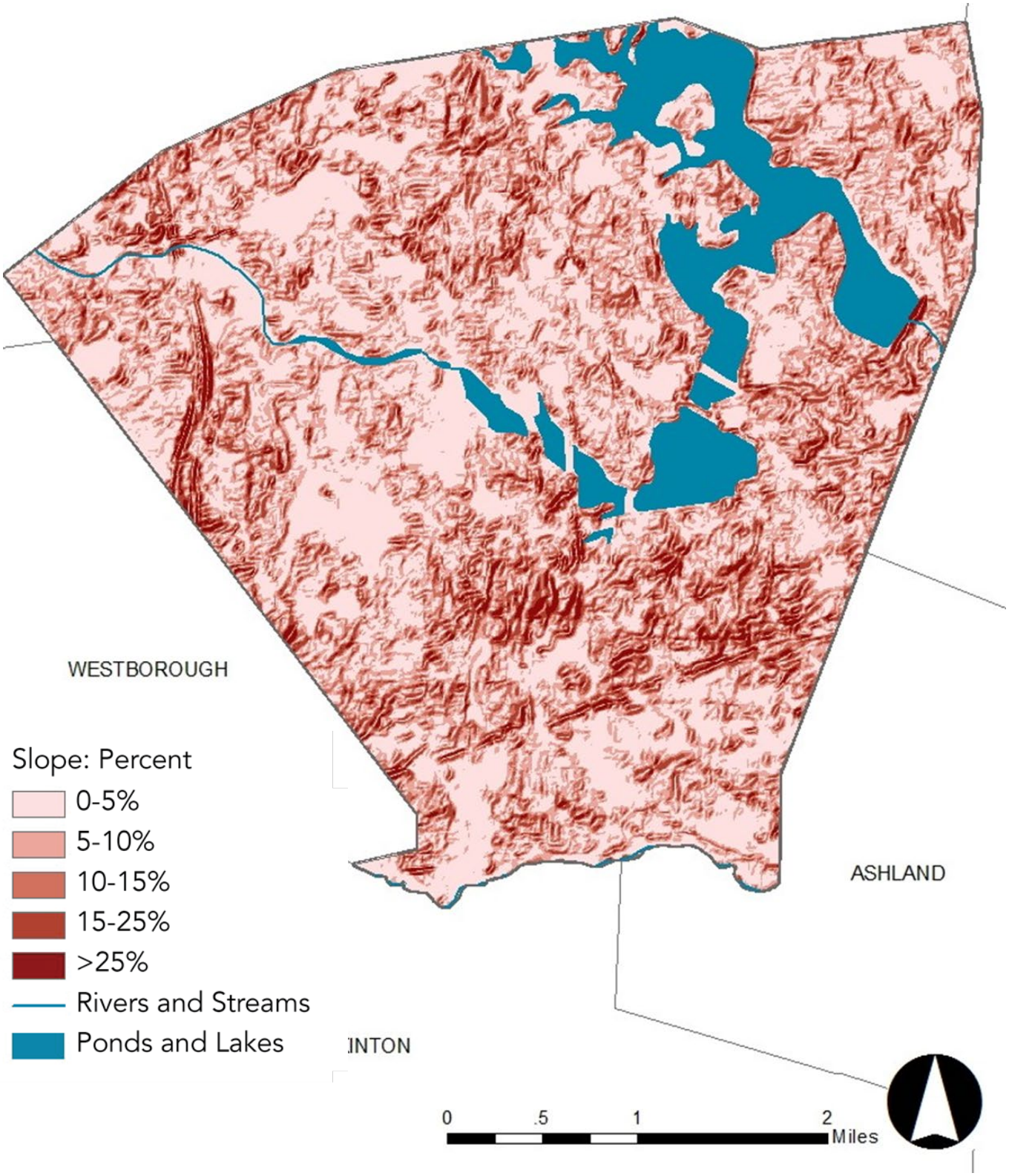
CONTOURS

Overall, Southborough's slopes are relatively gentle, with an elevation difference of only about 200 feet. The flattest areas are located around the Sudbury Reservoir and the Sudbury River. The generally shallow slopes once made the area attractive for agriculture, and now make it attractive for development.



TOPOGRAPHY

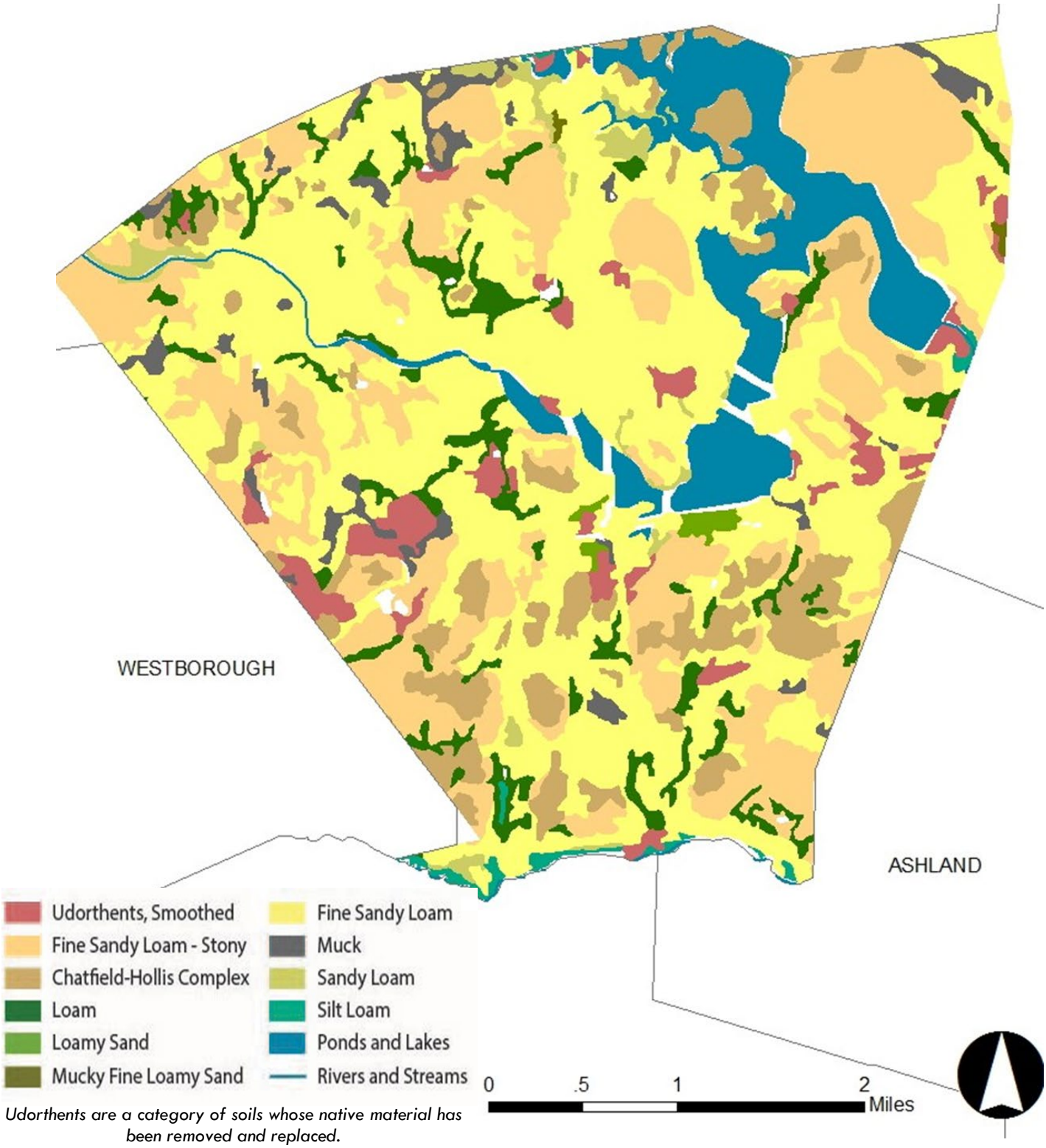
Slopes above 15%, if developed or otherwise disturbed, are at risk for excessive erosion, which sends pollutants into local water bodies. Southborough does have some steep slopes that will erode if disturbed or manipulated. However, there are also many flat areas in town that can be developed or farmed without excessive impact on local water quality.



SOIL FORMATIONS

Most of the soils in Southborough are fine sandy loam, which is a well-drained soil formed in a loamy mantle, common in areas that were once glaciated. It is considered fertile and is frequently classified as Prime Farmland by the National Resources Conservation Service.

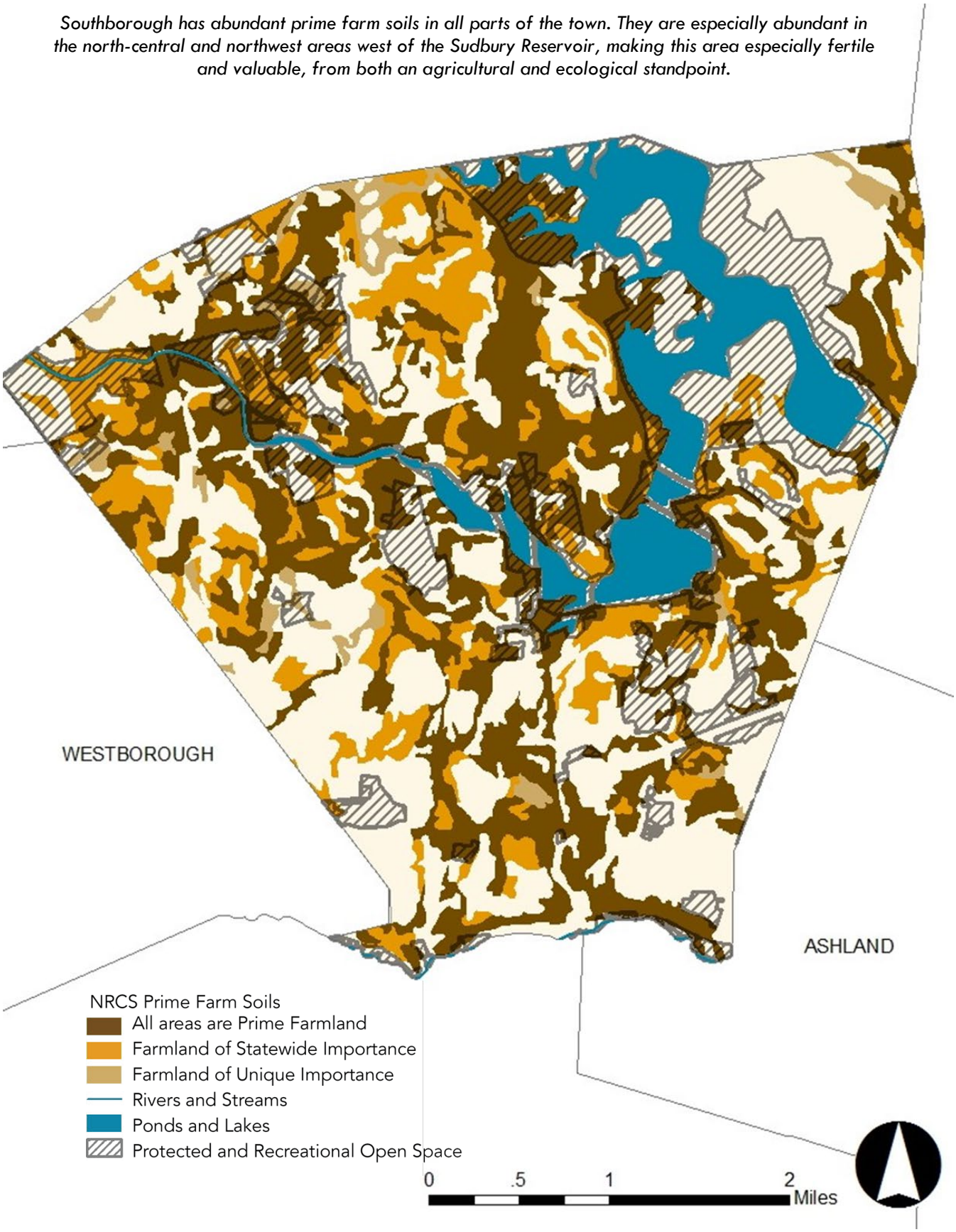
Another prominent soil formation in Southborough is Chatfield-Hollis complex. Chatfield soils are loamy and deep to bedrock, while Hollis soils are shallow to bedrock. Both are moderately to steeply sloped and are formed on bedrock hills and ridges.



Udorthents are a category of soils whose native material has been removed and replaced.

PRIME FARM SOILS

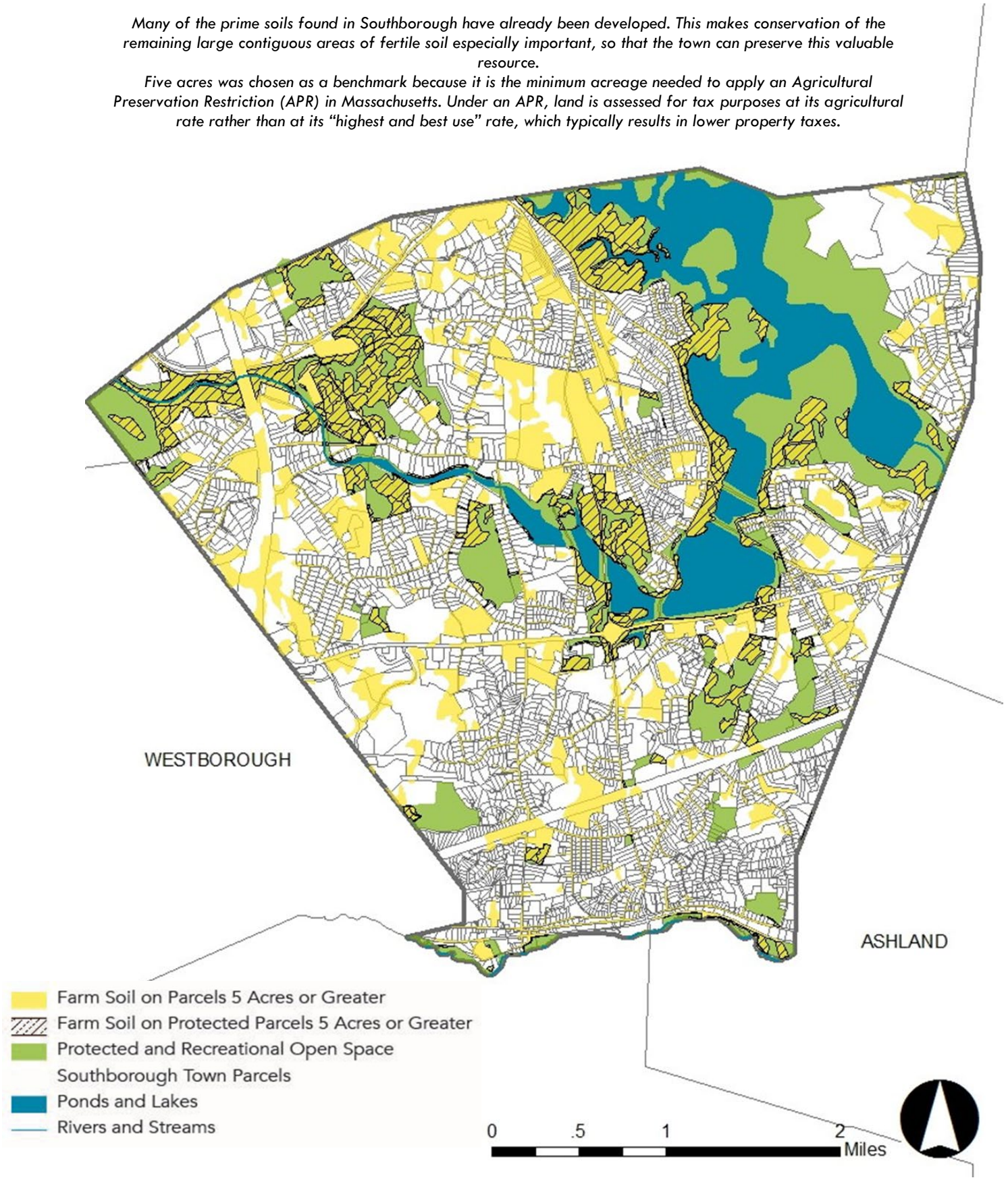
Southborough has abundant prime farm soils in all parts of the town. They are especially abundant in the north-central and northwest areas west of the Sudbury Reservoir, making this area especially fertile and valuable, from both an agricultural and ecological standpoint.



PRIME FARM SOILS ABOVE FIVE ACRES

Many of the prime soils found in Southborough have already been developed. This makes conservation of the remaining large contiguous areas of fertile soil especially important, so that the town can preserve this valuable resource.

Five acres was chosen as a benchmark because it is the minimum acreage needed to apply an Agricultural Preservation Restriction (APR) in Massachusetts. Under an APR, land is assessed for tax purposes at its agricultural rate rather than at its "highest and best use" rate, which typically results in lower property taxes.



B. LANDSCAPE CHARACTER

Southborough's landscape of plains and low hills typifies the Southern New England Coastal Plains and Hills Ecoregion (which is a subset of the larger Northeastern Coastal Zone Ecoregion). As with many other areas of New England, the forests were cleared for growing crops and grazing cattle. The town's undeveloped land is largely forested. A variety of successional oak and oak-pine forests, along with some elm, ash, and red maple that are typical of southern New England's forested wetlands. Some forests grew in abandoned farm fields, while some were planted by the DCR for protection of the reservoir. Although attempts were made to farm much of the Northeastern Coastal Zone during European settlement, land use now consists mainly of forests, woodlands, and urban and suburban development, with only some minor areas of pasture and cropland. This trend continues within the town of Southborough. Farmhouses punctuate Southborough's landscape while stone walls line the narrow and winding residential streets. Open tracts of land offer glimpses of the town's past as an agricultural community. Newer developments in the town are now attempting to match the rural character that is treasured by Southborough's residents by constructing stone walls that mimic these relics.

The most distinctive element of the town is the Sudbury Reservoir, which takes up almost a quarter of the town's acreage. Residents enjoy the passive recreation opportunities that the reservoir provides. It is the largest contiguous parcel of open space in town.

There are many other places of unique interest including Breakneck Hill Conservation Land (BHCL), the Town Forest, and Beals Preserve; all three have their own walking trails. The regional trails that pass through town include the Bay Circuit Trail and the Boroughs Loop Trail. There are many recreational fields used by the community as well, including the 9/11 Memorial Field and Mooney Field.

The three major causeways that run through town have heavy and fast-moving traffic (Route 9, I-495 and the Mass Turnpike), making crossing difficult for bikers, pedestrians and wildlife.

There are only three places to cross through town from north to south (Middle Road, White Bagley Road to Breakneck Hill Road, and Central Street to Oak Hill Road), and only two places to cross town from east to west as a pedestrian (Route 30, which is dangerous, and Southville Road along the southern edge of town). Kids are unable to cross Route 9 safely to their recreational fields. One solution to this problem could be bridges that cross these roads.

Any future development in Southborough (including Park Central, which has yet to break ground), has the opportunity to add to the quality of life and the ecological health of the landscape. Municipal officials have the responsibility to work with future developers to implement conservation restrictions on a percentage of the land and include greenway planning to create linkages between existing open spaces in Southborough to ensure that the town's goals for open space and recreation are met.

C. WATER RESOURCES

Southborough is a water-rich town with many resources, from the Sudbury Reservoir to wetlands, vernal pools, and the Sudbury River. It is one of the thirty-six towns in the SuAsCo watershed (Sudbury, Assabet, and Concord Rivers). Because the water quality of these rivers is impacted by the land use within the watershed, it is important to protect land, such as areas containing wetland systems, that provide valuable ecological services that maintain clean water, and also to effectively address aspects of development that threaten water quality. Since the flow of water does not stop at a political boundary, these efforts can be strengthened by regional partnerships. Strengthening the health and resilience of ecosystems within this watershed can help protect the natural resources that keep drinking water clean for the residents of the region. As the rivers continue on their paths to the sea, the actions of one town have effects on water quality far beyond its borders.

WATERSHED

Southborough is in the SuAsCo watershed (Sudbury, Assabet and Concord Rivers). It includes thirty-six towns and a large network of tributaries that ultimately flow into the Merrimack River, which empties into the Atlantic Ocean in Newburyport, Massachusetts. The watershed has a total drainage area of approximately 377 square miles. Twenty-nine miles of the three rivers were designated by the Commonwealth as Wild and Scenic for their outstanding ecological, historical, scenic, and recreational values on April 9, 1999 (NPS, 2006).

The 2005 SuAsCo Watershed Action Plan recognizes the resource challenges faced by the towns within the SuAsCo Watershed because of the impacts of the rapid growth of the region. They state that many stretches of the three rivers routinely fail water quality standards due to the stress of non-point stormwater sources and wastewater treatment plant discharges, and also experience both severe flooding, and low flow. All three rivers have been impounded by dams, creating systems with rapidly moving headwaters and slowly moving impounded sections (Ambient Engineering, 2005). Because of this, all aquifers within the watershed are no longer used as primary sources of drinking water. The two subwatersheds in Southborough that are critical to groundwater quality include those where surface water has already been impaired. These two areas drain into the Sudbury Reservoir and the Sudbury River. These subwatersheds encompass all of Southborough; the 2003 Southborough Stormwater Management Plan advises that activities to ameliorate the water quality should be implemented town wide. Many organizations are working at the SuAsCo watershed level to protect the natural resources needed to sustain wildlife, keep beautiful places accessible for recreation, and maintain water quality. Two of these organizations include:

The Sudbury Valley Trustees (SVT), a regional land trust that conserves land and protects wildlife habitat; and The SuAsCo Cooperative Invasive Species Management Area (CISMA), a partnership of organizations whose goal is to manage and control invasive species in the watershed in order to protect the biological, aesthetic, cultural, historical, and recreational values of natural areas, farmland, water resources, and scenic vistas of the region. The Southborough Stewardship Committee voted to join CISMA in 2016.

The Sudbury Reservoir, Southborough

SURFACE WATER

The Sudbury Reservoir is a defining feature of Southborough, extending into neighboring Marlborough to the north. It is an Outstanding Resource Water as defined in the Commonwealth of Massachusetts 1995 Surface Water Quality Standards and is afforded special protections under the Massachusetts Water Quality Standards (314 CMR 4.04) The reservoir is an emergency back-up water supply source for over two million residents of eastern Massachusetts. The reservoir and its surrounding land is owned and managed by the Department of Conservation and Recreation (DCR). Together they cover 24.6 percent of the town's total area. The land surrounding the reservoir provides a place for passive recreation and wildlife habitat. Recreational activities in and around the reservoir are limited in order to protect the quality of the water. Only passive recreational activities, such as bank fishing, hiking, walking, nature study, bird watching, and snowshoeing, are allowed, and only in designated areas.

The major hydrologic inputs to the Sudbury Reservoir are the natural watershed drainage and the flow from the final portion of the Wachusett Aqueduct, an open channel running from near the treatment facility to Sudbury Reservoir.


Wachusett Aqueduct, Southborough

Rivers, streams, and wetlands serve many functions, such as providing habitat and corridors for wildlife, linking ecological communities, transporting nutrients and sediments, and contributing to the town's scenic, recreational, and educational qualities. According to the 1999 OSRP, the town has forty-two ponds, streams and brooks, but no natural lakes (the Sudbury Reservoir being man- made). The Sudbury River runs east along the southern boundary of Southborough in a series of oxbows, separating the town from Hopkinton and Ashland and is about 41 miles in total.

The headwaters of the river are in the Commonwealth's first designated Area of Critical Environmental Concern: The Great Cedar Swamp in neighboring Westborough, MA. The swamp is one of the largest wetlands in Central

Massachusetts (EOEEA, 2005). The river continues to Concord, where it merges with the Assabet River at Egg Rock to form the Concord River (OARS). Mercury contamination was discovered in the 1970s from the Nyanza plant in neighboring Ashland. The EPA subsequently listed the town as a toxic site and led a cleanup effort to repair the damage, and they recommended that fish caught downriver not be eaten. The SuAsCo River Stewardship Council is just one of the many organizations that help to manage and maintain the condition of the river.

One of the recommended actions from the EEA's 2005 SuAsCo Watershed Action Plan was to perform stream team surveys and notify property owners and local conservation commissions of infractions of wetlands and river regulations. The Sudbury Watershed Monitoring Program (SWAMP) was the stream team for Southborough, made up of residents and volunteers who cared for the section of the river between the Fruit Street Bridge and the Chattanooga Mill Site. It helped protect the watershed by noting pollution incidents and watershed activities that lead to pollution. SWAMP was discontinued in 2012. If this group were revived, it could contribute to remediating non-point source pollution, educate and involve citizens, and identify future grant opportunities.

Forested wetlands, Beals Preserve

WETLANDS

Wetlands are scattered throughout the town of Southborough, and play a crucial role in maintaining the quality of groundwater, providing groundwater and aquifer recharge, helping to control seasonal flooding, preventing pollution by filtering contaminants that enter the system, and providing habitat for a variety of wildlife species. Wetlands also add to the natural beauty of the landscape and provide opportunities for recreation such as bird watching or scenic photography.

According to the 2003 Southborough Storm-Water Management Plan, there are approximately 850 acres of wetlands in Southborough, covering approximately 8.5% of the town's area. Many of these wetland areas are classified as wooded swamp deciduous. Other wetland types in Southborough include shallow marsh meadows and shrub swamps. The UN Millennium Ecosystem Assessment states that wetlands are considered the most biodiverse of all ecosystems, and that environmental degradation is more prominent within wetland systems than any other ecosystem on earth (Finlayson, D'Cruz, Davidson, et al, 2005).

The Wetlands Protection Act provides the Department of Environmental Protection and the local conservation commissions with the authority to enforce the regulations of the Act. The Town's local wetlands regulations are in place to protect waterways and wetlands from activities that may have a "significant or cumulative effect" upon the value of these and other resources. Unless permitted by the Southborough Conservation Commission, no alteration of resource areas, or of areas within twenty feet of resource areas, is allowed. The Commission must approve any work within 100 feet of a resource area and 200 feet from a perennial stream.

Limited uses on wetlands are regulated under Section 170 of the Town of Southborough Wetlands By-laws. The goals and objectives of the Massachusetts Wetland Protection Act (amended by the 1996 Rivers Act) are to "preserve the quality of water, maintain quality and quantity of drinking water, provide recharge through infiltration of water into the

ground, retain the natural flood storage capacity, sustain fisheries, and protect wildlife habitat." The Army Corps of Engineers "believes that establishing or maintaining existing vegetated buffers to open waters is critical to overall protection of the nation's aquatic ecosystems" (Army Corps of Engineers WRAP, 2002). The minimum recommended width of buffers for most studies on avian populations is 300 feet. Although these widths are not always possible, the wider the strip adjacent to a water body, the greater the potential for providing for more ecological functions (Army Corps of Engineers WRAP, 2002).

VERNAL POOLS

Vernal pools typically fill with water in the autumn or winter from rainfall and rising groundwater and remain ponded through the spring and into summer. They dry completely by the middle or end of summer each year, or at least every few years. There are currently eight certified vernal pools in Southborough, all found in the southern part of town (three of which are on the Breakneck Hill Conservation Land). Another fifty-six potential vernal pools, scattered extensively throughout the town, have not yet gone through the official certification process. This certification process relies largely on volunteers to survey possible vernal pools and to submit documentation of certain biological and physical evidence of vernal pool habitat. The National Heritage and Endangered Species Program (NHESP) then reviews the documentation and makes a determination whether the wetland basin in question meets the biological and physical criteria necessary for status as a certified vernal pool. Important to consider is that many of the potential vernal pools are located on private land, which may prove to be an obstacle in obtaining certification. Certifying these potential pools can help limit development in these highly sensitive areas. Official certification provides a vernal pool, and up to 100 feet beyond its boundary in some cases, certain protections under several state and federal laws.

Originally defined and protected under the Massachusetts Wetlands Protection Act regulations, certified vernal pools now also receive protection under Title 5 of the Massachusetts Environmental Code, Section 401 of the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards which relate to Section 401, and the Massachusetts Forest Cutting Practices Act. These regulations help to prevent direct impacts on certified vernal pools and to minimize indirect impacts. The Department of Environmental Protection (DEP) is responsible for the implementation of these regulations (except for the Forest Cutting Practices Act, administered by the Department of Conservation and Recreation) and has designated specific staff as vernal pool liaisons (EOEEA, 2016). Updating zoning laws, creating conservation restrictions, direct land acquisition, and vernal pool certification are all important actions to take towards their conservation.

AQUIFER RECHARGE AREAS

An aquifer is an underground reservoir that supplies public or private drinking water. The town does not have any public water supply wells that draw from aquifers, but some private homes do. An aquifer's water storage capacity ranges from low to high yield. A high-yield aquifer stores greater than 300 gallons of water per minute, medium yields 100 to 300 gallons per minute, and low yielding aquifers store less than 50 gallons per minute. There is one low-yielding aquifer in Southborough located in glacial sand and gravel deposits, whose recharge area is beneath the Sudbury River.

FLOOD HAZARD AREAS

A floodplain is low land adjacent to streams and rivers. The floodplain holds water during times of increased flow, usually occurring in early spring when the snow is melting or during times of heavy concentrated rainfall. Disturbance within the floodplain, such as filling, earth relocating, or development, can result in diminished water-holding capacity. Disruption of the holding capacity can cause flooding beyond the boundary of the floodplain, resulting in possible damage to roads and buildings, and potentially redirecting the course of the rivers and streams. The 100-year floodplain is determined by the edge of the water level of a flood that has a one percent chance of occurring each year. Within Article III of Southborough's Zoning Bylaws, the Wetland and Floodplain District requires a special building permit to protect floodplain areas.

These restrictions help reduce the negative impacts that displacing flood waters in a flood zone could have. Sections of Route 9, Route 85, and I-90 are located within the floodplain area. Low impact recreation and agriculture are potentially appropriate uses for these areas.

The looming threat of climate change is bringing more severe and frequent flooding throughout the world. For planning purposes, it may be advisable to consider the potentiality of a 500-year flood, in order to be better prepared for more and more frequent extreme weather events.

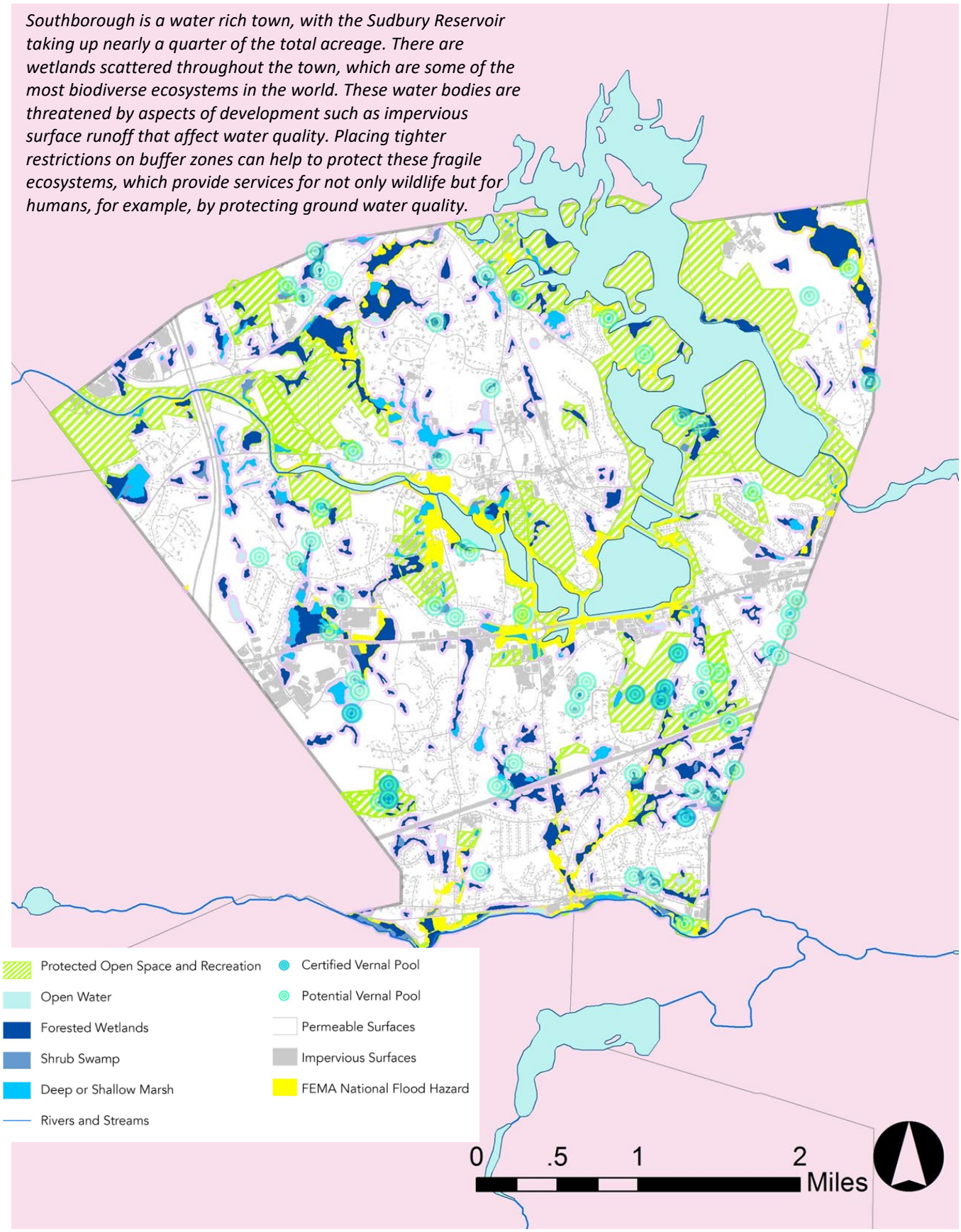
STORMWATER

Stormwater is the natural result of rain storms and other wet weather events. As more of the landscape is covered with impervious surfaces, stormwater runoff becomes an issue that increasingly affects human and natural systems. If stormwater is not directed to natural or man-made facilities designed to treat it, water bodies within the watershed can be adversely impacted by chemical and biological materials carried in the runoff. For example, oils, pesticides and animal waste can be picked up by water flowing across developed sites and deposited into nearby water bodies. Due to these potential impacts, stormwater has come under more scrutiny and regulation. The Environmental Protection Agency (EPA) is enforcing the Stormwater Permitting Program through its National Pollutant Discharge Elimination System (NPDES) to mitigate these impacts. The program has set a series of regulatory requirements for stormwater which first applied to large cities and then to smaller cities and towns.

Southborough last updated its Stormwater Master Plan in 2003, providing a long list of resources and recommendations to protect the town's water. The EPA will be issuing an updated NPDES permit for towns in Massachusetts. Southborough will be required to meet new standards for stormwater management including efforts to reduce impervious coverage and promoting the implementation of Green Infrastructure techniques to treat and infiltrate stormwater in more naturalized systems close to its source.

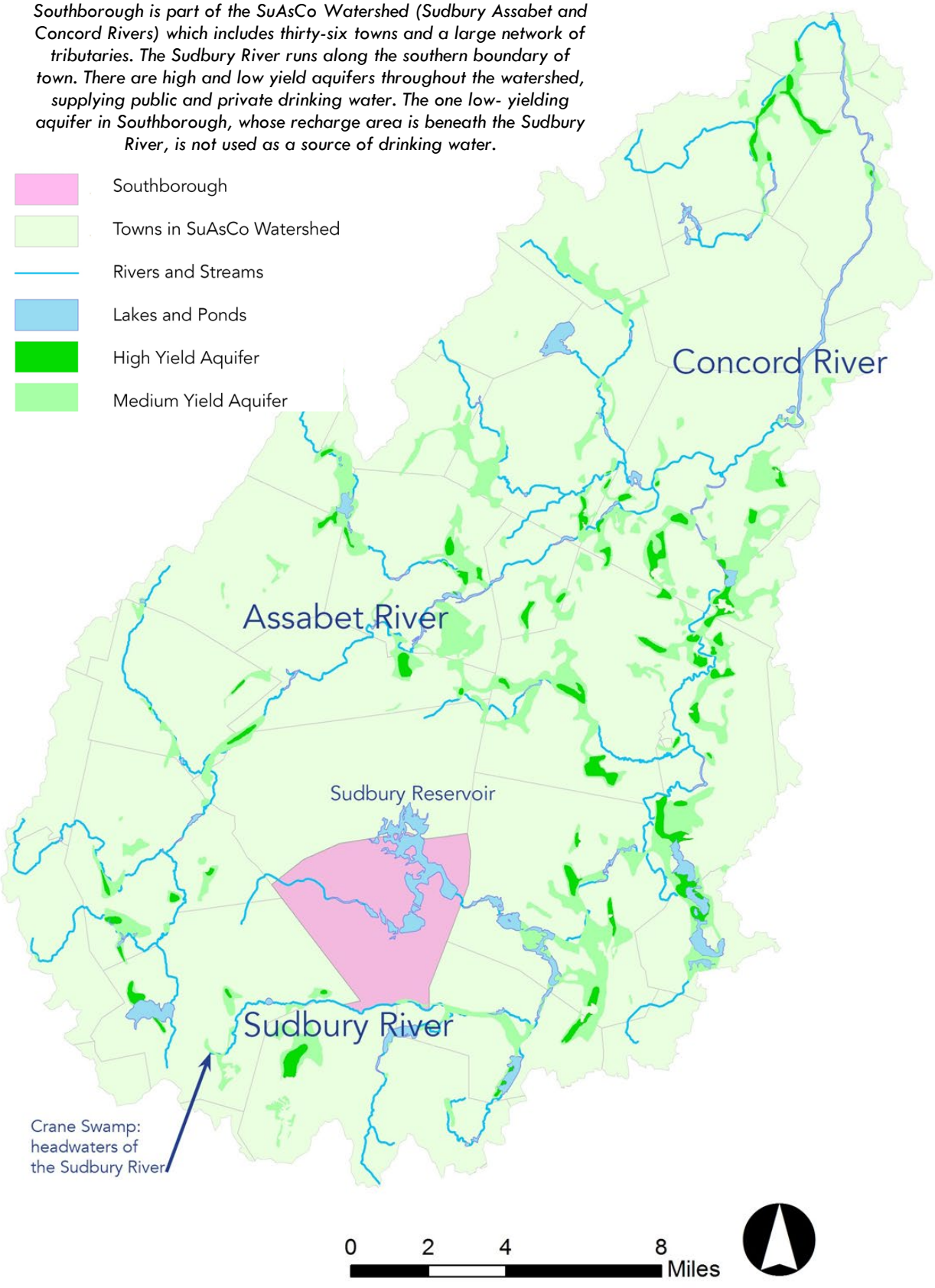
A WATER RICH TOWN

Southborough is a water rich town, with the Sudbury Reservoir taking up nearly a quarter of the total acreage. There are wetlands scattered throughout the town, which are some of the most biodiverse ecosystems in the world. These water bodies are threatened by aspects of development such as impervious surface runoff that affect water quality. Placing tighter restrictions on buffer zones can help to protect these fragile ecosystems, which provide services for not only wildlife but for humans, for example, by protecting ground water quality.



SUASCO WATERSHED

Southborough is part of the SuAsCo Watershed (Sudbury Assabet and Concord Rivers) which includes thirty-six towns and a large network of tributaries. The Sudbury River runs along the southern boundary of town. There are high and low yield aquifers throughout the watershed, supplying public and private drinking water. The one low- yielding aquifer in Southborough, whose recharge area is beneath the Sudbury River, is not used as a source of drinking water.



Birches and white pines at Breakneck Hill Conservation Land

D. VEGETATION

Southborough's undeveloped land is mostly forested, and forests provide numerous ecological services, especially filtration of water, sequestration of carbon, and moderation of streamflow. While the NHESP and BioMap2 have designated limited areas in Southborough as being especially ecologically important, more extensive monitoring may uncover further areas and species worthy of legal protection.

FOREST BENEFITS

Southborough's undeveloped land is largely forested. Some forests grew in abandoned farm fields, while some were planted by the DCR for protection of the Sudbury Reservoir (Scannell and Zimmerman, 2010). Upland forests provide a wide variety of ecosystem services to wildlife, such as habitat, and to humans, such as purification of air and water, moderation of stream flow, and sequestration of carbon (EOEEA, 2011). Forested land also provides

crucial links to other ecosystems–for example, most of the energy input into small streams comes from organic material from forested lands, as these small particles form the base of small streams' food chains. In Massachusetts, forests sequester approximately 10% of the carbon we emit (EOEEA, 2011).

VEGETATION TYPES

Southborough is part of the Southern New England Coastal Plains and Hills ecoregion, which is composed of plains and low hills covered mostly by central hardwoods, with some transition hardwoods and some elm-ash- red maple communities (MassGIS). Specific properties in Southborough that have been mapped at a finer scale are described as having more variety in forest types. For example, the Town Forest includes mixed oak, oak-hardwood, and white pine-oak forests, and the

forested wetlands there are composed of red maple and white ash. (Gouldrup, 2011). The forest surrounding the Sudbury Reservoir was planted between 1907 and 1947. These managed forests include, in order of density: white pine; maple; oak; red pine; ash; spruce; hickory; and others. Active silvicultural operations, including thinning, removing diseased or dying trees, regeneration cuts, and salvage operations following large storm events, are occasionally conducted on the property (Buzzell et al., 2005).

AREAS AND SPECIES OF CONCERN

The NHESP lists one plant species, featherfoil (Hottonia inflata) in Southborough. This wetland plant is on the NHESP's Watch List, meaning that it is not legally regulated but the NHESP is interested in tracking its populations. Species are often placed on the Watch List because they are thought to be rare or declining, but there is insufficient documentation; they have recently been delisted but may still be vulnerable to extinction; or, because they have been recently discovered (NHESP).

Featherfoil (Hottonia inflata)

BioMap2 designates the Sudbury Reservoir and its surrounding land as a Critical Natural Landscape worthy of protection as a unit. BioMap2 defines Critical Natural Landscapes' ecological benefits as such:

[P]rovide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience; and includes buffering uplands around coastal, wetland and aquatic Core Habitats to help ensure their long-term integrity. (Woolsey, Finton, DeNormandie, 2010)

The Sudbury Reservoir and its surrounding lands are classified as a Landscape Block, which is a "large area of intact predominantly natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds" (Woolsey, Finton, DeMormandie, 2010). The reservoir and surrounding lands are listed in BioMap2 specifically because they create a large contiguous block of open land of high ecological integrity, which should be protected in perpetuity in order to preserve these benefits.

PUBLIC SHADE TREES

In 2019, the Planning Board updated the Southborough Street Tree Guidelines to incorporate a more robust and native species listing for the placement of street trees and to align with native pollinator initiatives and enhance our Tree City USA designation.

With the help of VHB, the list of street trees that will be used and utilized by the Tree Warden are found on the next page.

BROAD SHADE TREES

The following trees are recommended for unconfined spaces such as lawns, parks, yards, and wide landscape buffers. Ideal growth area is 30'x30'x3'D. They can also be used as street trees provided they are planted in an adequate space on the outside of sidewalks. More specific information for each tree can be found on the following pages.

Botanical Name	Common Name	Notes
Acer *rubrum*	Red Maple	N, IST
Liquidambar *styraciflua*	Sweetgum	N, IST, consider fruitless cultivars such as 'Rotundiloba'
Nyssa sylvatica	Black Tupelo	N, MST
Ostrya virginiana	American Hophornbeam	N, IST
Quercus *rubra*	Red Oak	N, MST,
Querucs *palustris*	Pin Oak	N, IST, pendulous lower branches preclude use in pedestrian areas
Ulmus americana *Use Dutch Elm Disease resistant varieties such as 'Valley Forge'*	American Elm	N, MST, upright vase shape makes it ideal for streets with pedestrians and truck traffic.

NOTE: There are many native oak trees, not included in the list above or in the tree fact sheets, such as Quercus *coccinea* – Scarlet Oak, Quercus *alba* – White Oak, and Quercus *bicolor* - Swamp White Oak, which might also be suitable for a street tree planting if sufficient room is provided for their mature growth.

Key to Notations

C – denotes columnar or very narrow variety of a tree species
N – denotes native to North America
ST – denotes salt tolerant
MST – denotes moderate salt tolerance
IST – denotes intolerant to salt
var. – denotes variety or cultivar

UPRIGHT OR NARROW TREES

The following trees are recommended for use on streets where pedestrian walks and proximity to buildings pose constrained space conditions. Trees noted with C are columnar or narrow and are particularly suitable for use in areas with 8-15' clearance to buildings and OHWs. Ideal growth area averages 15'x15'x3'D. More specific information for each tree can be found on the following pages.

Botanical Name	Common Name	Notes
Acer rubrum var. *Karpick*	Karpick red maple	N, MST, C
Amelanchier grandiflora 'Robin Hill'	Robin Hill Serviceberry	N, C
Liquidambar styraciflua 'Slender Silhouette'	Sweetgum	N, IST, C
Quercus palustris var. *'Green Pillar'*	Fastigiate Pin Oak	N, MST, C

Key to Notations

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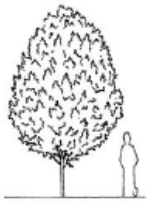
N – denotes native to North America
ST – denotes salt tolerant
MST – denotes moderate salt tolerance
IST – denotes intolerant to salt
var. – denotes variety or cultivar

SMALL TREES

The following trees are recommended for use *under* or near overhead wires, in confined spaces, or for ornamental accent. Ideal growth area averages 7'x7'x3'D. More specific information for each tree can be found on the following pages.



Botanical Name	Common Name	Notes
Amelanchier x *grandiflora var. 'Robin Hill'*	Improved varieties of single-stem Serviceberry	N, MST, Select or specify single-stem, tree-form plants for use along streets.
Cercis canadensis	Eastern Redbud	N
Crataegus *crusgali var. inermis*	Thornnless Cockspur Hawthorn cultivars	N, MST

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SPECIMEN TREES

The following trees are recommended for use in lawn and park areas set well back from sidewalks and roadsides along the outside of the public right of way. More specific information for each tree can be found on the following pages.

Botanical Name	Common Name	Notes
Acer saccharum	Sugar Maple	N
Amelanchier laevis 'Clump'	Clump Allegheny Serviceberry	N
Betula nigra	River Birch	N
Cornus florida 'Appalachian Spring'	Appalachian Spring Flowering Dogwood	N
Liriodendron tulipifera	Tuliptree	N
Magnolia virginiana	Sweetbay Magnolia	N
Quercus bicolor	Swamp White Oak	N
Tilia americana	Basswood	N

Key to Notations

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E. FISHERIES AND WILDLIFE

Southborough is home to a diverse mix of birds, reptiles, mammals and other wildlife. Many of Southborough's protected open spaces are well connected to each other and to open spaces in adjacent towns, allowing some wildlife to migrate freely between them. Preserving additional land near existing open space with high ecological value would strengthen the ecological integrity of the area, provide habitat for a wider variety of species, and promote genetic diversity among species by connecting isolated populations.

The following is a partial inventory of the wildlife that has been recorded in Southborough:

WILDLIFE OBSERVED IN SOUTHBOROUGH	
Common Name	Scientific Name
REPTILES AND AMPHIBIANS	
Spotted turtle	*Clemmys guttata*
Wood turtle	*Glyptemys insculpta*
Eastern box turtle	*Terrapene Carolina*
Yellow spotted salamander	*Ambystoma maculatum*
Spring peepers	*Pseudacris crucifer*
Painted turtle	*Chrysemys picta*
Wood frog	*Rana sylvatica*
MAMMALS AND RODENTS	
Red fox	*Vulpes*
White-tailed deer	*Odocoileus virginianus*
Eastern coyote	*Canis latrans*
Eastern cottontail	*Sylvilagus floridanus*
Snowshoe hare	*Lepus americanus*
Bobcat	*Lynx rufus*
Muskrat	*Ondatra zibethicus*
American mink	*Neovison vison*
Fisher	*Martes pinnanti*
North American beaver	*Castor Canadensis*
North American porcupine	*Erithizon dorsatum*
INSECTS	
Monarch butterfly	*Danaus plexippus*
Golden northern bumblebee	*Bombus fervidus*
Half-black bumblebee	*Bombus vagans*
Confusing bumblebee	*Bombus perplexus*
BIRDS	
Bobolink	*Dolichonyx oryzivorus*
Eastern meadowlark	*Sturnella magna*
Dark-eyed junco	*Junco hyemalis*
American robin	*Turdus migratorius*
Black-capped chickadee	*Poecile atricapillus*
White-breasted nuthatch	*Sitta carolinensis*

Ruffed grouse	*Bonasa umbellus*
American woodcock	*Scolopax minor*
Blue-winged warbler	*Vermivora cyanoptera*
Yellow warbler	*Dendroica petachia*
Hooded merganser	*Lophodytes cucullatus*
Common merganser	*Mergus merganser*
Ruddy duck	*Oxura jamaicensis*
Wood duck	*Aix sponsa*
American goldfinch	*Spinus tristis*
Great blue heron	*Ardea Herodias*
Green heron	*Butorides virescens*
Common grackle	*Quiscalus quiscula*
Indigo bunting	*Passerina cyanea*
Great crested flycatcher	*Myiarchus crinitus*
Eastern kingbird	*Tyrannus*
Gray catbird	*Dumetella carolinensis*
Tree swallow	*Tachycineta bicolor*
Ovenbird	*Seiurus aurocapillus*
Scarlet tanager	*Piranga olivacea*
Red-tailed hawk	*Buteo jamaicensis*

Eastern Tailed Blue butterfly (Cupido comyntas) at Breakneck Hill Conservation Land. Photo by Dawn Puliafico.

Monarch butterfly (Danaus plexippus) landing on milkweed. Monarchs have been spotted at Breakneck Hill and other open spaces in Southborough.

Song sparrow (Melospiza melodia) singing at Breakneck Hill. Photo by Dawn Puliafico.

CORRIDORS FOR WILDLIFE MIGRATION

"A wildlife corridor is a link of wildlife habitat, generally native vegetation, which joins two or more larger areas of similar wildlife habitat. Corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations" (Drielsma and Scotts, 2003).

Substantial research has documented the importance of corridors for maintaining wildlife populations. Connected open spaces can provide habitat for many species, and can provide crucial linkages between isolated populations of a species (Niemelä, 2001), allowing a species to interbreed freely rather than becoming fragmented. Massachusetts' Climate Change Adaptation Report lists as one of its core climate change adaptation strategies "[to] maintain large-scale ecosystem processes and prevent isolation" (EOEEA, 2011). Large, connected open spaces can maintain critical ecosystem processes such as filtration of air and water and sequestration of carbon. Connected corridors are important to prevent isolation.
They can provide high quality wildlife habitat, and connectivity across habitats "facilitate[s] species dispersal, migration, and maintenance" (EOEEA, 2011). Plant and animal migration may be especially important in coming years due to climate change (EOEEA, 2011), which may result in significant range changes for both plants and animals. Therefore, providing continuous and connected spaces for plants and animals will be critical.

Southborough's current open spaces are well positioned to function as part of local and regional wildlife corridors from east to west. However, Route 9 crosses Southborough from east to west, obstructing wildlife passage north to south. Creating safe passage across Route 9 could enable Southborough's open spaces to connect to a broader network of open spaces across the SuAsCo watershed. (See the maps on pages 50 and 51. for more information.)

In 2005, the Massachusetts Highway Department built four concrete underpasses under Route 2 in Concord, both to create safe passage for wildlife and to reduce the number of vehicle accidents. Those tunnels are monitored by volunteers from the Sudbury Valley Trustees and the town of Concord, and by infrared cameras that take photos when they sense motion or heat. Over 30 species have been documented using the underpasses (Pfeiffer, 2008). Some of the animals have been documented performing behaviors, such as carrying prey or traveling with young, that indicate to scientists that the highway separates crucial parts of their home ranges (Rogers et al., 2009). Nationwide, there have been over 500 wildlife underpasses built, including a dozen in Massachusetts (Pfeiffer, 2008).

Coyotes cross a highway in Montana using a spatially-designed underpass

SPECIES AND AREAS OF CONCERN

The 2007 Mass Audubon report commissioned by the Town of Southborough identified areas within Southborough that are high priority for conservation, based on the goal of conserving maximum biodiversity. The report rated specific parcels based on size and quality of land cover. It then assigned additional points based on the following characteristics: proximity to wetlands; location above an aquifer; location in a FEMA flood zone; classification as an Important Bird Area by Mass Audubon; proximity to existing conservation land; and presence of or proximity to a vernal pool. That report identified a total of 106 properties in town, and is included in full as an appendix to this document (Appendix 6).

Massachusetts' Natural Heritage and Endangered Species Program has identified three uncommon turtle species in Southborough: Eastern box turtle (Terrapene carolina), wood turtle (Glyptemys insculpta), and spotted turtle (Clemmys guttata). The NHESP has also identified

a rare plant species, featherfoil (Hottonia inflata), an aquatic plant.

The wood and spotted turtles make use of aquatic and terrestrial habitats during their life cycles; both species nest in sandy upland areas, although they are often found in aquatic habitats as adults. The Eastern box turtle is a terrestrial species, and its habitat consists of both dry and moist woodlands. Because the wood and spotted turtles live in a variety of habitats that they migrate between, preserving wetlands with adjacent uplands is crucial to their survival. See the attached letter from the NHESP (Appendix 5) for more detailed information.

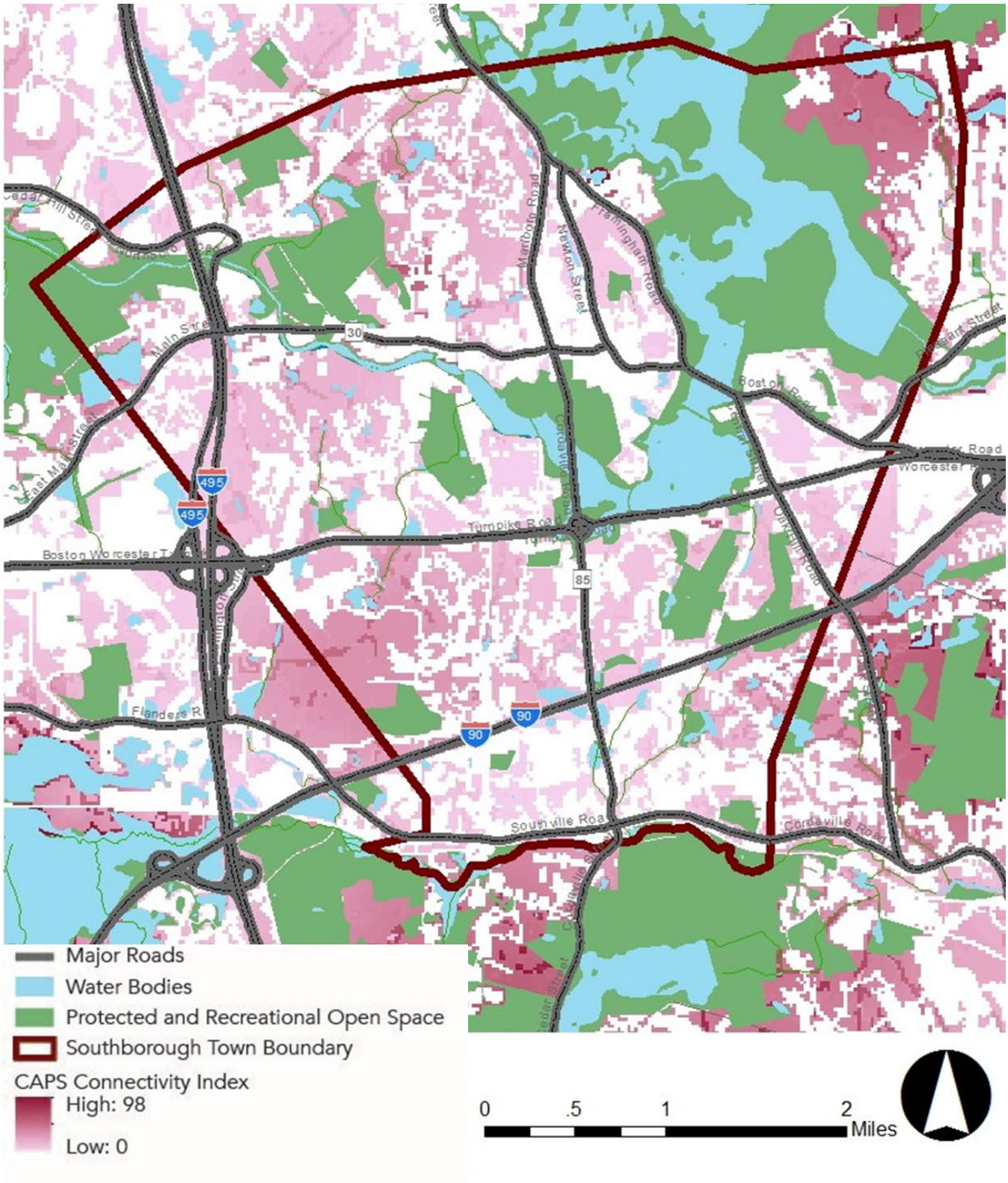
In addition to these species, the NHESP has identified Southborough's vernal pools as being crucial to wildlife survival. Southborough currently has eight certified and sixty-four potential vernal pools. Vernal pools are ephemeral water bodies that dry out for part of the year (Pressier et al. 2000). This makes them excellent habitat for the reproduction of species such as frogs and salamanders, as their eggs will be safe from fish. The presence of vernal pools in an area is key to the survival of many species, especially amphibians: New England species, including the spotted salamander (Ambystoma maculatum), Jefferson salamander (Ambystoa jeffersonianum), wood frog (Rana sylvatica) and others are obligate vernal pool species, meaning they cannot survive without these pools to reproduce in. Furthermore, since adults of some species return to the same pool each year, each individual pool is important (Pressier et al. 2000). In Massachusetts, in order to be legally protected, vernal pools must be certified with the NHESP. Once certified, they are protected by the Wetland Protection Act, as well as other state and federal regulations (NHESP).

Spotted salamander, Ambystoma maculatum is one of the rare species found in Southborough.

The wood frog, Rana sylvatica, is one of the rare species identified in Southborough by NHESP.

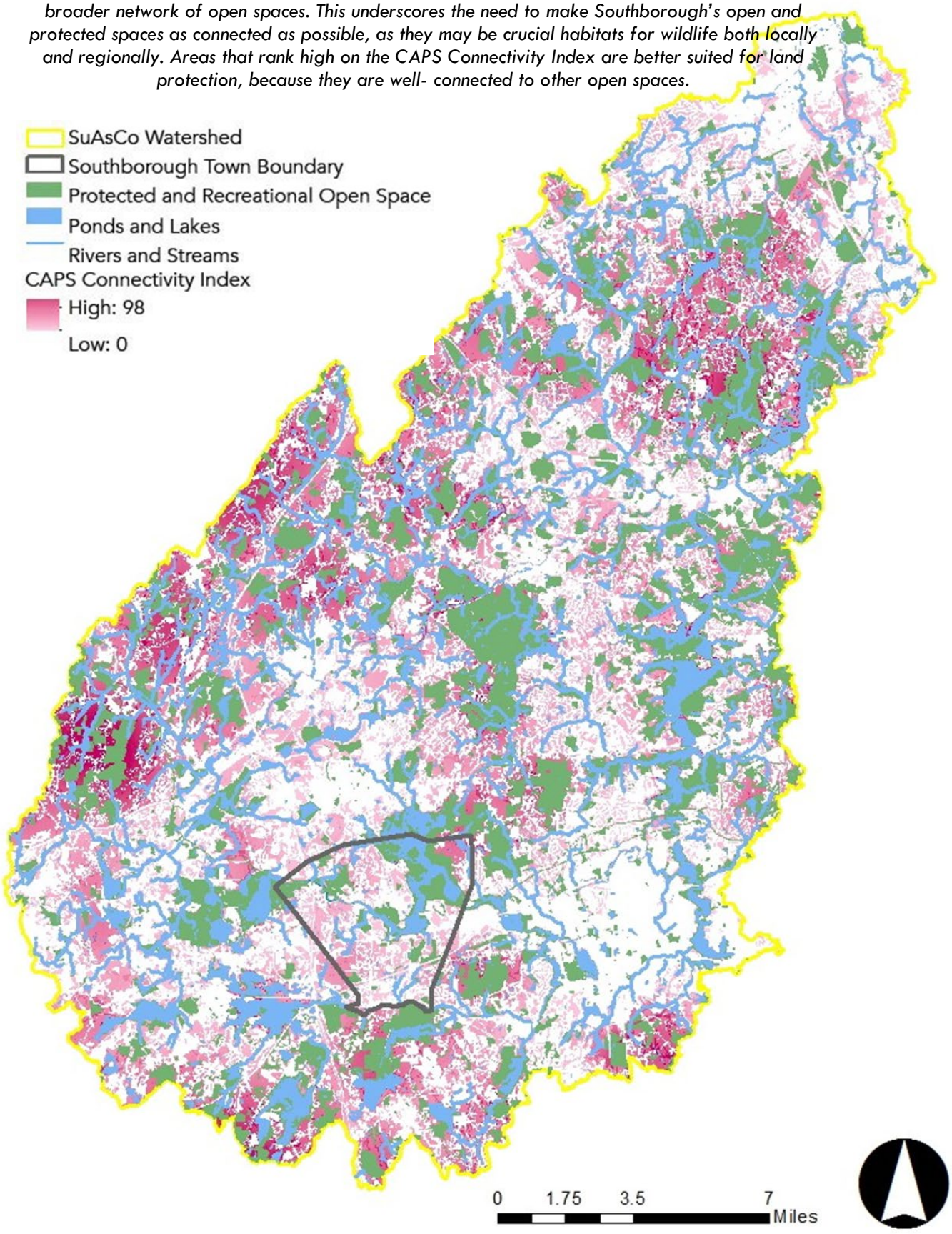
TOWN CONNECTIVITY

Southborough's open spaces are well-positioned spatially to provide connectivity for wildlife. They are located adjacent or close to other open spaces in Southborough and adjacent towns, such as Marlborough and Hopkinton. However, this connectivity is interrupted by major roads that are virtually impassable to wildlife. Because habitat connectivity is crucial to many species' continued survival, efforts should be made to make these roads easier to cross, such as with wildlife overpasses. This has been done in Concord, MA with outstanding results.



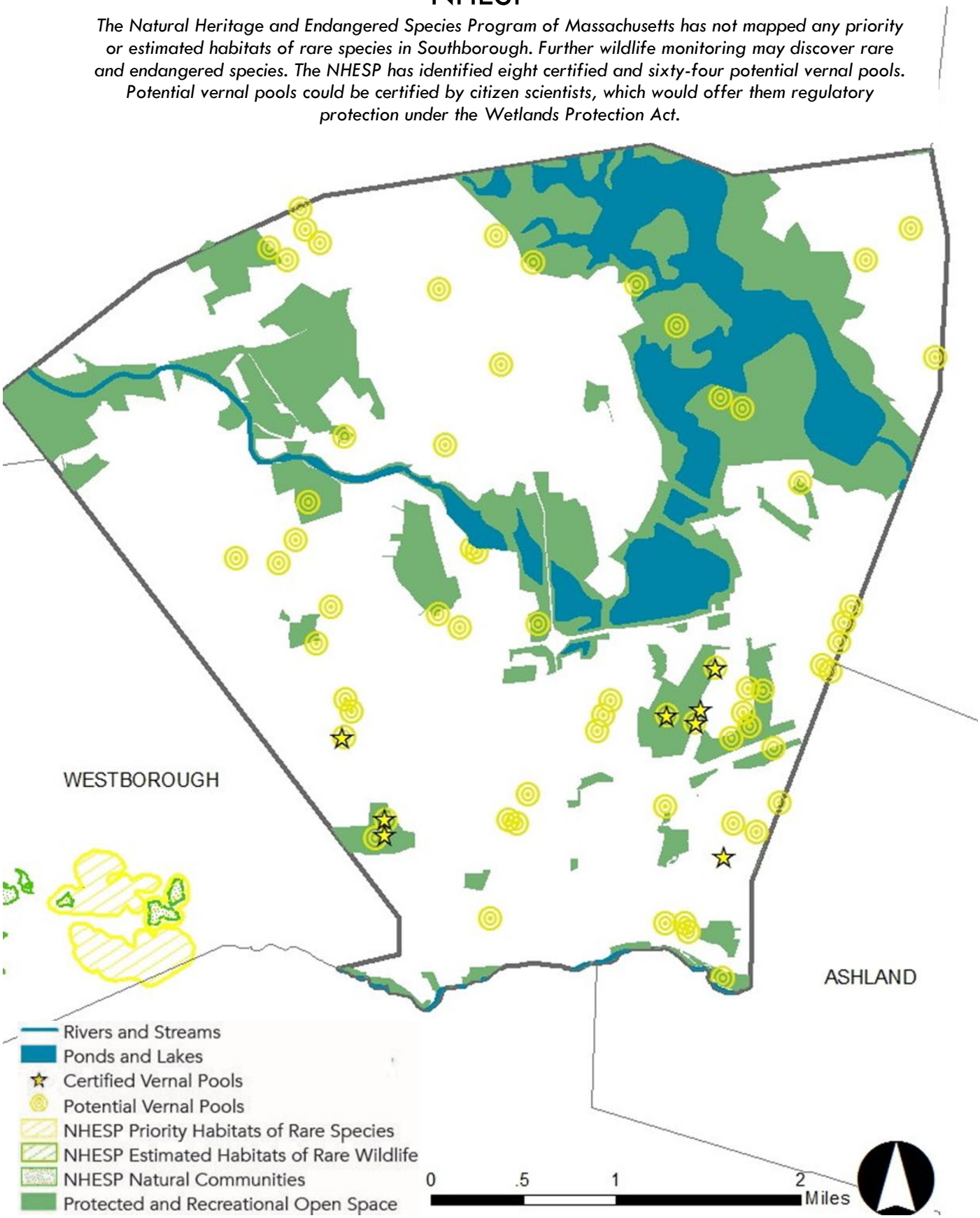
WATERSHED CONNECTIVITY

On a watershed scale, Southborough's open spaces can provide connections to wildlife through a broader network of open spaces. This underscores the need to make Southborough's open and protected spaces as connected as possible, as they may be crucial habitats for wildlife both locally and regionally. Areas that rank high on the CAPS Connectivity Index are better suited for land protection, because they are well- connected to other open spaces.

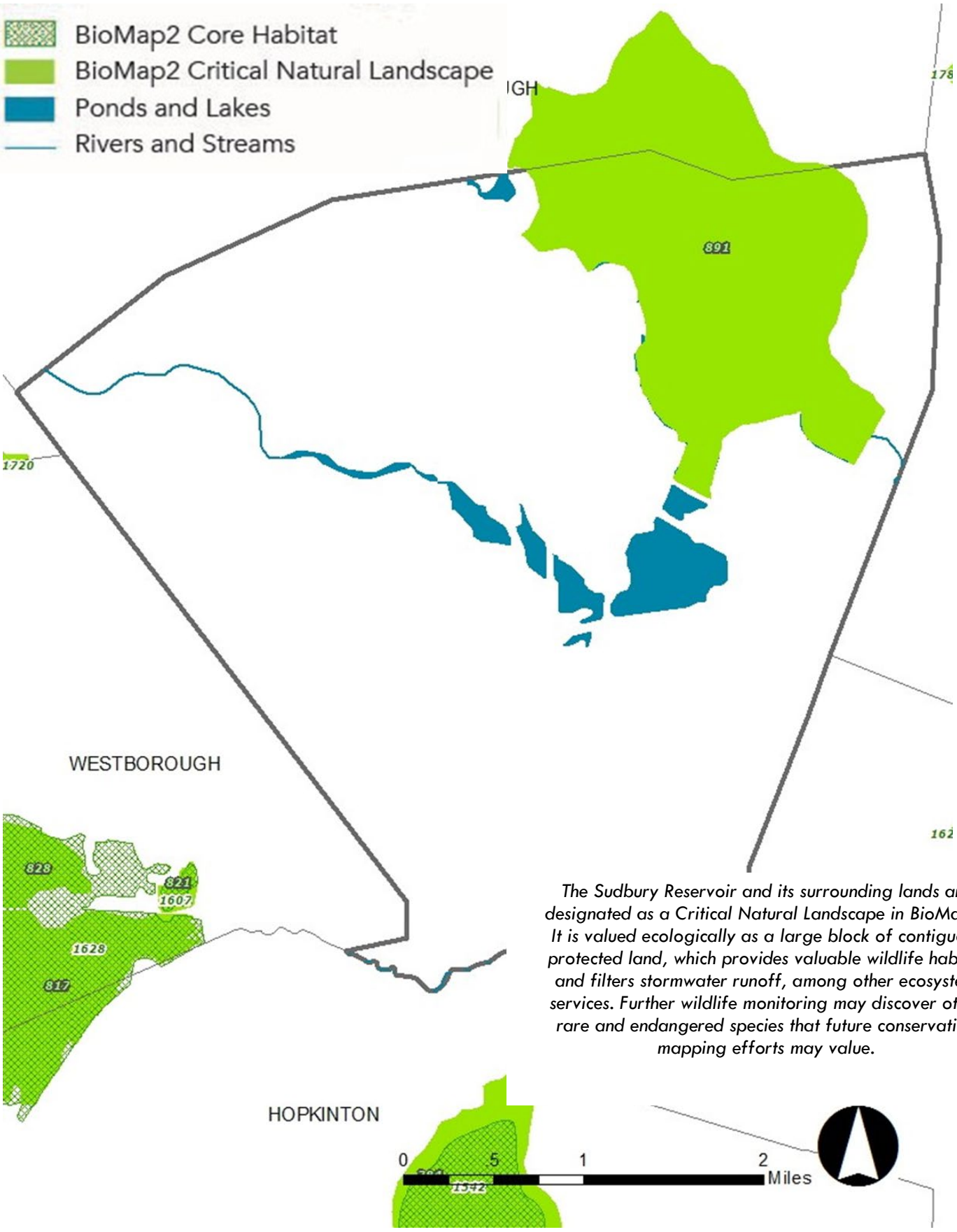


NHESP

The Natural Heritage and Endangered Species Program of Massachusetts has not mapped any priority or estimated habitats of rare species in Southborough. Further wildlife monitoring may discover rare and endangered species. The NHESP has identified eight certified and sixty-four potential vernal pools. Potential vernal pools could be certified by citizen scientists, which would offer them regulatory protection under the Wetlands Protection Act.



BIOMAP2



The Sudbury Reservoir and its surrounding lands are designated as a Critical Natural Landscape in BioMap2. It is valued ecologically as a large block of contiguous protected land, which provides valuable wildlife habitat and filters stormwater runoff, among other ecosystem services. Further wildlife monitoring may discover other rare and endangered species that future conservation mapping efforts may value.

F. SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

There are many places to enjoy the scenery in Southborough, including simply driving down roads lined with large trees and stone walls built many years ago. As new neighborhoods and businesses grew, all of the roads in town were designated as scenic to protect them and help maintain the rural aesthetic and reminders of the town's history. Regional and town-wide efforts in the past few decades have helped protect many places valued by the community, providing residents spaces where they can enjoy a variety of activities while also protecting wildlife habitat.

Breakneck Hill Conservation Land

SCENIC LANDSCAPES

The amount of open space protected in perpetuity in Southborough is 2,826 acres, or 28.4% of its total area. Some of these places are very important to residents, who visit them regularly for activities ranging from bird watching to cross-country skiing. Some notable places include:

- ☐ Chestnut Hill Farm
- ☐ Breakneck Hill Conservation Land
- ☐ Beals Preserve
- ☐ Southborough Golf Course
- ☐ Halloran Property
- ☐ Turenne Wildlife Habitat
- ☐ The Town Forest
- ☐ 9/11 Field and Trails

Chestnut Hill Farm is one of the newest additions to Southborough's conservation land. The property is 109 acres of rolling hills, forest, and meadow, the kind of landscape that many people of Southborough cherish. Turenne Wildlife Habitat, the Town Forest, and Breakneck Hill join to form a large contiguous protected area with trails and scenic views of Southborough. All three of these places,

Trails at Beals Preserve

as well as several other parcels within town, have walking trails that are open to the public. There are other trails in town which tie in to larger regional networks including:

- ☐ The Sudbury Reservoir Trail
- ☐ The Bay Circuit Trail
- ☐ The Boroughs Loop Trail

The Sudbury Reservoir is a designated Important Birding Area (IBA) by Mass Audubon in Massachusetts. The Sudbury Reservoir Trail winds throughout the conserved surrounding land, providing an area for snowshoeing, cross- country skiing,

and bird watching, which are all popular activities along the reservoir.

The Bay Circuit Trail was first proposed in 1929 as an "outer emerald necklace," linking parks, open spaces, and waterways from Plum Island to Kingston Bay. Today the greenway corridor of 230 miles, spanning fifty-seven communities, links hundreds of parks and open spaces. The trail passes through a ¾-mile segment in the northeast corner of Southborough, winding along the edge of the Sudbury Reservoir. This trail offers scenic views while providing residents a place to maintain an active lifestyle.

The major challenge for the Southborough Trails Committee is finding a crossing point over the Sudbury Reservoir in the eastern part of town near Route 30. The two choices they have is to either use Route 30 or the CSX (freight rail) causeway, both of which cross the reservoir. Route 30 is an extremely dangerous road to walk on. The committee has approached CSX for the use of their land to extend the trail across the reservoir, but has been told that it could not be considered as long as there are trains running on the track. The Trails Committee continues to investigate alternatives and look for a solution which will allow them to complete the loop. Neighboring towns eagerly await Southborough's completed segment.

SCENIC VIEWS

A large portion of land around the Sudbury Reservoir was identified as a noteworthy scenic landscape in the 1982 Massachusetts Landscape Inventory Project. The community today still values this landscape according to residents who attended a public OSRP forum on February 4, 2016.

SCENIC ROADS

Southborough's Scenic Road Bylaw has the ability to protect the appearance of historic artifacts, such as stone walls. Since 1978, all non-state numbered routes in the Town of Southborough are designated as scenic roads, making all stone walls and tree removal on private and public property along road frontage subject to review and approval by the planning board (Vanasse Hangen Brustlin, Inc., 2008).
During the public forum on February 4, 2016, residents identified certain roads as particularly scenic, including:

- ☐ Chestnut Hill Road
- ☐ Old Northborough Road & Johnson Road (both are unprotected parcels)
- ☐ Looking to the southwest toward I-495 and Beals Preserve (which is protected, but the fields behind it aren't).

One of the recommendations from the 2008 *Southborough Master Plan* to help preserve the scenic character of the town is considering implementing a scenic overlay district to help provide a no-disturb buffer on private property bordering scenic roads, or to adopt flexible zoning standards to protect certain views.

CULTURAL AND HISTORIC AREAS

Southborough has a rich legacy represented by both its historic and archaeological resources, including buildings, structures, objects, burial grounds, landscapes, and archaeological sites (Vanasse Hangen Brustlin, Inc., 2008). These finite and non-renewable elements of the landscape establish the community character and are what make Southborough a unique place. The Southborough Historical Commission and Southborough Historic Society have been active in identifying and documenting the history and architectural significance of many resources and structures. The Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets has a searchable database Massachusetts Cultural Resource Inventory System (MACRIS) which documents nearly 800 properties in Southborough ranging from the turn of the 18th century to the late 20th century.

The Southborough Historic Properties Survey (completed in June 2000) also concluded that 81 individual properties (including buildings, structures, objects, and

cemeteries) and 12 areas should be proposed for listing in the National Register of Historic Places. Some of Southborough's most well-known historic buildings include:

- ☐ Southborough Town House (1870)
- ☐ Southborough Community House (1906)
- ☐ The Charles Burnett-Warner Oland House (1815)
- ☐ The Joseph Burnett House (1850)
- ☐ St. Mark's Episcopal Church (1862)
- ☐ Flagg School (1859)
- ☐ Pilgrim Church (1806)

There are three places in Southborough listed on the National Register of Historic Places:

- ☐ South Union School
- ☐ Wachusett Aqueduct at Deerfoot Road Bridge
- ☐ Bradley, J.D.C., House, 60 Sears Road

Wachusett Aqueduct at Deerfoot Road Bridge

While Southborough contains a number of prehistoric and historic archaeological resources, their information and locations cannot be disclosed in documents available for public review in order to protect them.

UNIQUE ENVIRONMENTS

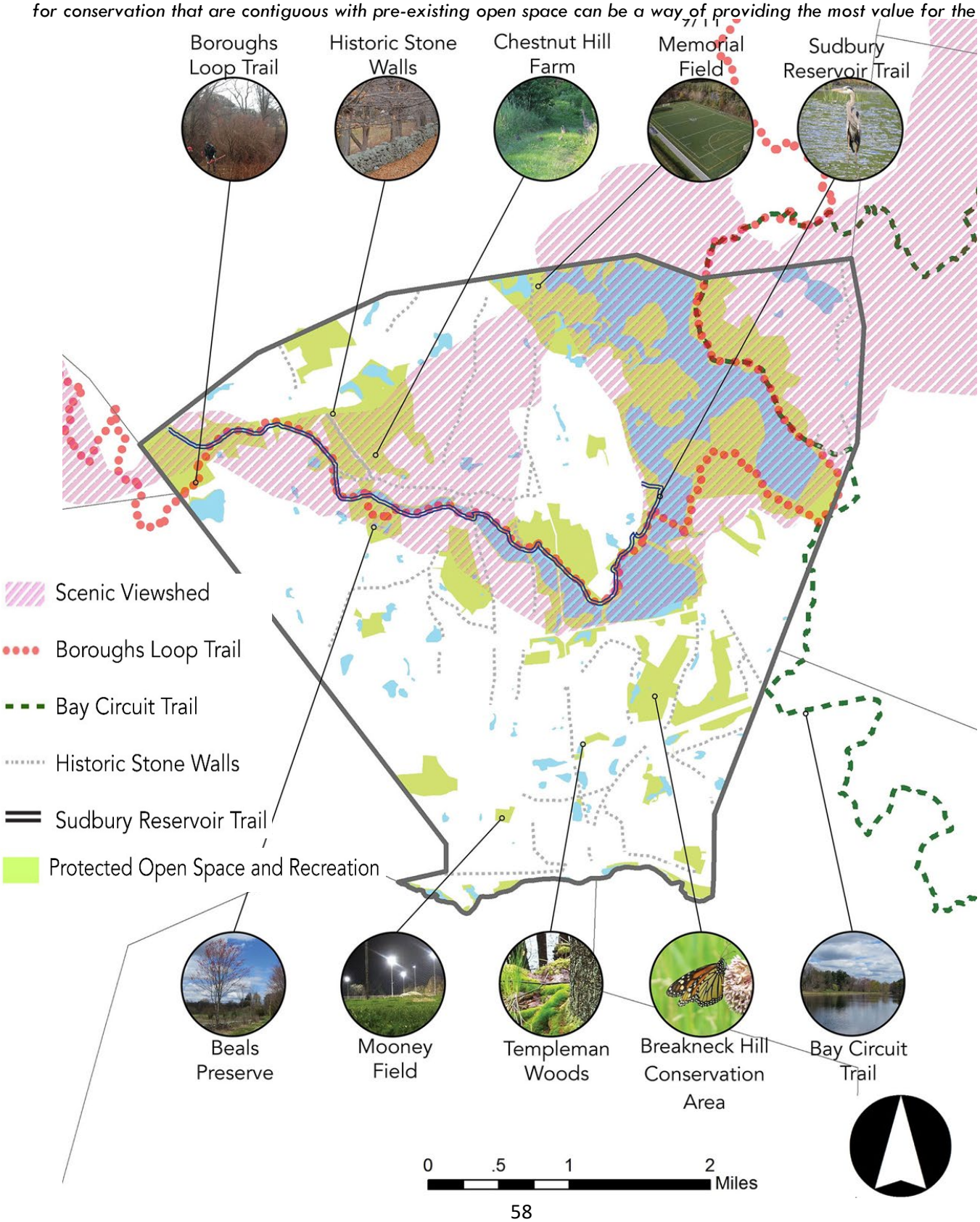
As mentioned in part A under Geology and Topography, Southborough is relatively flat with the surficial geology dominated by stratified and unstratified deposits. Other than the deposits seen throughout New England, Southborough does not have any unusual geologic features.

Southborough has no identified Areas of Critical Environmental Concern according to the Secretary of Energy and Environmental Affairs (EEA). However, BioMap2 identified 1,358 acres as Critical Natural Landscape in a contiguous block around the Sudbury Reservoir. The report states that "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." It is important to note that 1,209 acres, or 89% of this Critical Natural Landscape, is protected. Prioritizing the remainder of the land that has been identified as Critical Natural Landscape for conservation protection can help support the range of ecological processes that support wildlife and biodiversity.

The Harvard Primate Research Center in the northeast corner of town recently closed its doors as of May, 2015. This land is ecologically valuable, as it is contiguous with the conserved open space around the reservoir. As a land parcel it meets the criteria for priority conservation because it could provide an extended area for a wildlife corridor and help protect the water quality of the reservoir. If the property is up for sale, the town may want to consider acquiring it for conservation, or as a location for an indoor community center. More research is needed to determine the suitability of the existing building for repurposing as a community center. The surrounding land could be excellent for outdoor activity and nature-based programming, which would serve to meet the goals laid out in this OSRP.

UNIQUE FEATURES OF SOUTHBOROUGH

There are many unique places of interest that residents of Southborough like to go for passive and active recreational activities. Historic stone walls line the roads and help the town to retain a rural characteristic. Areas of contiguous protected open space create habitat for wildlife and create a greenway for residents to enjoy by foot and by bike. Prioritizing parcels for conservation that are contiguous with pre-existing open space can be a way of providing the most value for the town.



G. ENVIRONMENTAL CHALLENGES

Southborough faces a myriad of environmental challenges at this time in its history, ranging from hazardous waste regulation, to non-point source (NPS) stormwater runoff, and the unpredictable (as well as forecasted) effects ushered in by our changing climate. As a town with abundant water resources, its primary environmental concerns are connected to water quality and the ways in which land use, both historical and present, may deteriorate the quality of groundwater and quality of water in the larger SuAsCo Watershed. Building resiliency into the town infrastructure with the protection and stewardship of land that provides valuable ecosystems services can help buffer any negative environmental impacts.

WATER QUALITY IMPAIRMENTS

The EPA states that nonpoint source pollution (NPS) is the leading remaining cause of water quality problems, creating harmful effects on drinking water supplies, recreation, fisheries and wildlife (www.epa.gov). NPS pollution is caused by rainfall or snowmelt moving over and through the ground. The moving water carries natural and man-made pollutants which end up in rivers, wetlands and groundwaters. Because of the lack of stormwater infrastructure in Southborough, the greatest threat to ground and surface water comes from many diffuse NPS's. During the summer of 2011, DWSP investigated a toxic algae bloom at the Sudbury Reservoir that was suspected to be related to lawn care practices using synthetic pesticides and fertilizers on abutting properties (Austin et al., 2013).

Given the predominantly suburban landscape of the SuAsCo Watershed, the control of lawn contaminants is critical to maintaining water quality in the watershed. Creating local bylaws to minimize the use of lawn fertilizers, pesticides, and herbicides, and encourage appropriate depth of loam, especially in new developments was recommended in the 2005 *SuAsCo Watershed Action Plan*.

The 2005 *SuAsCo Watershed Action Plan* states that many stretches of the three rivers routinely fail water quality standards due to stress of non-point stormwater sources, wastewater treatment plant discharges, and experience both extreme flooding and low flows. Throughout much of the Sudbury River and downstream into the Concord River, fish consumption is banned due to mercury-laden sediments from the Nyanza Superfund Site. Invasive aquatic plant species compromise the river habitat for native species, and impair the recreational experience for boaters and anglers (Ambient Engineering, 2005).

Septic systems pose a threat to Southborough's groundwater quality. Older systems from before the 1960s were often too deeply buried and lie just inches above the water table. (Goldson, 2015). Replacing such systems on older lots would help reduce the risk of groundwater contamination.

According to the 1998 *Shoreline Survey Report and Action Plan* created by the Sudbury Watershed Monitoring and Protection Group (SWaMP), creosote railroad ties have been dumped into the Sudbury River. Creosote is a chemical used to preserve wood; this chemical is hazardous to humans, and very hazardous to wildlife. Removal of the railroad ties will be beneficial to the Sudbury River ecosystem.

CHRONIC FLOODING

The lowland adjacent to streams and rivers is known as floodplain. Because of the large amount of area that the Sudbury Reservoir amasses to, there is many areas surrounding the reservoir and aqueducts that are prone to chronic flooding. With increased precipitation rates throughout New England, disruptions of the holding capacity of certain areas or features can cause flooding beyond the boundary of the floodplain.

Further hazards and impacts are to be analyzed and identified through the Municipal Vulnerability Preparedness program and Local Hazard Mitigation Plan that the town has received grant funding to complete.

HAZARDOUS WASTE & BROWNFIELD SITES

There are thirty-seven EPA-regulated industrial/commercial facilities located in Southborough. While most of these fall under EPA's other/unknown category, approximately ten have been identified as automotive repair or transportation facilities. Thirty-three of these thirty-seven are regulated for hazardous waste (*2003 Southborough Stormwater Management Plan*). The Resource Conservation and Recovery Act (RCRA), enacted in 1976 requires the tracking of hazardous wastes from the time they are created in order to prevent illegal dumping. Two of the largest regulated facilities are both in Marlborough. Veolia Environmental Services is one of the largest waste management and services companies in the world. The company provides a range of services, such as solid waste management, chemical cleaning, dredging, non-hazardous/hazardous waste management, medical waste disposal, construction and demolition disposal, landfill operations, consumer products, and industrial ethanol recovery. Marlborough is also home to the cellulosic ethanol company Qteros, which is working with Applied Cleantech, a recycling company based in Israel, to turn sewage into ethanol biofuel (Chu, 2009).

Precipitation run-off from over a quarter of Marlborough, the most urbanized section of the watershed, drains into the Sudbury Reservoir. Shipping of the waste and fuels processed in Marlborough may pose a threat to the quality of water in the reservoir in the case of a potential accident. In Marlborough in 2012 and underground fuel leak spilled and is considered a hazardous site. As of 2015 has not yet been cleaned up ("Marlborough Diesel Spill.", 2015). In December 2009 over 4 significant haz-mat releases happened in Southborough within one week alone, including two truck crashes released 100 gallons of diesel fuel on I-495 (Fitzgerald, 2009).

Seven Superfund Sites are located in the SuAsCo Watershed. In 1980 the EPA established the Superfund Program to identify, investigate, and remediate hazardous waste sites throughout the United States. One of these sites is in adjacent Ashland. The Nyanza Chemical Waste Dump is a 35-acre area next to an active industrial complex. From 1917 to 1978, textile dyes, intermediates, and other products were produced on this site. Nyanza Inc. operated here from 1965 to 1978. Over 45,000 tons of chemical sludges generated by Nyanza's wastewater treatment processes, along with spent solvents, mercury and other chemical wastes, were buried on site, leading to soil and groundwater contamination MassDEP is currently responsible for site operation and ongoing maintenance activities. The excavation of contaminated soil and capping of the hill area of the site have reduced the potential of exposure to hazardous substances by controlling contaminant migration and isolating wastes (EPA, 2016).

An article published in the Metrowest Daily News in 2014 found contamination from the Nyanza plant has been linked to a high number of cases of rare cancer, including eight deaths. Mercury laden sediments from the Nyanza Plant have raised concerns about consuming contaminated fish caught in the Sudbury River, where warning signs are posted along the banks. The EPA is awaiting funding for an $11 million project to dump 140,000 tons of sand near the Reservoir No. 2 dam in Framingham to cap the contamination in the sediment, is opposed by a citizens group called Save the Sudbury River. The proposed plan will add 6 inches of sand to the bottom of the river, pushing mercury down at a rate that would naturally take 100 to 200 years to complete. Opponents claim the plan is based on "flawed science" and will destroy the ecosystem of the river (Phelps, 2014).

LANDFILLS

There are two inactive landfills in Southborough. Both are uncapped, unlined municipal solid waste sites. The Southborough Landfill is located on Parkerville Road, near the intersection of General Henry Knox Road. The Southborough Mt. Vickery Road Dump is just off Route 9 near Cordaville Road adjacent to the southern edge of the

Sudbury Reservoir.

NEW DEVELOPMENT

Typical construction activities can have significantly impact surface water quality by creating the conditions for sediment, construction materials, waste, and other pollutants to be transported to surface waters by wind or stormwater runoff. As a result, the EPA promulgated construction site runoff control regulations as part of its Phase I Storm Water permitting program. This program focuses on projects that disturb more than five acres of land. The Massachusetts Department of Environmental Protection (DEP) has administrative control over activities under this permit in lieu of EPA.

Outlined in Southborough's Zoning Regulations (§244), construction site runoff, erosion, and sedimentation controls. These controls must be addressed in a project's environmental assessment report and must be based on an analysis of the "Capability of soils, vegetative cover and proposed erosion control efforts to support proposed development without danger of erosion, silting or other instability" (Fuss & O'Neill Inc., 2003). However, the assessment is only required for subdivisions "creating frontage potentially allowing ten or more dwelling units or serving ten or more acres of non-residentially zoned land."

INVASIVE SPECIES

Invasive species—both plants and wildlife—threaten native species and denigrate the balance of existing ecosystems. The EEA recognizes invasive as one of the greatest threats to the integrity of natural communities and threaten the survival of many indigenous species (www.mass.gov/eea). Non-native organisms have contributed to the decline or 42% of our federally listed threatened and endangered species (The Nature Conservancy). The town's policy towards invasives is early detection and rapid response. Unfortunately, by the time an invasive species is discovered, it has taken such a stronghold that it is often past the point of full eradication. Resources to address invasives must be channeled to make the best use of limited funding, as the cost of management is the biggest challenge. The Southborough Stewardship Committee recently voted to become a member of the SuAsCo Cooperative Invasive Species Management Area (CISMA), a partnership of organizations whose goal is to manage and control invasive species in the watershed in order to protect the biological, aesthetic, cultural, historical, and recreational values of natural areas, farmland, water resources, and scenic vistas of the region. The town's efforts towards invasive species management and potential eradication will be further strengthened and its resources expanded as part of this partnership.

Town-owned Breakneck Hill Conservation Land is under the jurisdiction of the Conservation Commission. The Southborough Stewardship Committee (a subcommittee of the Conservation Commission) has worked tirelessly for many years dealing with the invasive species that had engulfed the old apple orchard that sits within 35 rolling acres that was once covered in bittersweet. Ongoing management and monitoring keep invasives from fully taking over.

Invasive Wildlife

A Canadian goose population control program was initiated in 2006 on the Sudbury Reservoir and managed by the Division of Wildlife Service Protection (DWSP) in order to protect the reservoir's water quality from nutrient loading and bacteria contamination.

Invasive Aquatic Plants

The Sudbury Reservoir is host to two invasive aquatic plants: Eurasian water-milfoil (*Myriophyllum spicatum*) and water chestnut (*Trapa natans*) which are removed every year with the goal of reducing seed-drop (DCR, 2008). The 2013 *DCR Watershed Protection Plan Update* found that Eurasian water-milfoil is present throughout the entire Sudbury Reservoir system at relatively high densities, indicating that it was introduced into this system many years ago, probably in the 1990s. It is not targeted for control in Sudbury Reservoir because the population is so well-established that removal efforts would be futile. DWSP staff continue to

monitor water chestnut and other macrophytes in Sudbury Reservoir on an annual basis. Annual harvesting of water chestnuts has been performed by contractors since its discovery by DWSP Aquatic Biologists in 2006. The extent of the infestation has recently shown signs of reduction, as the seed-bank becomes depleted. In 2013, a few brittle naiad (*Najas minor*) plants were found and targeted for removal. Annual surveys will continue to target new infestations of these and other aquatic invasive species. (Austin et al., 2013).

Invasive Terrestrial Plants found in Southborough include:

- Oriental Bittersweet
- Purple loosestrife
- Buckthorn
- Garlic mustard
- Japanese Barberry, whose infestation is particularly bad in sections of the Beals Preserve.

SOLF has applied for several grants to help manage invasive species on their land.

Since the last OSRP, SOLF organized workshops with the Garden Club to educate about invasives in Southborough. Building on actions like this, and expanding education into the science curriculum of the town's schools can help to build a knowledgeable citizenry that cares about preserving the towns ecosystems from invasive threats. Ensuring that local garden centers do not carry any variety that may pose a threat can be part of a strategy of prevention.

Oriental Bittersweet, Breakneck Hill

IMPACT OF CLIMATE CHANGE

Our earth is warming, with the average temperature rising 1.5°F over the past century, with projections of another 0.5 to 8.6°F over the next hundred years. Rising global temperatures have been accompanied by changes in weather and climate, including more frequent and extreme weather events such as floods, droughts, intense rain, and more frequent and severe heat waves. As these and other changes become more pronounced in the coming decades, they will likely present challenges to our society and our environment (www3.epa.gov).

Many organizations and around the world agree that significant human-caused climate change is occurring, including the EPA, the United Nations IPCC, the U.S. National Academy of Sciences, and the National Center for Atmospheric Research among many others. According to NASA, climate change is one of the most complex issues facing us today. It involves many dimensions—science, economics, society, politics and moral and ethical questions—and is a global problem that will be around for decades and centuries to come.

Carbon dioxide, the heat-trapping greenhouse gas that has driven recent global warming, lingers in the atmosphere for hundreds of years, and the planet (especially the oceans) takes a while to respond to warming. So even if we stopped emitting all greenhouse gases today, global warming and climate change will continue to affect future generations. In this way, humanity is "committed" to some level of climate change (NASA, 2016).

While climate change is a global issue, it is felt on a local scale and municipalities are at the frontline of adaptation. In the absence of national or international climate policy direction, communities around the world have been focusing on solving their own climate problems. They are working to build flood

defenses, plan for heatwaves and higher temperatures, install water-permeable pavements to better deal with floods and stormwater, and improve water storage and use.

According to the United Nations Intergovernmental Panel on Climate Change 2014 report *Climate Change Impacts, Adaptation and Vulnerability*, governments at various levels are also getting better at adaptation (8). Climate change is starting to be factored into a variety of development plans: how to manage the increasingly extreme and frequent disasters, how to protect coastlines and deal with sea-level encroachment, how to best manage land and forests, how to deal with and plan for reduced water availability, how to develop resilient crop varieties, and how to protect energy and public infrastructure. Placing more restrictive protections around wetland areas can help to mitigate the effects of climate change by sequestering carbon. According to the UN Millennium Ecosystem Assessment, wetlands play an important role in mitigating global climate change through carbon sequestration. MAPC has developed a Regional Climate Change Adaptation Strategy to reduce the region's vulnerability to the predicted impacts of climate change. Adaptation is the ability to adjust to actual or expected effects of our future climate. Mitigation is reducing the flow of heat-trapping greenhouse gases into the atmosphere, for example, by reducing current emissions and designing ecological systems that store these gases.

Southborough can help address climate change by adapting and mitigating in ways that are appropriate for its particular location and resources. Protecting forested areas and increasing carbon sequestration would be of great importance towards mitigation efforts.
Town goals to protect remaining prime farm land soil and expanding the local food system would address the issue of food security at a local scale by adapting to forecasted rising food prices and shortages. In order to not miss opportunities to preserve this prime farm land soil in the future, the town could develop a proactive plan to exercising the town's Right of First Refusal for parcels under Ch. 61 that come up for sale. Creating youth education programs and connections with regional youth farming programs could encourage an interest in agriculture.

ENVIRONMENTAL EQUITY

While there are no environmental justice communities within Southborough, there is an uneven distribution of open space because of the heavy prevalence of open space and recreational areas around and along the Sudbury Reservoir.

The town should be more diligent in looking at areas south of the Mass Pike as there are limited town owned parcels that are dedicated to open space and recreation.

Section 5: Inventory of Lands of Conservation and Recreation Interest

Southborough's beautiful open spaces are a valuable resource to the town's residents, providing beautiful views, places to relax, and ecological services. Many of these properties are owned or managed by local land trusts, including the Southborough Open Land Foundation (SOLF), Sudbury Valley Trustees (SVT), and The Trustees of Reservations (TTOR).

Preserved open spaces, such as Beals Preserve, are important for both ecological integrity and recreation. This pond provides important aquatic and terrestrial habitat; is a tranquil place for relaxation with family or friends; and is used as an ice-skating pond in the winter.

The Southborough Open Land Foundation (SOLF) is a non-profit land trust dedicated to preserving, protecting, conserving, and enhancing the natural resources in the Town of Southborough (SOLF) in order to benefit current and future generations of residents of the town of Southborough. SOLF collaborates with public agencies and other private organizations and is a source of information regarding voluntary land conservation.

Sudbury Valley Trustees (SVT) is a non-profit land trust that conserves land in the Sudbury, Assabet, and Concord River Watersheds, working in communities between Worcester and Boston. SVT works to protect and steward land and provide volunteer and other community- engagement programs for local citizens to engage with natural resources. SVT currently protects over 4300 acres, holds 66 conservation restrictions, and maintains a 55-mile trail network. Its work is supported by nearly 3000 members.

The Trustees of Reservations is a state-wide non-profit conservation organization that has worked to preserve "special places" in Massachusetts for over 100 years. The Trustees cares for over 25,000 acres in Massachusetts and enjoys the support of over 100,000 members.

Templeman Woods is a 7.7-acre property located off Cordaville Road featuring an upland wood interspersed with glacial rock outcrops.

Turenne Wildlife Habitat is an 18-acre parcel of woodland and meadow donated to the Sudbury Valley Trustees by Fred and Millie Turenne in 1990. A bird garden, planted with native wildflowers and shrubs, attracts local birds and butterflies. Outcrops of granite are visible along walking paths. The forest is primarily young oak- hickory, although there are also some areas of richer mixed-hardwood forest, and some multi-trunked oaks believed to be up to 100 years old.

Sudbury Valley Trustees also owns Conservation Restrictions on properties owned by the following families: The Gay Family, the Gohlke Family, the White Family, the Barsoumian Family, and the Merriam Family. Some of these properties are owned by other entities; for example, the Barsoumian Family's Land, also called Barber Pasture, is owned by SOLF.

Chestnut Hill Farm is a 131-acre parcel of land historically owned by the Beals Family. In 2006, the Town of Southborough voted overwhelmingly to purchase a Conservation Restriction on the land, and the land itself was donated to The Trustees of Reservations. About 44 acres of the farm are currently in agricultural use, producing animal feed, hay, corn, and vegetables. In 2015, a Community-Supported Agriculture operation was begun there, managed by farmers hired by The Trustees. In addition to working agricultural land, Chestnut Hill Farm includes wetlands, meadows, and upland forest, and two miles of trails open to the public.

A list of parcels of conservation priority can help the town determine how to best use limited finances to secure open space and recreation into the future. Priority parcels will be determined by their ability to preserve scenic views, create/maintain wildlife corridors, provide passive and active recreation opportunities, and the presence of prime farm soil.

A. PROTECTED OPEN SPACE

A critical responsibility in long-range municipal planning is protecting lands of conservation and recreation interest. Conservation lands are typically undeveloped parcels used for passive recreation and/or conservation and protected from development through a conservation or deed restriction or by Article 97 of the Massachusetts Constitution. Recreation lands are generally improved parcels used for, or have the potential to be used for, active recreation. Such parcels may be owned and/or managed by public, private or nonprofit entities.

Protected open space serves several valuable functions including habitat and green infrastructure. Depending on the type (e.g. forest, meadow, wetlands, farmland, etc.) open space can provide habitat for both plant and wildlife, help replenish aquifers, reduce and absorb storm water runoff, produce a sustainable source of a wide range of resources, and absorb and/or treat pollutants. Open space can also offer numerous active and passive recreational opportunities and add scenic views to the landscape.

Article 97 of the Amendments to the Constitution of Massachusetts protects the right of the people of the Commonwealth to "clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment." Municipal water supplies can be protected by Zones 1 and 2 for groundwater sources and Zones A, B and C for surface water sources designated by the Department of Environmental Protection. An Open Space and Recreation Plan facilitates a municipality's ability to exercise the rights of its people under Article 97 by identifying open space and recreation lands, identifying appropriate protective measures and planning for future conservation and recreation needs.

The Town of Southborough encompasses 15.7 square miles (14.2 square miles of land and 1.5 square miles of water). Approximately a third of this area (3429.75 acres or 5.4 square miles, not including Conservation Restrictions which account for an additional 350-553 acres) is protected open space. Table A lists the protected parcels.

The largest holder of protected open space, by far, is the Massachusetts Department of Conservation and Recreation (DCR). DCR protects 2275 acres, including the Sudbury Reservoir. The Sudbury Reservoir serves as an emergency backup source of water for the DCR/Massachusetts Water Resources Authority (MWRA) water supply system which serves 2.5 million people in eastern Massachusetts. Consequently, activities on this land and water are strictly regulated to protect its value as a drinking water source. However, limited recreational activities including hiking, fishing and cross-country skiing are allowed.

The Conservation Commission controls the next largest total area, with 528 acres under its care and custody. Another 179 acres of land currently used for conservation are under the control of the Board of Selectmen.

Non-profit conservation organizations also contribute to land protection in Southborough with 448 acres under its control plus another 429 acres under Conservation Restrictions.

Table A presents the protected open space. Grants have not been used to purchase these parcels.

TABLE A

PROTECTED OPEN SPACE PARCELS

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
TOWN OF SOUTHBOROUGH								
MANAGEMENT AGENCY: Conservation Commission								
	Wood Street	02-037	1.5	Forest, Wetlands/Good	Passive	No	RB	Article 97
	Bridge Street	02-087	5.24	Forest, wetlands/ Good	Passive	Yes	RB	Article 97
	Highland Street	03-002-C	0.6967	Forest/Excellent	Passive/Trails	Yes	RB	Article 97
	Southville Road Off	04-043	3	Forest, wetlands/ Good	Passive/Trails	Yes	RB	Article 97
	Southville Road	05-004	16.5	Forest, wetlands, pond/Good	Passive/Trails	Yes	RB	Article 97
Soccer Field	Liberty Drive	05-050	4.46	Grass field/ Good	Soccer	Yes	RB	Article 97
	Richards Road	08-024	1.52	Forest, wetlands, / Good	Passive/Trails	Yes	RB	Article 97
	Darlene Drive	10-019-	0.349	Forest, wetlands, / Good	Passive/Trails	Yes	RB	Article 97
	Independence Drive	10-063	5.98	Forest/Good	Passive	Yes	RB	Article 97
	Rockpoint Road	13-018	30.67	Forest, wetlands, / Good	Passive/trail	Yes	RA	Article 97/CR
	Parkerville Road	27-043	2.188	Forest/Good	Passive	Yes	RA	Article 97
	Breakneck Hill Road***	29-028-A	87.66	Farm, field, wetlands/ Good	Passive, community gardens	Yes	RA	Article 97
	Oak Hill Road	31-047	20	Forest/Good	Passive	Yes	RA	Article 97
	Eastbrook Farm Lane	33-030	2.78	Forest, wetlands, / Good	Passive	Yes	RA	Article 97

Zoning Key: RA= Residence A, RB = Residence B, IP= Industrial Park

***Purchased with Self-Help Grant

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
TOWN OF SOUTHBOROUGH								
MANAGEMENT AGENCY: Conservation Commission								
	Turnpike Road Off	33-030-A	11.84	Forest, wetlands, / Good	Passive	Yes	IP	Article 97
	Boston Road	47-060	11.113	Forest/Good	Passive	Yes	RB	Article 97
	Valley Road	48-007	7.17	Forest/Good	Passive	Yes	RB	Article 97
	Bigelow Road	49-019	16.77	Wetland/ Good	Passive	Yes	RA	Article 97
	Bigelow Road	49-021	2.662	Wetland/ Good	Passive	Yes	RA	Article 97
	Main Street	51-006	3.65	Wetlands/ Good	Passive	Yes	RA	Article 97
	Main Street Off	51-012	41.28	Fields, forest, wetlands/Good	Passive/trail	Yes	RA	Article 97
	Main Street	51-013	13.13	Meadow/Good	Passive	Yes	RA	Article 97
	Main Street	51-015	0.39	Forest/Good	Passive	Yes	RA	Article 97
	Main Street	52-009	0.99	Field/ Good	Passive	Yes	RSP	Article 97
	Main Street	52-010	4.39	Forest, wetlands, pond/Good	Passive/trails	Yes	RA	Article 97
	Chestnut Hill Road***	62-004	108	Farm, fields/ Excellent	Passive/trails community gardens	Yes	RSP	Article 97
	Sears Road Off	63-010	15.21	Forest, fields, wetlands/Good	Passive	Yes	RA	Article 97
	Hillside Avenue	66-067	10.54	Forest, wetlands/ Good	Passive	Yes	RB	Article 97
	Pine Hill Road	69-021-	16.14	Forest, wetlands, / Good	Passive	Yes	RA	Article 97

Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional
***Purchased with Self-Help Grant

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
TOWN OF SOUTHBOROUGH								
MANAGEMENT AGENCY: Conservation Commission								
	Chestnut Hill Rd Off	72-008-0	23.57	Forest, wetlands, / Good	Passive/trails	Yes	RSP	Article 97
	Barn Lane	72-019	7.66	Wetlands/Good	Passive/trails	Yes	RA	Article 97
	Presidential Drive	73-020	14.34	Wetlands/Good	Passive/trails	Yes	RA	Article 97
	Nichols Street	79-004	10.45	Good	Passive/trail	Yes	RA	Article 97
	Presidential Drive	82-020	21.42	Forest, wetlands/Good	Passive/trails	Yes	RA	Article 97
	Presidential Drive	82-023-	4.26	Forest, wetlands, Good	Passive/trails	Yes	RA	Article 97
	Presidential Drive	82-027-	0.24	Wetlands/Good	Passive/trails	Yes	RA	Article 97
Subtotal			**527.76**					

Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional, C= Conservation

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
TOWN OF SOUTHBOROUGH								
MANAGEMENT AGENCY: Board of Selectmen								
	Wood Street	01-020	0.78	Forest, wetlands/Good	Passive/wildlife habitat	Yes	RB	Low
Stockwell Farms	Off Atwood Street	8-103	11.42	Forest/Good	Passive/wildlife habitat	Yes	RB	Article 97
Hillman Property	Nathan Stone Rd.	10-024	10.82	Forest, wetlands, /Good	Passive	Yes	RB	Article 97
Hillman Property	Edgewood Road	10-102	0.196	Forest/Good	Passive	Yes	RB	Article 97
Hubley Lane	Middle Road	13-33	7.53	Forest/Good	Passive/trail	Yes	RA	Article 97
Watkins Property	Cordaville/ Richards Road	14-12	9.67	Forest/Good	Passive/Trail	Yes	RB	Article 97
	Vickery Hill Lane	20-054	4.416	Forest/Good	Passive/trails	No	RA	Article 97
	Breakneck Hill Road	29-58	1.84	Connects to conservation area	Passive/trails	Yes	RA	Low
	Orchard Road	34-016	7.243	Forest, wetlands, / Good	Passive/trails	Yes	RA	Low
Golf Course	36 Cordaville Rd	45-002	55.7	Golf/Excellent	Golf, trails	Yes	RB	Article 97/CR
Linda Construction	Reservoir Drive	46-08	3.9	Forest/Good	Passive/trails	Yes	RB	Article 97
	Main Street	51-018	1.807	Forest, field/Good	Passive/trails	Yes	RA	Low
Maillett Property	Sadie Hutt Lane	74-51	0.73	Forest/Good	Passive/trails	Yes	RA	Article 97
	Angelica Lane	79-005, 016	16.84	Forest, wetlands/ Good	Passive/trails	Yes	RA	Article 97
	Pinecone Lane	85-009	0.72	Forest/Good	Passive/trails	Yes	RB	Low
Town Forest	Kidder/Woodland/ Walnut	22-002, -003, -014, -015, 23-008	45.29	Forest, wetlands/ Good	Passive/trails	Yes	RA, C	Article 97
Subtotal			**178.9**					

Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional, C= Conservation

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
TOWN OF SOUTHBOROUGH								
MANAGEMENT AGENCY: Board of Selectmen								
	Wood Street	01-020	0.78	Forest, wetlands/Good	Passive/wildlife habitat	Yes	RB	Low
Stockwell Farms	Off Atwood Street	8-103	11.42	Forest/Good	Passive/wildlife habitat	Yes	RB	Article 97
Hillman Property	Nathan Stone Rd.	10-024	10.82	Forest, wetlands, /Good	Passive	Yes	RB	Article 97
Hillman Property	Edgewood Road	10-102	0.196	Forest/Good	Passive	Yes	RB	Article 97
Hubley Lane	Middle Road	13-33	7.53	Forest/Good	Passive/trail	Yes	RA	Article 97
Watkins Property	Cordaville/ Richards Road	14-12	9.67	Forest/Good	Passive/Trail	Yes	RB	Article 97
	Vickery Hill Lane	20-054	4.416	Forest/Good	Passive/trails	No	RA	Article 97
	Breakneck Hill Road	29-58	1.84	Connects to conservation area	Passive/trails	Yes	RA	Low
	Orchard Road	34-016	7.243	Forest, wetlands, / Good	Passive/trails	Yes	RA	Low
Golf Course	36 Cordaville Rd	45-002	55.7	Golf/Excellent	Golf, trails	Yes	RB	Article 97/CR
Linda Construction	Reservoir Drive	46-08	3.9	Forest/Good	Passive/trails	Yes	RB	Article 97
	Main Street	51-018	1.807	Forest, field/Good	Passive/trails	Yes	RA	Low
Maillett Property	Sadie Hutt Lane	74-51	0.73	Forest/Good	Passive/trails	Yes	RA	Article 97
	Angelica Lane	79-005, 016	16.84	Forest, wetlands/ Good	Passive/trails	Yes	RA	Article 97
	Pinecone Lane	85-009	0.72	Forest/Good	Passive/trails	Yes	RB	Low
Town Forest	Kidder/Woodland/ Walnut	22-002, -003, -014, -015, 23-008	45.29	Forest, wetlands/ Good	Passive/trails	Yes	RA, C	Article 97
Subtotal			**178.9**					

Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional, C= Conservation

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME	LOCATION IF APPLICABLE	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION								
	Off Wood	01--011	1.57	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Off Wood	01-024	7.55	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Off Southville	05-009	14	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Trnpk At Cordaville	28-002	10.36	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Trnpk Corner Middle	28-014	3.23	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Trnpk At Cordaville	28-015	13.51	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Cordaville Road	36-018	62.62	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	White Bagley Road	37-006	183.14	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Turnpike	38-016	6	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Turnpike Road	38-021	2.01	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Middle Road	44-004	52.59	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Middle Road	44-005	61.17	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Latisquama Road	45-001	3.04	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Latisquama Road	45--014	4.20	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High

Zoning Key: RA= Residence A, RB = Residence B, C= Conservation, I= Industrial

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME	LOCATION IF APPLICABLE	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION								
	White Bagley Road	46-006	26.99	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Central Street	47-001	3.65	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road Off	47-014	2.62	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road	48-024	3.07	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Bigelow Road	49-009	159.58	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Main Street	51-002	0.78	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Main Street	51-005	0.83	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Deerfoot Road	53-002	7.23	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Deerfoot Road	53-004	26.72	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Boston Road	58-001	0.34	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road	58-002-A-142	1492.004	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Northboro Road	61-003	8.82	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High
	Northboro Road	62-001	7.67	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High
	Northboro Road	62-002	38.04	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High

Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME	LOCATION IF APPLICABLE	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION								
	White Bagley Road	46-006	26.99	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Central Street	47-001	3.65	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road Off	47-014	2.62	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road	48-024	3.07	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Bigelow Road	49-009	159.58	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Main Street	51-002	0.78	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Main Street	51-005	0.83	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Deerfoot Road	53-002	7.23	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Deerfoot Road	53-004	26.72	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Boston Road	58-001	0.34	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RB	High
	Boston Road	58-002-A-142	1492.004	Water Supply/ Good	Hiking, fishing, cross-country skiing	Yes	RA	High
	Northboro Road	61-003	8.82	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High
	Northboro Road	62-001	7.67	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High
	Northboro Road	62-002	38.04	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High

Zoning Key: RA= Residence A, RB = Residence B, C= Conservation, I= Industrial Passive= habitat, birdwatching, nature walks, etc.

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME	LOCATION IF APPLICABLE	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION								
	School Street	65-002	0.35	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	C	High
	School Street	65-004	7.18	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	C	High
	Newton Street	65-014	0.14	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RB/I	High
	Newton Street	65-017	0.75	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RB	High
	Chestnut Hill Road	73-022	20.37	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	C	High
	Sears Road	74-004	5.09	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	C	High
	Marlboro Road Off	91-018	1.45	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	RA	High
	Marlboro Road	91-019	36.58	Water Supply/ Good	Hiking, Fishing, cross-country skiing	Yes	C	High
Sub-Total			**2275.31**					

Continued Zoning Key: RA= Residence A, RB = Residence B, C= Conservation, I= Industrial Passive= habitat, birdwatching, nature walks, etc.

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: SUDBURY VALLEY TRUSTEES								
Willman Wetlands	Wood Street	01-019	1.87	Conservation/Good	Passive	Yes	RB	Medium
	Wood Street	02-037	1.50	Conservation/Good	Passive	Yes	RB	Medium
Merriam	River Street	04-041-A	0.57	Park/Very Good	Passive	Yes	RB	Medium
White	Oregon Road	15-10-A	3.35	Conservation/Good	Passive	Yes	RA	Medium
Turenne	Oak Hill Road	31-047	20.00	Conservation/Good	Passive	Yes	RA	Medium
Triangle Meadow	Main Street	51-006	3.65	Conservation/Good	Passive	Yes	RA	Medium
Wyndemere	Main Street	52-010	4.39	Conservation/Good	Passive	Yes	RA	Medium
	Jericho Hill Road	80-005	0.23	Conservation/Good	Passive	Yes	RA	Medium
Sub-Total			**35.56**					
MANAGEMENT AGENCY: PINE HILL MEADOW TRUST								
	Pine Hill Road	69-021	16.14	Conservation/Good	Passive	Yes	RA	Deed restriction
	Nichols Street	79-004	10.45	Conservation/Good	Passive	Yes	RA	Medium
Sub-Total			**26.59**					
MANAGEMENT AGENCY: THE PRESERVATION TRUST INC.								
	Oland Lane	12-041	0.35	Conservation/Good	Passive	Yes	RA	Medium
	Parkerville Rd.	27-043	2.19	Conservation/Good	Passive	Yes	RA	Medium
	Presidential Dr.	82-020	21.42	Conservation/Good	Passive	Yes	RA	Medium
	Presidential Dr.	82-023	4.26	Conservation/Good	Passive	Yes	RA	Medium
	Presidential Dr.	82.027	0.24	Conservation/Good	Passive	Yes	RA	Medium
Sub-Total			**28.46**					
MANAGEMENT AGENCY: THE TRUSTEES OF RESERVATIONS								
	0 Chestnut Hill Rd	51-043	38.66	Conservation/Good	Passive	Yes	RSP	Medium
	Main Street	52-009	0.99	Conservation/Good	Passive	Yes	RSP	Medium
	7 Chestnut Hill Rd	62-004	108.00	Conservation/Good	Passive	Yes	RSP	Medium
	Chestnut Hill Rd Off	72-008	23.57	Conservation/Good	Passive	Yes	RSP	Medium
Sub-Total			**171.22**					

Continued Zoning Key: RA= Residence A, RB = Residence B, RSP= Research, Science and Professional Passive= habitat, birdwatching, nature walks, etc.

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONIN G	LEVEL OF PROTECTION
MANAGEMENT AGENCY: SOUTHBOROUGH OPEN LAND FOUNDATION								
Barber Pasture	Bridge Street	02-087	5.24	Conservation/Very Good	Passive	Yes	RB	High/CR
	Highland Street	03-002-C	0.70	Conservation/Very Good	Passive	Yes	RB	Medium
River Reserve	Southville Rd.	04-043	3.00	Conservation/Very Good	Passive	Yes	RB	Medium
Lambert Corners	Richards Road	08-024	1.52	Conservation/Very Good	Passive	Yes	RB	Medium
Big Oak Woods	Darlene Drive	09-067	0.69	Conservation/Very Good	Passive	Yes	RB	Medium
	Darlene Drive	09-068	0.7	Conservation/Very Good	Passive	Yes	RB	Medium
	Darlene Drive	09-069	0.68	Conservation/Very Good	Passive	Yes	RB	Medium
	Darlene Drive	10-020	1.02	Conservation/Very Good	Passive	Yes	RB	Medium
	Darlene Drive	10-021	11.17	Conservation/Very Good	Passive	Yes	RB	Medium
Temple-mann Woods	Cordaville Rd.	14-037	8.16	Conservation/Very Good	Passive	Yes	RA	Medium
Nipmuc Trail Woods	Brookside Rd.	15-061	2.15	Conservation/Very Good	Passive	Yes	RB	Medium
Eastbrook Farm	Eastbrook Farm Ln.	33-030	2.78	Conservation/Very Good	Passive	Yes	RA	Medium
	Turnpike Rd. Off	33-30-A	11.84	Conservation/Very Good	Passive	Yes	IP	Medium
Kalander Woods	Boston Road	47-060	11.11	Conservation/Very Good	Passive	Yes	RB	Medium
	Valley Road	48-007	7.17	Conservation/Very Good	Passive	Yes	RB	Medium
Bigelow Wildlife Reserve	Bigelow Road	49-019	16.77	Conservation/Very Good	Passive	Yes	RA	Medium
	Bigelow Road	49-021	2.66	Conservation/Very Good	Passive	Yes	RA	Medium
Beals Preserve	Main Street Off	51-012	41.28	Conservation/Very Good	Passive	Yes	RA	High/CR
	Main Street	51-013	13.13	Conservation/Very Good	Passive	Yes	RA	High/CR
	Main Street	51-014	3.70	Conservation/Very Good	Passive	Yes	RA	High/CR
Access to Beals	Main Street	51-015	0.39	Conservation/Very Good	Passive	Yes	RA	Medium

Continued Zoning Key: RA= Residence A, RB = Residence B, C= Conservation, I= Industrial Park Passive= habitat, birdwatching, nature walks, etc.

TABLE A

PROTECTED OPEN SPACE PARCELS (Continued)

SITE NAME IF APPLICABLE	LOCATION	MAP/ PARCEL	AREA (Acres)	CURRENT USE/ CONDITION	RECREATION POTENTIAL	PUBLIC ACCESS	ZONING	LEVEL OF PROTECTION
MANAGEMENT AGENCY: SOUTHBOROUGH OPEN LAND FOUNDATION								
Wolfpen Pasture	Sears Road Off	63-010	15.21	Conservation/Very Good	Passive	Yes	RA	Medium
Clear Hill Hollow	Hillside Avenue	66-067	10.54	Conservation/Very Good	Passive	Yes	RB	Medium
Sears Reserve	Presidential Dr.	73-020	14.34	Conservation/Very Good	Passive	Yes	RA	Medium
Sub-Total			**185.95**					

Source: Assessors Database, 2018 Zoning Key: RA= Residence A, RB = Residence B, IP= Industrial Park Passive= habitat, birdwatching, nature walks, etc.

Table B lists the conservation restrictions in Southborough as provided by the Division of Conservation Services. It indicates a total of 553.61 acres of CR's submitted to DCS for review. One of the parcels is Chestnut Hill Farm, which is now owned in fee by The Trustees of Reservations, so it is shown as a protected parcel in Table A.

Table C is a deed restriction for conservation purposes.

Table D summarizes the protected open space in Southborough.

TABLE B

CONSERVATION RESTRICTIONS*

DCS REFERENCE	LOCATION	RECEIVED DATE	SIGNED DATE	GRANTOR	GRANTEE	AREA (Acres)
14937	Jericho Hill Road	--	12/26/91#	George H. Gay, Jr.	Sudbury Valley Trustees	59.4#
14938	West Main/ Chestnut Hill/ Northborough Rd.	3/1/1995	3/30/1995	Philip & Elaine Beals	Sudbury Valley Trustees	48.10
14939	Fay Ct/Bridge St.	7/7/2000	7/26/2001	Frank W. Gohlke	Sudbury Valley Trustees	6.70
14940	Southville Rd.	10/10/2000	12-20/2000	Southborough Open Land Foundation	Sudbury Valley Trustees	3.48
14943	Off Main St.	9/12/2005	5/23/2006	Philip Beals	Conservation Commission	109.90#
14945	Off Main/ Chestnut Hill Rd.	11/3/2006	12/22/2006	Philip & Elaine Beals	Sudbury Valley Trustees	56.10
14946	Off Main/ Chestnut Hill Rd.	11/3/2006	6/8/2006	Philp Beals Trust	Sudbury Valley Trustees	13.00
14947	Off Main	7/16/2007	5/28/2007	134 Turnpike Road LLC	Town	6.95
14949	Oland Lane/ Gilmore Rd.	7/21/2010	3/3/2011	EMC Corporation	Sudbury Valley Trustees	39.00
16526	Cordaville Rd.	5/29/2018	8/29/19	Town	Sudbury Valley Trustees/ Conservation Commission	55.70
	Rockpoint Road +		Pending	Town	Sudbury Valley Trustees	30.67
	TOTAL					**429**

Sources: Division of Conservation Services (DCS), 2018 # Worcester County Registry of Deeds, 2019
+Purchased with CPA Funds

TABLE C

DEED RESTRICTION FOR CONSERVATION PURPOSES

LOCATION	RECORDING DATE	OWNER	AREA (acres)
Orland Lane/Gilmore Road	3/10/2011	EMC Corporation	**7.00**

Source: Worcester County Registry of Deeds, 2019

TABLE D

SUMMARY OF PROTECTED OPEN SPACE

MANAGEMENT AGENCY	AREA (ACRES)
Town	
Conservation Commission	527.76
Board of Selectmen	208.79
Sub-Total	**736.42**
State	
Department of Conservation and Recreation	**2275.55**
Non-Profit Conservation Organizations	
Sudbury Valley Trustees	35.56
Pine Hill Meadow Trust	26.59
The Preservation Trust, Inc.	28.46
The Trustees of Reservations	171.22
Southborough Open Land Foundation	185.95
Sub-Total	**447.78**
Conservation Restrictions	**342.63***
TOTAL	**3803.05**

B. PUBLIC AND PRIVATE RECREATION FACILITIES

A variety of recreational opportunities exist in Southborough. While conservation land (listed in Tables A, B and C) is usually also available for some recreation activities (hiking, bird-watching, etc.), recreation land here is defined as areas devoted and used primarily for one or more specific recreation uses that require:

- o A large portion of the site;
- o Man-made facilities or significant alteration of the natural landscape; and
- o Intensive maintenance.

Examples of recreation facilities include parks and playgrounds, schoolyards, country clubs/golf courses, campgrounds, beaches, picnic areas, etc. Such facilities can be publicly or privately owned and accessible.

The recreation facilities in Southborough are discussed below. Table E lists the public recreation sites in Southborough. As the table indicates, schoolyards provide the majority of the recreation sites in Town as fields tend to be located on or adjacent to school sites. Grant funds were not used to purchase or redevelop these recreation sites and facilities

Table F lists the private sites Private facilities include the two private schools in Southborough, the Fay School and St. Mark's School. As shown on Table F, their campuses include a variety of both indoor and outdoor recreational opportunities. While not available to the general public, these facilities add to the diversity of recreation opportunities in Southborough.

TABLE E
PUBLIC RECREATION PROPERTIES

NAME	LOCATION	AREA	MAP/ PARCEL	CURRENT USES/ FACILITIES	RECREATION POTENTIAL	MANAGEMENT AGENCY	PUBLC ACCESS	CONDITION/ ZONING	LEVEL OF PROTECTION
TOWN-OWNED OR MANAGED PUBLIC RECREATION AREAS									
911 Memorial Field	Acre Bridge Road.	5+[1]	58-002A	Turf field	DCR permission would be needed for expansion	Recreation Commission/DPW	Yes	Excellent/ Conservation	High
Kallander Field	Kallander Drive	2.63	56-012	Grass Field/Soccer	No, fully developed	Recreation Commission	Yes	Poor/RB	Article 97
Liberty Estates Field	Liberty Road		05-050	Grass Field	No, fully developed	Recreation Commission/DPW	Yes	Very Good/RB	Article 97
Lunblad Grassfield	53 Parkerville Road	80.7[3]	43-018	Baseball, track, soccer	No, fully developed	Recreation Commission/DPW	Yes	Good/RA	Article 97
Richardson Tennis Courts	53 Parkerville Road	80.7[3]	43-018	Tennis	No, fully developed	Recreation Commission/DPW	Yes	Excellent/RA	Article 97
Fayville Playground	Central Street	2.37	38-45A	Playground equipment	No, fully developed	Recreation Commission	Yes	Excellent/RB	Article 97
Triangle Park	Cordaville Street	0.74	04-001	Paths, benches	Suitable for passive only	Recreation Commission	Yes	Excellent/BH	Article 97
Town Common	Common and Main Street	0.74	54-006	Monuments, benches	Suitable for passive only	Recreation Commission	Yes	Excellent/RA	Article 97
South Union Building and Playground	21 Highland Street	3.0	03-003	Playground	Room for expansion.	Recreation Commission	Yes	Excellent/RB	Article 97
George Mooney Park	Parkerville Road	7.03	07-023	Baseball, softball, Grass Field/Soccer	No, fully developed	Recreation Commission/DPW	Yes	Very Good/C	Article 97
Southborough Golf Club	36 Cordaville Road	55.70	45-002	9-hole golf course	Limited passive activities possible	New England Golf Corporation	Yes	Under Construction/C	High (CR)
Sub-total		**210.95**							

[1]Part of 1492-acre Sudbury Reservoir parcel owned by DCR [2]DCR land [3]Includes same entire school sites

TABLE E
PUBLIC RECREATION PROPERTIES (Continued)

NAME	LOCATION	AREA*	MAP/ PARCEL	CURRENT USES/FACILITIES	RECREATION POTENTIAL	MANAGEMENT AGENCY	PUBLIC ACCESS	CONDITION/ ZONING	LEVEL OF PROTECTION
				SCHOOL PROPERTIES					
Finn Elementary	60 Richards Road	11.15*	07-021	Softball, tennis, gym, playground, skate park	No, fully developed	School Committee	Limited	Good/RB	Low
Neary Elementary	53 Parkerville Road	80.7*	43-018	Playground, soccer, basketball, softball	No, fully developed	School Committee	Limited	Good/RA	Low
Trottier Middle	49 Parkerville Road	Same site as Neary	Same site as Neary	Track, soccer, baseball, basketball, gym	No, fully developed	School Committee	Limited	Good/RA	Low
Woodward Memorial	28 Cordaville Road	11.65*	54-092	Volleyball, gym, basketball, soccer, playground, softball	No, fully developed	School Committee	Limited	Good/RB	Low
Total Public Recreation Acreage (including schools)		**233.75**							

Sources: Assessors Database 2018, Recreation Department web site. *Includes entire school site

TABLE F

PRIVATE RECREATION PROPERTIES#

NAME	LOCATION	AREA	MAP/ PARCEL	CURRENT USES/FACILITIES	MANAGEMENT AGENCY	PUBLIC ACCESS	CONDITION/ ZONING	LEVEL OF PROTECTION
PRIVATE PROPERTIES								
Fay School	48 Main St	56.58*	53-10,11,12, 13,14,15,16, 17,19,20,25,54-54-2,14,16,17 91-006	Gym, 2 pools, 11 fields, baseball, basketball, fitness center, cross-country track, tennis	Board of Trustees	No	Very Good/RA-RB	Low
St. Mark's School	25 Marlboro Road	207.33 *	45-02A, 53-08, 09, 54-08,31, 65-01,03,09,12,23 74-06, 75-34A	Gym, ice rink, baseball, soccer, football, tennis	Board of Trustees	No	Very Good/RA-RB	Low
Total Private Recreation Acreage		**263.91**						

Source: Assessors Database, 2018, Institution web sites *Includes entire campus sites

C. POTENTIAL INEQUITIES

There are no environmental justice populations in Southborough. An Environmental Justice community is one or more U.S, Census block groups where the median household income is below 65% of the state median, or at least 25% of the population is other than white or at least 25% of households have no one over the age of 14 who speaks English well. Environmental Justice is based on the principle that all people have a right to be protected from environmental pollution and to live in a clean and healthful environment. Furthermore, as Map _ illustrates, open space and recreation areas are well distributed throughout the Town. All neighborhoods are within reasonable proximity to both conservation and recreation areas.

D. CHAPTER 61, 61A, & 61B LANDS

In order to encourage the preservation of certain activities and land uses (namely forestry, agriculture, and recreation), the laws of the Commonwealth of Massachusetts allow a property tax break for these land uses. In return for this tax break, the property owners who take advantage of it must make the parcel available for purchase by the town in which it is located before it may be sold on the open market. Since towns rarely have the available funds to purchase these parcels, the law does not provide much protection. However, to the extent that the tax break may help keep the land use economically feasible, it does provide some incentive to continue the land use rather than make the land available for development. Furthermore, landowners who continue to maintain their lands under this program should be acknowledged for their stewardship efforts.

Named after the section of state law that allows this, Chapter 61 land is that which is used for forestry or woodlands, Chapter 61A land is used for agriculture, and Chapter 61B land is used for recreation.

As Table F indicates, Southborough has a total of 121.6 acres of Chapter 61, 61A and 61B land as follows:

- **Chapter 61:** Southborough has two parcels totaling 23.35 acres.
- **Chapter 61A**: There are presently thirteen parcels totaling 98.25 acres. There 5 owners of the thirteen parcels as two owners own 5 parcels each.
- **Chapter 61B:** There are no Chapter 61B properties in Southborough.

TABLE F

CHAPTER 61, AND 61A LANDS*

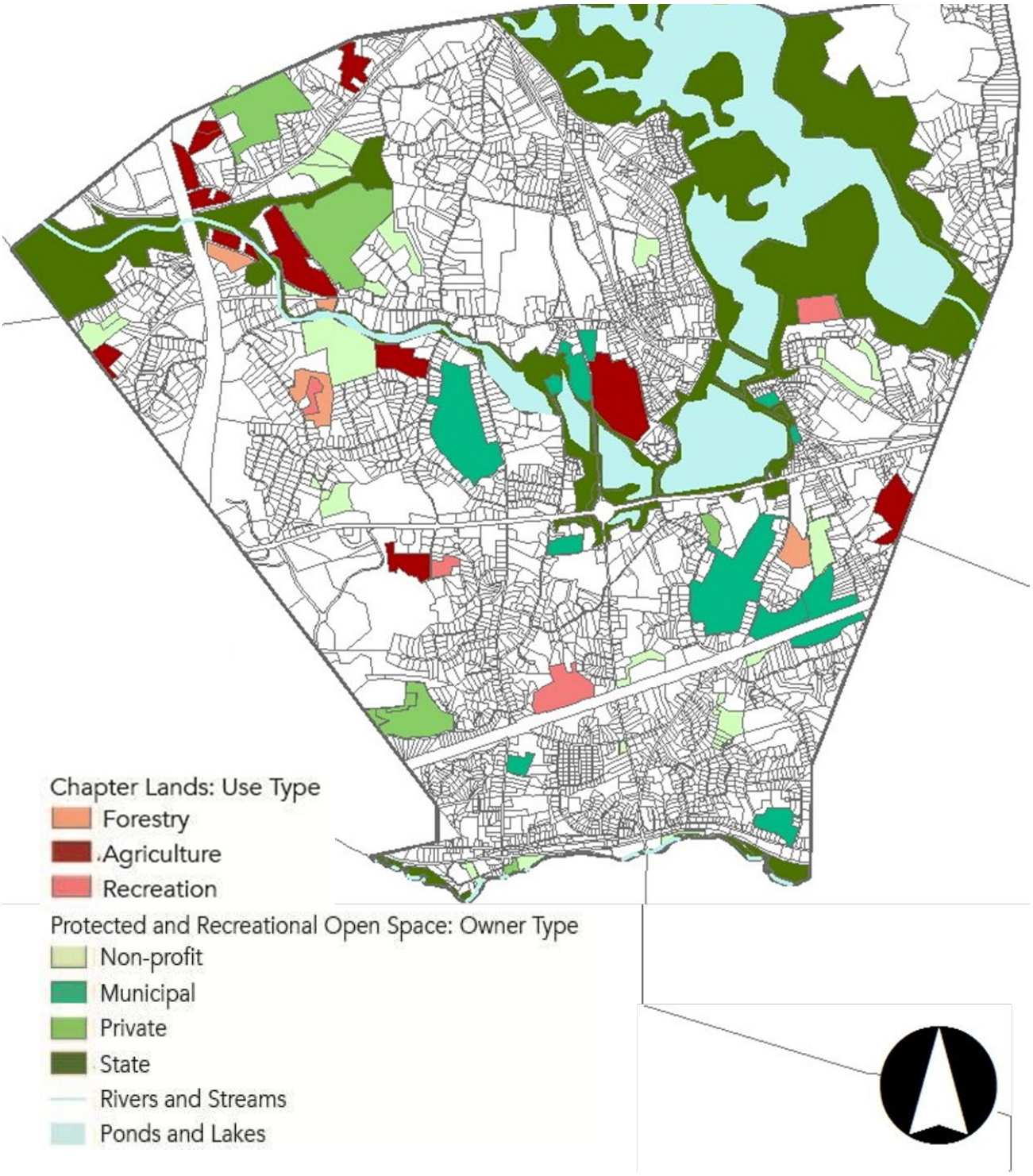
LOCATION	OWNER	MAP/ PARCEL	AREA (ACRES)	ZONING	PUBLIC ACCESS
Chapter 61					
Fisher Road	Pietro	82-001	15.99	RA	No
Subtotal			**15.99**		
Chapter 61A					
Main Street	Blynn	40-006	7.50	RA	No
Newton Street	Derby	75-034	18.91	RB	No
Framingham Road	Derby	75-046	1.25	RB	No
Framingham Road	Derby	75-047	1.02	RB	No
Framingham Road	Derby	75-048	1.00	RB	No
Framingham Road	Derby	84-022	2.46	RB	No
Deerfoot Road	Millea	52-021	21.25	RA	No
Northboro Road	Johnson	61-004	5.00	RA	No
Northboro Road	Johnson	61-005	11.00	RA	No
Northboro Road	Johnson	61-014	2.69	RA	No
Northboro Road	Johnson	71-001A	10.76	RA	No
Northboro Road	Johnson	71-006	8.76	RA	NO
Jericho Hill Road	Mulvaney	80-004	6.65	RA	NO
Subtotal			**98.25**		
TOTAL			**114.24**		

Source: Assessors Database, 2018 *There are no 61B lands.

INVENTORY OF OPEN SPACE MAP

Chapter land *is enrolled in a current-use management plan that allows the owner to have the property assessed at its forestry (Chapter 61), agricultural (Chapter 61A), or recreational (Chapter 61B) value, rather than its "highest and best" value. If it is sold, the Town of Southborough has the "right of first refusal" to purchase the land before it is sold to a third party. Property owners may enroll land in a Chapter program if it is actively used for forestry, agriculture, or recreation.*

Protected and recreational open space *is open space owned by a town or government agency, or placed under a conservation restriction owned by a non-profit organization such as a land trust.*



Section 6: Community Vision

A. DESCRIPTION OF PROCESS

The process to gather public input for this update to Southborough's Open Space and Recreation Plan included a series of public forums, a town-wide survey, and meetings with town officials. The public feedback helped to define goals and articulate recommendations to address the community's priorities.

OPEN SPACE AND RECREATION SURVEY

The Town created and distributed an online survey. It was made available on the town website, and sent out through the Recreation email service and through the Southborough Public Schools [verify? Were there more?] The survey received 207 responses.

See appendix 1 for full results.

PUBLIC FORUM #1: *Data*

Gathering

The first public forum was held at Cordaville Town Hall/Southborough Senior Center on February 3, 2016. Thirty participants attended. At the first meeting, the Working Group gave a presentation outlining the purpose and utility of the OSRP, as well as accomplishments since the last update, published in 2009.

PUBLIC FORUM #2:

Responses to Draft Goals and Objectives

The second forum, also held at Cordaville Town Hall, occurred March 4, 2016. The seven participants evaluated the goals and objectives the students and Working Group had identified, and proposed actions to achieve these goals. The results of both forums were incorporated into the goals, objectives, and seven-year action plan delineated at the end of this report.

B. STATEMENT OF GOALS

Southborough faces challenges familiar to many other small towns in the region. These include a desire to maintain and increase community awareness and use of existing open space and recreational facilities while taking steps to protect additional lands under pressure from future development. Based on input obtained from the community and a review of the community vision described in the 2009 OSRP, Southborough's vision for open space and recreation was drafted:

Southborough aims to take the proper steps to meet the community's growing needs for sufficient recreation facilities and infrastructure. Parcels of priority conservation interest are identified and protected to support ecological integrity and connectivity of open space for people and wildlife. The open space parcels and recreation facilities already in place are maintained and/or improved as needed, and when applicable they are expanded. Agriculture is preserved and promoted as an important aspect of community character. Groundwater and surface water are protected as clean and abundant resources.

Section 7: Analysis of Needs

Southborough's valuable natural resources are increasingly under pressure from development, and its population continues to grow. With a growing population comes more need for recreational programs and facilities. It also makes conserving Southborough's remaining open spaces more crucial to retain the rural character appreciated by residents.

SUMMARY OF RESOURCE PROTECTION NEEDS

Southborough, formerly a small agricultural town, faces pressure from development and a growing population that challenges its infrastructure and the integrity of its natural areas. In the OSRP Survey, a majority of residents indicated they were drawn to the town for its rural character and picturesque qualities. This was true both for long-time residents and for those who reported living in Southborough for ten years or less.

FARMLAND SOILS

Southborough has abundant fertile soil that is an important resource for agriculture and biodiversity preservation. Soils classified as Prime Farmland Soils, Farmland of Statewide Importance, or Farmland of Unique Importance by the Natural Resources Conservation Service constitute 48% of the town's total land area. While there are few active farms in Southborough, there has been a recent resurgence in interest in local agriculture; for example, a new community-supported agriculture (CSA) farm and farm stand opened in 2015 at Chestnut Hill Farm. If interest in local agriculture continues to grow, it will be important to Southborough to preserve soils suitable for agriculture. On a broader scale, studies have indicated that food prices will rise over the long term as California's limited water resources make growing fruits and vegetables there more difficult, suggesting that local agriculture will become more important. Local agricultural production can also help to reduce a community's carbon emissions by reducing the travel time required between farm fields and consumers' plates.

In addition to its agricultural importance, prime farmland soil's fertility enables it to support a wide variety of plant and animal species. This makes prime farm soil valuable from a conservation standpoint, as fertile conditions may improve the quality of habitat for plants and wildlife. In Southborough, fertile soils are dispersed throughout the town. However, the largest tracts of undeveloped soils appropriate for farming are concentrated in the northern half of the town, primarily in the land surrounding the Sudbury Reservoir.

WATER

Water resources are some of Southborough's most visible and celebrated natural resources, and also some of its most endangered. The Sudbury Reservoir covers just over two square miles in the town's northeastern corner, about a quarter of the town's total area. As a backup drinking water source for the city of Boston, the reservoir is surrounded by land protected by the Massachusetts Water Resources Administration and the Department of Conservation and Recreation. However, Southborough has numerous other water resources, especially wetlands and vernal pools, that have little legal protection. Southborough also has 1,059 acres of wetlands, not including the reservoir's 1,280 acres.

Wetlands provide groundwater and aquifer recharge; help to control seasonal flooding; prevent pollution by filtering contaminants before they reach surface water bodies; and provide habitat for a variety of wildlife species.

Unfortunately, Southborough's legal wetland by-laws protections are minimal, and are not uniformly enforced. The "no-touch" wetland buffer is only 20 feet, and

the buffer within which building requires a permit is only 100 feet. These important natural resources must be better protected with larger wetland buffers and stricter enforcement of local wetland bylaws.

CONNECTIVITY OF OPEN SPACE

The Sudbury Reservoir and its adjacent conserved lands create a contiguous area that provides important wildlife habitat, water filtration, and carbon-emissions offset. This land is connected to conserved areas in adjacent towns and connects to wildlife corridors that run throughout the region. Protecting additional land adjacent to this already-protected open area would add additional wildlife habitat and strengthen the ecological integrity of the land. In addition to the land surrounding the reservoir, there is undeveloped land in the southeastern corner of the town that could provide an important wildlife connection between large open spaces in neighboring Hopkinton and Ashland. These lands are vital for the survival and migration of plant and animal communities in the town and the region and should be prioritized for protection.

SUMMARY OF COMMUNITY'S NEEDS

Continued population growth is a concern for Southborough for several reasons. Residents are concerned that an influx of new development threatens the small-town, rural feel of their community, and that rapid growth strains town services such as schools, recreation facilities, and law enforcement.

Results of the OSRP survey indicate that residents are interested in expanding recreational facilities, especially trails and a new indoor recreation and community center.

Existing trails in the town are widely used and are connected to a broader network of regional trails through regional initiatives such as the Bay Circuit Trail and the Boroughs Loop Trail. The Trails Committee, formed in 2013, has made great progress in working with local partners and state agencies to officially permit trails and expand their use. Their work will continue to be vital to recreation in Southborough given the high level of interest in trails expressed in public feedback.

Southborough's vibrant recreational programs serve thousands of children and adults each year. While the outdoor facilities are robust, they are often challenged by scheduling conflicts. Adding lights to fields, rather than building new fields, could help to accommodate more users by opening fields to night scheduling. Southborough Recreation's indoor programming is especially challenged for space. Currently, indoor programs often use facilities owned privately or by other towns. This arrangement is not ideal because it is dependent upon continued cooperation of those entities, which may change in the future. Alternatively, some programs use public facilities such as public schools, but are challenged by insufficient space for the amount of programming demanded. This reduces the Recreation Department's ability to offer indoor programming, and often forces residents to travel outside of town. A new recreational center is widely supported by the residents and would support the town's current recreation programs, as well as the population growth anticipated from new development.

Based on survey results of Questions 6 and 7, there, while it shows that the town is satisfied with the places available for children and adults, there is more room for improvement. Accessibility is a key factor in ensuring that the communities needs are met, and while great strides have been made for accessibility for families on playgrounds, the Town should continue to maintain and improve trail access, pathways, sideways, bikeways, etc. to be accessible to all of the potential special groups that reside in Southborough.

MANAGEMENT NEEDS & POTENTIAL CHANGE OF USE

While the Town of Southborough officially has the right of first refusal on land in Chapter 61 that is put on the market for sale, there is no official communication process in place to inform relevant parties when these expirations will take place. Creating a town policy about responding to the Town's first right of first

refusal, and identification of conservation entities that they could work with, will assist in the prevention of important working landscapes being lost to development.

According to the OSRP Survey, 78% of respondents believe the Town should pursue increased use of the Sudbury Reservoir for passive recreation. The Town should conduct further research to determine if this is feasible.

MASSACHUSETTS STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN (SCORP) 2017

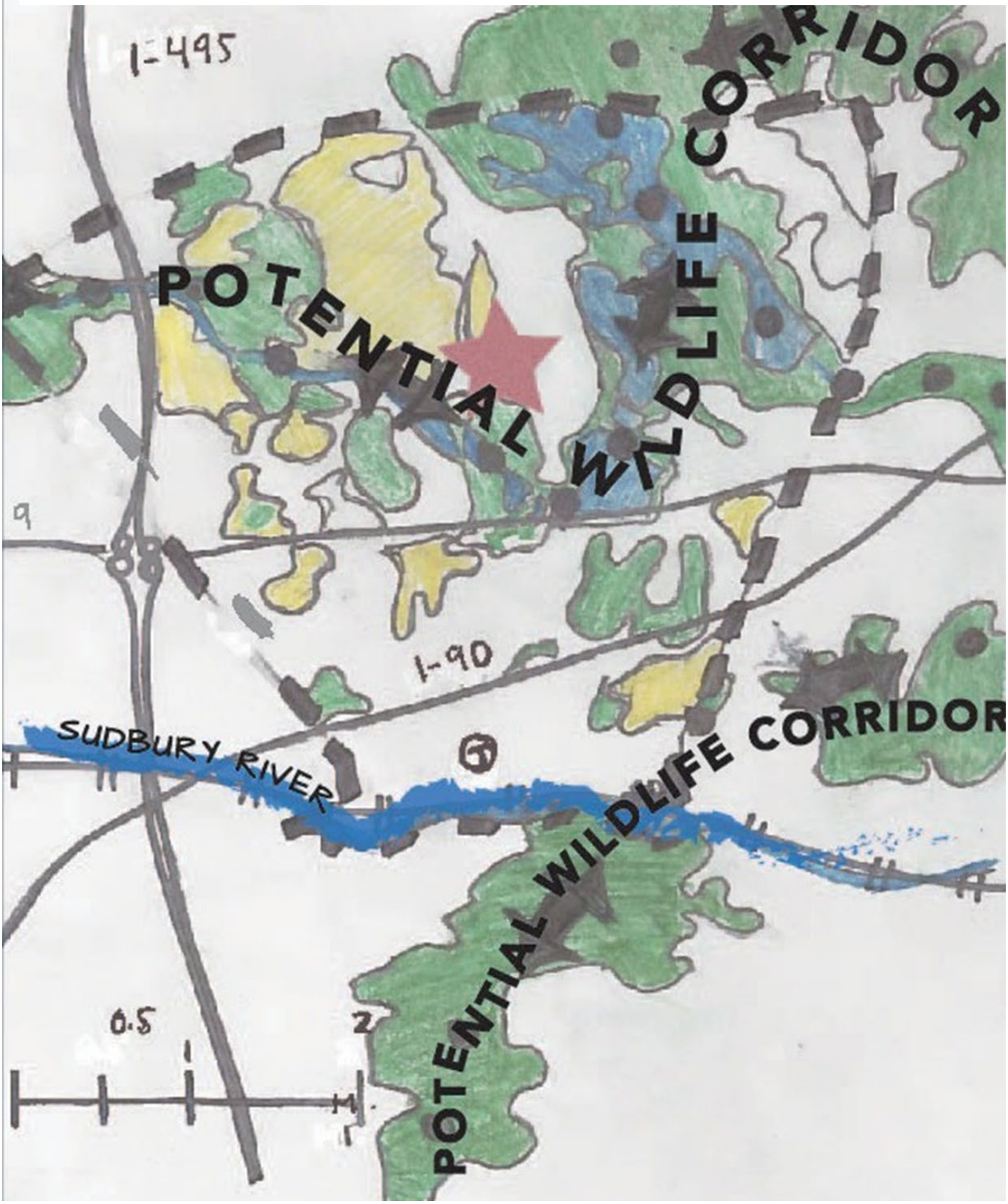
An important aspect of an Open Space and Recreation Plan is to see how the Town compares to resource needs in the region Over 50% of adults throughout the state mentioned that their top outdoor activity was walking, jogging or running which aligned with the town's response of 74% have a top recreation priority of passive recreation trails. Road biking was much higher of a priority within the town with a 64.6% response versus the SCORP's 18%. Another high response within the Town's results was 40% find that children's play areas are a priority to them for recreation.

Like SCORP, Southborough residents commonly use recreation areas or facilities under 10 times a year but are generally satisfied by the number of places available for recreation purposes and are satisfied with the general condition of them.

It is clear that through the results seen in Appendix #1 that the town has a wide variety of recreational interests and it is important that we continue to prioritize parcels and add additional areas for active or organized recreational uses especially along the Reservoir.

A DIRECTION FORWARD

Conserving land adjacent to open, protected land could strengthen Southborough's ecological integrity by building up wildlife corridors, particularly around the Sudbury Reservoir and the Sudbury River. Farm-appropriate soil, highlighted in yellow, is valuable both for potential future agriculture and for conservation, since fertile soil is often able to support a wide variety of plants and animals. Focusing on the areas identified can help Southborough work towards a greenerfuture.



Section 8: Goals and Objectives

GOAL #1: The community's needs for sufficient active recreational facilities and infrastructure are met.

Objectives:

a. New residential development includes funds for recreation facilities.
b. The use of existing active recreation fields, including school facilities, is documented, updated, and published regularly.
c. Multi-use trail and sidewalk systems satisfy the community's walking and biking needs.
d. Sidewalks and trails connect across the Sudbury Reservoir and Route 9; sidewalks and trails connect to adjacent municipal and regional trail networks.
e. New active recreational facilities, as determined through a needs assessment based on existing and projected recreational use data and community input, are sited appropriately and funded.

GOAL #2 Parcels of conservation interest are permanently protected to support ecological integrity and connectivity of open space for wildlife and people.

Objectives:

a. Parcels contiguous with open space around the aqueduct and reservoir are permanently protected.
b. Parcels of high ecological integrity are permanently protected.
c. The scenic and natural character of the town is preserved.
d. Parcels contiguous to protected open space near the Bay Circuit and Boroughs Loop Trails are permanently protected.
e. Connected open space between municipalities strengthens wildlife corridors and contributes to regional wildlife corridors.
f. Rare and endangered plant and wildlife species in Southborough are identified and designated by the Town and/or appropriate state and federal agencies for legal protection.

GOAL #3: Existing open space and recreational facilities are maintained and appropriately improved or expanded based on community needs.

Objectives:

a. Signs, maps and user-friendly amenities are located for visibility and ease of use.
b. There is safe and appropriate parking at designated open space and recreation areas.
c. ADA compliance standards are met for appropriately designated facilities.
d. Invasive plant species are managed and replaced by plants native to the region.
e. The level of service for open space and recreation areas is documented, updated, and published regularly.
f. Appropriate land is identified and designated solely for ecological biodiversity.
g. Adequate funding is provided for routine maintenance, including land stewardship, which meets or exceeds the level of service for each open space and recreation area.

GOAL #4: Agriculture is preserved and promoted as an important aspect of community character.

Objectives:

a. Land with agricultural capability is prioritized for conservation.
b. Existing farmland is maintained in agricultural use, or preserved as open space so that land may be available for future farming.
c. Active farms are encouraged to participate in Chapter 61A designation and other state programs designed to protect and preserve organic agriculture.

GOAL #5: Groundwater and surface water are protected as clean and abundant resources.

Objectives:

a. The public understands the importance of clean water as a natural resource.
b. Southborough's water resources are identified and designated for appropriate protection by the Town and/or appropriate state and federal agencies.
c. Rare and endangered aquatic species in town waterways are identified and designated by the Town and/or appropriate state and federal agencies (e.g., NHESP).

GOAL #6: The community protects biodiversity and is resilient to climatic change.

Objectives:

a. Promoting native plants and pollinators are integrated into public projects, private development, and the education curriculum.
b. All town-owned property is managed in an ecologically sensitive manner.
c. Local bylaws protect native plants and pollinators by implementing appropriate landscaping, lighting, drainage, and low impact site development and maintenance practices.
d. The public understands the importance of preserving biodiversity in adapting to climate change.
e. Land that has potential for future flood storage capacity is identified and protected.
f. Expanded trail and sidewalk systems promote walkability and cycling within town and decrease dependence on motor vehicles.

Section 9: Seven Year Action Plan

	Organization
ADA	Americans with Disabilities Act Committee
CON	Conservation Commission
CPC	Community Preservation Committee
ENV	Environmental Club
GOLF	Golf Course Committee
OSPC	Open Space Preservation Commission
PLAN	Planning Board
REC	Recreation Commission
SEL	Selectmen
STEW	Stewardship Committee
TRA	Trails Committee

	Potential Funding Sources
CPA	Community Preservation Act
END	Endowment Fund
GEN	General Fund
GRA	Grant
PRI	Private Fundraising / Donations

YEAR 1:

Goal	Action	Responsible Party	Partners	Funding
1	Evaluate and inventory the current active recreational facilities available in Town; including use, scheduling and appropriate level of service	REC		BGT
1	Establish appropriate levels of service for existing facilities based on inventory and use evaluation	REC		BGT
1	Document anticipated future active recreation facilities needs for the community	REC		BGT
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Explore the creation of multi-use trails for biking, hiking, and walking and new connecting trails and sidewalks	REC, TRA	CON, OSPC, STEW	BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Create an education plan for publicizing conservation options and benefits for private landowners	OSPC		BGT
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,

2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Respond to the needs from inventory of ADA Compliance	TRA, ADA		CPA, GRA
3	Create additional signs and maps to make areas clearly easy to navigate	TRA, REC	CON	BGT, GRA
3	Develop plans to add additional parking facilities at recreational and open space areas, as needed	TRA, REC	CON, OSPC, BOS	BGT, GRA, PRI,
3	Continuously update the website and provide up-to-date information about open space and recreation and related activities/events	TRA, REC	CON, OSPC	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI

3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Create a signage and parking area repair and maintenance plan for Breakneck Hill Conservation Land that includes new kiosks at the parking areas	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI
4	Identify, inventory and map prime agricultural lands and lands with agricultural capability	CON, PLAN		BGT
4	Seek opportunities to network with organic farms, municipal organic farming programs, or other appropriate organic agriculture opportunities	ENV	CON, PLAN	BGT
5	Leverage existing and evolving technology to increase community awareness and engagement about watershed protection, stormwater, and surface water	CON		BGT
5	Create a plan to inventory, map, and protect natural, rare or endangered aquatic species in Town waterways	CON	ENV	BGT

YEAR 2:

Goal	Action	Responsible Party	Partners	Funding
1	Evaluate and inventory the current active recreational facilities available in Town; including use, scheduling and appropriate level of service	REC		BGT
1	Establish appropriate levels of service for existing facilities based on inventory and use evaluation	REC		BGT
1	Document anticipated future active recreation facilities needs for the community	REC		BGT
1	Prepare a recreation facility master plan for future improvements	REC		BGT, GRA
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Explore the creation of multi-use trails for biking, hiking, and walking and new connecting trails and sidewalks	REC, TRA	CON, OSPC, STEW	BGT, CPA, GRA
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Create an education plan for publicizing conservation options and benefits for private landowners	OSPC		BGT
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Review open space parcel inventory and create process to permanently protect temporary or unprotected dedicated open space	OSPC, PLAN	CON, BOS	BGT, GRA, PRI,
2	Review open space parcel inventory and create process to permanently protect temporary or unprotected dedicated open space	OSPC, PLAN	CON, BOS	BGT, GRA, PRI,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT

2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Respond to the needs from inventory of ADA Compliance	TRA, ADA		CPA, GRA
3	Create additional signs and maps to make areas clearly easy to navigate	TRA, REC	CON	BGT, GRA
3	Develop plans to add additional parking facilities at recreational and open space areas, as needed	TRA, REC	CON, OSPC, BOS	BGT, GRA, PRI,
3	Continuously update the website and provide up-to-date information about open space and recreation and related activities/events	TRA, REC	CON, OSPC	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Plan and install ecological garden and roadside wildflower meadow at Breakneck Hill Conservation Land that includes access to water, and goal to provide habitat for bumblebees and other native pollinators	STEW	ENV	BGT, GRA, PRI
3	Create a management plan for the Farm Pond at the Breakneck Hill that includes naturalizing the embankments	STEW	ENV	GRA, PRI

3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Create a signage and parking area repair and maintenance plan for Breakneck Hill Conservation Land that includes new kiosks at the parking areas	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Mow trail to Woodland Road, remove/replace Japanese knotweed and other invasive plant species, and enhance wetland viewing area at Breakneck Hill	STEW	OSPC	BGT, GRA, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI
3	Update the management plan for Town Forest and include a regular schedule for reviewing and revising the plan moving forward	STEW	ENV	BGT, PRI
4	Identify, inventory and map prime agricultural lands and lands with agricultural capability	CON, PLAN		BGT
4	Seek opportunities to network with organic farms, municipal organic farming programs, or other appropriate organic agriculture opportunities	ENV	CON, PLAN	BGT
5	Leverage existing and evolving technology to increase community awareness and engagement about watershed protection, stormwater, and surface water	CON		BGT
5	Create a plan to inventory, map, and protect natural, rare or endangered aquatic species in Town waterways	CON	ENV	BGT

YEAR 3:

Goal	Action	Responsible Party	Partners	Funding
1	Prepare a recreation facility master plan for future improvements	REC		BGT, GRA
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Create an education plan for publicizing conservation options and benefits for private landowners	OSPC		BGT
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Review open space parcel inventory and create process to permanently protect temporary or unprotected dedicated open space	OSPC, PLAN	CON, BOS	BGT, GRA, PRI,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Respond to the needs from inventory of ADA Compliance	TRA, ADA		CPA, GRA

3	Create additional signs and maps to make areas clearly easy to navigate	TRA, REC	CON	BGT, GRA
3	Develop plans to add additional parking facilities at recreational and open space areas, as needed	TRA, REC	CON, OSPC, BOS	BGT, GRA, PRI,
3	Continuously update the website and provide up-to-date information about open space and recreation and related activities/events	TRA, REC	CON, OSPC	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Plan and install ecological garden and roadside wildflower meadow at Breakneck Hill Conservation Land that includes access to water, and goal to provide habitat for bumblebees and other native pollinators	STEW	ENV	BGT, GRA, PRI
3	Create a management plan for the Farm Pond at the Breakneck Hill that includes naturalizing the embankments	STEW	ENV	GRA, PRI
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Create a signage and parking area repair and maintenance plan for Breakneck Hill Conservation Land that includes new kiosks at the parking areas	STEW	OSPC	BGT, GRA, PRI

3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Mow trail to Woodland Road, remove/replace Japanese knotweed and other invasive plant species, and enhance wetland viewing area at Breakneck Hill	STEW	OSPC	BGT, GRA, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI
3	Update the management plan for Town Forest and include a regular schedule for reviewing and revising the plan moving forward	STEW	ENV	BGT, PRI
3	Create a boardwalk installation and maintenance plan for appropriate trails at the Town Forest	STEW	ENV	BGT, PRI
4	Identify, inventory and map prime agricultural lands and lands with agricultural capability	CON, PLAN		BGT
4	Create an education plan for publicizing conservation options and benefits for private farmland owners	OSPC		BGT
4	Seek opportunities to network with organic farms, municipal organic farming programs, or other appropriate organic agriculture opportunities	ENV	CON, PLAN	BGT
5	Leverage existing and evolving technology to increase community awareness and engagement about watershed protection, stormwater, and surface water	CON		BGT
5	Develop plans to identify and designate appropriate protection for Town groundwater and surface water areas	CON	ENV	BGT
5	Create a plan to inventory, map, and protect natural, rare or endangered aquatic species in Town waterways	CON	ENV	BGT

YEAR 4:

Goal	Action	Responsible Party	Partners	Funding
1	Prepare a recreation facility master plan for future improvements	REC		BGT, GRA
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Review open space parcel inventory and create process to permanently protect temporary or unprotected dedicated open space	OSPC, PLAN	CON, BOS	BGT, GRA, PRI,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Respond to the needs from inventory of ADA Compliance	TRA, ADA		CPA, GRA
3	Create additional signs and maps to make areas clearly easy to navigate	TRA, REC	CON	BGT, GRA

3	Develop plans to add additional parking facilities at recreational and open space areas, as needed	TRA, REC	CON, OSPC, BOS	BGT, GRA, PRI,
3	Continuously update the website and provide up-to-date information about open space and recreation and related activities/events	TRA, REC	CON, OSPC	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Plan and install a multi-seasonal bloom mosaic landscape for native pollinators at Southborough Golf Course	OSPC	GOLF	BGT, GRA
3	Plan and install ecological garden and roadside wildflower meadow at Breakneck Hill Conservation Land that includes access to water, and goal to provide habitat for bumblebees and other native pollinators	STEW	ENV	BGT, GRA, PRI
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI

3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI
3	Create a boardwalk installation and maintenance plan for appropriate trails at the Town Forest	STEW	ENV	BGT, PRI
3	Create a signage and parking area plan for Town Forest	STEW	ENV	BGT, PRI
4	Create an education plan for publicizing conservation options and benefits for private farmland owners	OSPC		BGT
4	Seek opportunities to network with organic farms, municipal organic farming programs, or other appropriate organic agriculture opportunities	ENV	CON, PLAN	BGT
5	Develop plans to identify and designate appropriate protection for Town groundwater and surface water areas	CON	ENV	BGT
5	Create a plan to inventory, map, and protect natural, rare or endangered aquatic species in Town waterways	CON	ENV	BGT

YEAR 5:

Goal	Action	Responsible Party	Partners	Funding
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI

2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Respond to the needs from inventory of ADA Compliance	TRA, ADA		CPA, GRA
3	Create additional signs and maps to make areas clearly easy to navigate	TRA, REC	CON	BGT, GRA
3	Develop plans to add additional parking facilities at recreational and open space areas, as needed	TRA, REC	CON, OSPC, BOS	BGT, GRA, PRI,
3	Continuously update the website and provide up-to-date information about open space and recreation and related activities/events	TRA, REC	CON, OSPC	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT

3	Plan and install a multi-seasonal bloom mosaic landscape for native pollinators at Southborough Golf Course	OSPC	GOLF	BGT, GRA
3	Plan and install ecological garden and roadside wildflower meadow at Breakneck Hill Conservation Land that includes access to water, and goal to provide habitat for bumblebees and other native pollinators	STEW	ENV	BGT, GRA, PRI
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI
3	Create a signage and parking area plan for Town Forest	STEW	ENV	BGT, PRI
4	Create an education plan for publicizing conservation options and benefits for private farmland owners	OSPC		BGT
4	Seek opportunities to network with organic farms, municipal organic farming programs, or other appropriate organic agriculture opportunities	ENV	CON, PLAN	BGT
5	Develop plans to identify and designate appropriate protection for Town groundwater and surface water areas	CON	ENV	BGT
5	Create a plan to inventory, map, and protect natural, rare or endangered aquatic species in Town waterways	CON	ENV	BGT

YEAR 6:

Goal	Action	Responsible Party	Partners	Funding
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT

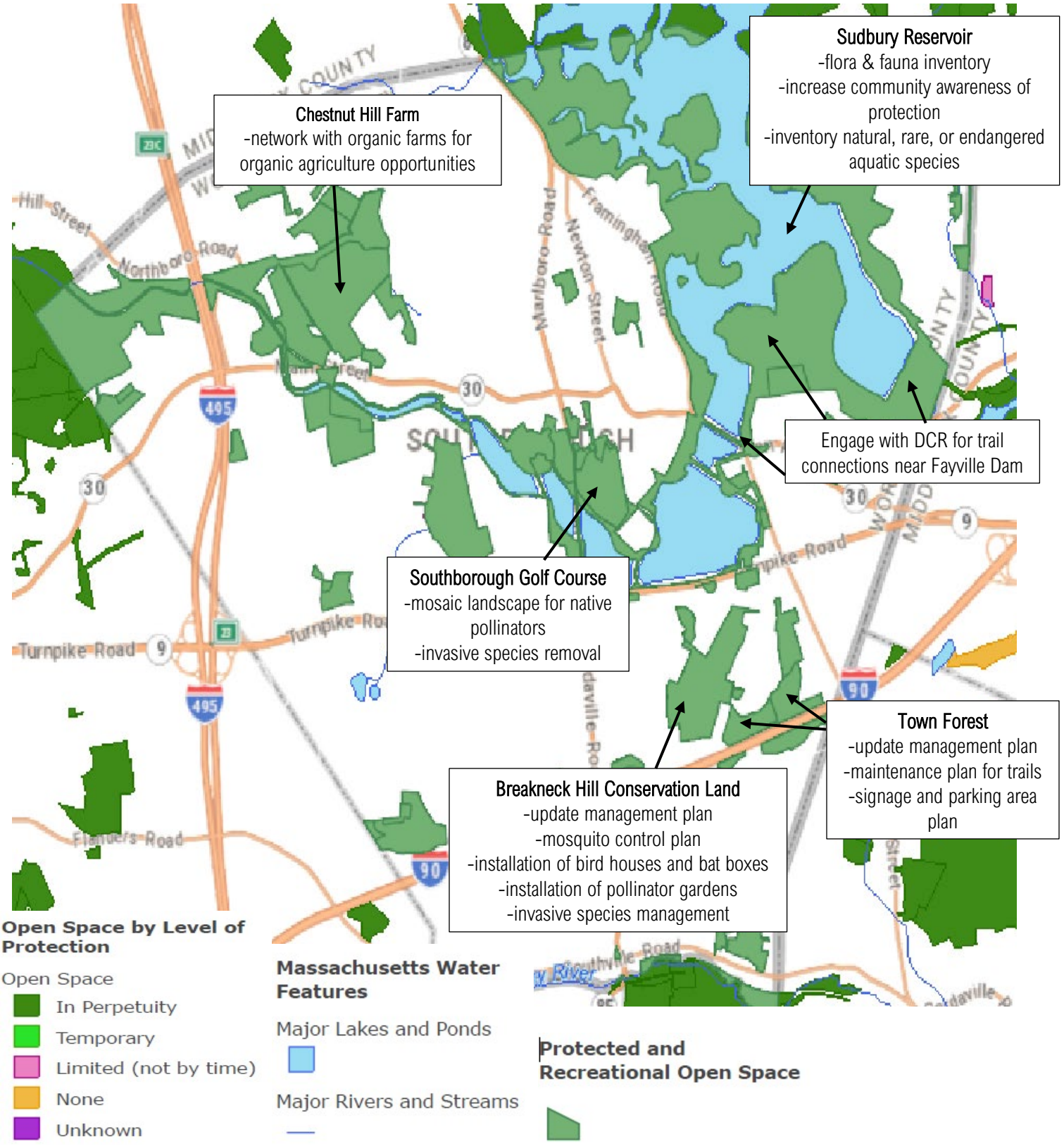
3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Plan and install a multi-seasonal bloom mosaic landscape for native pollinators at Southborough Golf Course	OSPC	GOLF	BGT, GRA
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI

YEAR 7:

Goal	Action	Responsible Party	Partners	Funding
1	Outline budget to continue to maintain existing facilities and fund identified improvements or appropriate new recreation facilities	REC		BGT, GRA, PRI, END
1	Identify opportunities to share recreation facilities with private schools and organizations located in Town	REC	BOS	PRI
1	Seek funding for multi-purpose trail development and connecting sidewalk/crosswalk improvements	REC, TRA		BGT, CPA, GRA
1	Develop website plan managing content creation and updates for all open space and recreation information	CON, REC	OSPC, STEW, TRA	BGT, GRA
2	Work with private landowners to conserve land for conservation and natural resource protection	OSPC	CON	BGT, GRA, PRI
2	Develop a plan and process for permanently protecting identified parcels prior to their sale or development	OSPC	CON, PLAN, BOS	BGT, CPA,
2	Create a process to continually review an update GIS data of protected open space	OSPC, PLAN		BGT
2	Create a plan to inventory and map natural, rare or endangered species in Town	ENV	CON, OSPC	PRI
2	Develop flora and fauna inventories for open space lands and public water bodies	ENV	CON, OSPC	BGT, CPA, GRA
2	Develop zoning regulations that create appropriate permanently protected publicly accessible open space with dedicated access on public roads	PLAN	OSPC	BGT, CPA, GRA
3	Engage with the Department of Conservation and Recreation to amend existing agreement to include 911 Loop Trail & the proposed Peninsula Trail near Fayville Dam	TRA	BOS	BGT
3	Leverage existing and evolving technology to increase community awareness and engagement about open space, trails, and recreation opportunities	TRA, REC	CON, OSPC	BGT
3	Create comprehensive electronic website that detail trails, conservation lands, and facilities	TRA, REC	CON, OSPC	BGT

3	Strengthen partnerships with municipal departments, committees, boards, commissions, other trail organizations, neighboring organizations, state representatives and federal entities as applicable	TRA, REC	CON, OSPC, PLAN, BOS	BGT, GRA
3	Enhance the walkability in Southborough through implementing the recommendations from the Sidewalk Study	TRA, REC	ADA, PLAN	BGT
3	Plan and install a multi-seasonal bloom mosaic landscape for native pollinators at Southborough Golf Course	OSPC	GOLF	BGT, GRA
3	Create and implement comprehensive invasive plant species removal and replacement plan that prioritizes public open space properties; including trails, conservation lands, and facilities	STEW	CON, ENV, OSPC, TRA	BGT, GRA, PRI
3	Create a natural mosquito management plan for Breakneck Hill Conservation Land.	STEW	ENV	BGT, GRA, PRI
3	Update the management plan for Breakneck Hill Conservation Land and include a regular schedule for reviewing and revising the plan moving forward	STEW	OSPC	BGT, GRA, PRI
3	Install birdhouses and bat boxed and create a maintenance plan for annual monitoring of the boxes for Breakneck Hill Conservation Land	STEW	OSPC	BGT, GRA, PRI
3	Research process for funding paid Stewardship staff	STEW	CPC, BOS	CPA, END, BGT, PRI
3	Identify, inventory, and certify qualifying vernal pools within town-owned open space properties	STEW	ENV	BGT, PRI

SEVEN YEAR ACTION PLAN



Section 10: Public Comment

TOWN OF SOUTHBOROUGH

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Melissa Cryan
Executive Office of Energy and
Environmental Affairs
100 Cambridge St. – Suite 900
Boston, MA 02114

RE: 2019 Open Space & Recreation Plan

Ms. Cryan,

The Board of Selectmen has reviewed the conditionally approved document and is in support of the items and actions listed within it. With changes that are happening within our environment, we realize it is important to address issues regarding water quality and land preservation to better preserve the resources that remain.

In conclusion, the Board of Selectmen, at its meeting held on August 18, 2020, voted unanimously in favor of approval of the 2019 Open Space & Recreation Plan.

Sincerely,

Mark J. Purple
Town Administrator

SMART GROWTH AND REGIONAL COLLABORATION

February 12, 2020

Melissa Cryan
Executive Office of Energy and Environmental Affairs
100 Cambridge St. – Suite 900
Boston, MA 02114

Dear Ms. Cryan:

The Town of Southborough's "Open Space and Recreation Plan Update" was recently submitted to the Metropolitan Area Planning Council (MAPC) for review.

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

Consistency with MetroFuture - *MetroFuture* is the official regional plan for Greater Boston, adopted in 2008 in accordance with the requirements of Massachusetts General Law. The plan includes 65 goals and objectives as well as 13 detailed implementation strategies for accomplishing these goals. We encourage all communities within the MAPC region to become familiar with the plan by visiting www.mapc.org/get-involved/metrofuture-our-regional-plan. (We also note that MAPC and its member communities are now in the process of developing a new regional plan, which will look out to 2050, and is accordingly called *MetroCommon 2050*.)

We are pleased to see that the Southborough Open Space and Recreation Plan (OSRP) will help to advance several *MetroFuture* goals and implementation strategies that relate specifically to open space, recreation, agriculture, trails, and the environment generally.

The OSRP also directly recognizes sustainability and climate change as a pressing environmental challenge and several of the OSRP's goals include actions that would enhance the Town's sustainability and build resilience against the present and anticipated effects of climate change. This will be relevant for the ongoing efforts to develop Municipal Vulnerability Preparedness and Local Hazard Mitigation Plans.

Surrounding communities – Several regionally significant protected parks and conservation areas are located within Southborough. The Sudbury Reservoir, which extends northerly into Marlborough, is owned and managed by the Department of Conservation and Recreation (DCR). The Sudbury River runs along the southern boundary of Southborough, along its border with Hopkinton and Ashland. Within Southborough, portions of land adjacent to the river are protected through ownership by land trusts or private conservation organizations, as well as conservation restrictions. We positively note that the OSRP cites prior regional open space planning efforts – specifically the MetroWest Regional Open Space Connectivity Plan – and highlights the importance of continuing to identify and pursue regional open space planning.

The Southborough Open Space and Recreation Plan provides a great deal of detail regarding its parks and open spaces, which includes an assessment of their current condition and future needs. It should serve the Town well as it continues its efforts to preserve open space and provide for the recreational needs of its residents.

MAPC
METROPOLITAN AREA PLANNING COUNCIL

SMART GROWTH AND REGIONAL COLLABORATION

Thank you for the opportunity to review this plan.

Sincerely,

Marc D. Draisen
Executive Director

cc: Melissa Danza, Conservation Agent

Town of Southborough
PLANNING BOARD
17 COMMON STREET
SOUTHBOROUGH, MASSACHUSETTS 01772-1662
508-485-0710

January 31, 2020

Melissa Cryan
Executive Office of Energy and
Environmental Affairs
100 Cambridge St. – Suite 900
Boston, MA 02114

Re: 2019 Open Space and Recreation Plan

Dear Ms. Cryan:

As requested, the Planning Board reviewed the 2019 Open Space and Recreation Plan that has been conditionally approved by the EEA. At their meeting on January 27, 2020, the Planning Board discussed and unanimously agreed (Morris, Mills, Stein, Luttrell, Hoolahan) to support the document.

The Planning Board and Planning Department greatly appreciate the effort set forth by you and the participating review members, Meme Luttrell and Frederica Gillespie, in preparing the updated 2019 Open Space and Recreation Plan.

Sincerely,

Karina G. Quinn, P.E.
Town Planner

Donald C. Morris, Planning Board Chairman

TOWN OF SOUTHBOROUGH

CONSERVATION COMMISSION
TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 281-8984 · FAX (508) 480-0161 · mdanza@southboroughma.com

December 19, 2019

Melissa Cryan
Executive Office of Energy and
Environmental Affairs
100 Cambridge St. – Suite 900
Boston, MA 02114

Subject: 2019 Open Space & Recreation Plan

Ms. Cryan,

The Conservation Commission has extensively reviewed the conditionally approved document and is in support of the items and actions listed within it. As a responsible party on several action items, the Commission is fully aware and willing in progressively working towards their completion.

In the meantime, the Commission has further mapped out their responsibilities and specific tasks and have found that the actions accurately align with the responsibilities and goals of the Conservation Commission. With changes that are happening within our environment, we realize it is important to address many issues regarding water quality and land preservation to better preserve the resources that remain.

In conclusion, the Conservation Commission is in support of the full approval of the 2019 Open Space & Recreation Plan and aim to work consistently and in collaboration with other responsible parties.

Sincerely,

Melissa Danza

Melissa Danza
Conservation Agent

Appendix #1: Open Space and Recreation Plan Survey Results

1. Do you feel there is a need to preserve open space and natural areas in Southborough?		
	Number of Response(s)	**Response Ratio**
Yes	207	97.1%
No	5	2.3%
No Response	1	<1%
Total	213	100%

2. How important is it to you to preserve: 1 = Very Important, 2 = Important, 3 = Neutral, 4 = Less Important, 5 = Not Important					
Top number is the count of respondents selecting the option. Bottom % is the percent of the total respondents selecting the option.	**1**	**2**	**3**	**4**	**5**
Open spaces to protect conservation values such as wildlife habitat, clean air and water, and scenic views.	167 79%	33 16%	6 3%	4 2%	1 0%
Properties of historical value or interest	92 44%	71 34%	33 16%	11 5%	4 2%
Open spaces for aesthetics or passive recreation	115 55%	66 32%	22 10%	6 3%	2 1%
Open space to meet our active recreational needs	119 56%	68 32%	19 9%	2 1%	3 1%
Farmlands and rural landscapes	110 52%	65 31%	25 12%	8 4%	3 1%

3. Which of the following most closely represents your opinion regarding the state of unprotected open space in Southborough?		
	Number of Response(s)	**Response Ratio**
Southborough needs to protect all undeveloped parcels in Town.	61	28.6%
Southborough should only identify key parcels to be permanently protected open space	127	59.6%
Southborough should only consider protecting additional open space when cost is minimal	21	9.8%
Southborough should encourage further development on all presently undeveloped parcels	3	1.4%
No Response	1	<1%
Total	213	100%

4. What actions do you favor to preserve open space? List in preference order.					
Top number is the count of respondents selecting the option. Bottom % is the percent of the total respondents selecting the option.	**1**	**2**	**3**	**4**	**5**
Pursue conservation restrictions	80 39%	57 28%	31 15%	20 10%	19 9%
Town purchase of land	32 15%	31 15%	45 22%	56 27%	43 21%
Donate money to buy land	7 3%	12 6%	34 16%	55 27%	99 48%
Town-supported land acquisition program	34 16%	46 22%	66 32%	53 26%	8 4%
Open space requirements within zoning	54 26%	61 29%	31 15%	23 11%	38 18%

5. Should the Town pursue the increased use of the reservoir for passive recreation?		
	Number of Response(s)	**Response Ratio**
Yes	168	78.8%
No	44	20.6%
No Response	1	<1%
Total	213	100%

6. Are you satisfied the places available in town for active/organized recreational use for children?		
	Number of Response(s)	**Response Ratio**
Yes	137	64.3%
No	74	34.7%
No Response	2	<1%
Total	213	100%

7. Are you satisfied the places available in town for active/organized recreational use for adults?		
	Number of Response(s)	**Response Ratio**
Yes	122	57.2%
No	89	41.7%
No Response	2	<1%
Total	213	100%

8. Are you satisfied with the general condition of the recreational facilities?		
	Number of Response(s)	**Response Ratio**
Yes	164	76.9%
No	47	22.0%
No Response	2	<1%
Total	213	100%

9. Please check your top five recreation priorities:		
	Number of Response(s)	**Response Ratio**
Bike trails	137	64.6%
Children's play areas	85	40.0%
Family picnic areas	53	25.0%
Golf	16	7.5%
Baseball/softball field	22	10.3%
Basketball courts	18	8.4%
Passive recreation trails	157	74.0%
Ice skating	18	8.4%
Large park with many facilities	58	27.3%
Local neighborhood parks	72	33.9%
Recreation/community center	72	33.9%
Soccer fields	45	21.2%
Swimming	66	31.1%
Tennis courts	38	17.9%
Fishing	23	10.8%
Boating (non-motorized)	65	30.6%
Birding	35	16.5%
Skate parks	4	1.8%
Football	2	<1%
Gardening	38	17.9%
Total	213	100%

10. How often do you visit or use the following for recreation during a year? 1 = 101+, 2 = 51-100, 3 = 11-50, 4 = 1-10, 5 = Never					
Top number is the count of respondents selecting the option. Bottom % is the percent of the total respondents selecting the option.	**1**	**2**	**3**	**4**	**5**
Harold E. Fay Memorial Playground (Central St.)	1 0%	7 3%	37 18%	67 33%	92 45%
School Playgrounds (when school is not in session)	3 1%	16 8%	61 30%	71 35%	53 26%
South Union Playground (Art Center)	0 0%	5 2%	22 11%	60 29%	117 57%
School Gyms (when school is not in session)	3 1%	8 4%	15 7%	43 21%	135 66%
Sports fields (baseball, soccer, lax, baseball, etc.)	10 5%	30 15%	45 22%	46 23%	73 36%
Town Forest	4 2%	9 4%	30 15%	88 43%	73 36%
Chestnut Hill Farm	8 4%	9 4%	41 20%	108 53%	38 19%
Breakneck Hill	14 7%	18 9%	46 23%	85 42%	41 20%
Beals Preserve	15 7%	9 4%	30 15%	84 41%	66 32%
Trails	15 7%	20 10%	48 24%	87 43%	34 17%

11. What attracted you to Southborough?
12. How long have you lived in Town?

	Number of Response(s)	Response Ratio
1 – 10 years	78	37.2%
11 – 20 years	57	31.1%
21 – 30 years	35	51.4%
More than 31 years	41	27.8%
Total	212	100%
Proximity to work	66	31.1%
Great commuting location	109	51.4%
Prestige of town	59	27.8%
Private schools	5	2.3%
Open space	83	39.1%
Quality of life	99	46.6%
Picturesque town	92	43.3%
Recreation facilities	6	2.8%
Recreation programs	10	4.7%
Rural character	109	51.4%
Total	212	100%

13. What is your age?

	Number of Response(s)	Response Ratio
20-30	3	1.4%
31-40	46	21.5%
41-50	79	37.0%
51-60	43	20.1%
60+	41	19.2%
No Response	1	<1%
Total	212	100%

Appendix 2: Report of the Sidewalk Construction Recommendation Committee

TOWN OF SOUTHBOROUGH

REPORT OF THE SIDEWALK CONSTRUCTION RECOMMENDATION COMMITTEE

1. **Our Mission:**
   The mission of the 2015 Southborough Sidewalk Construction Recommendation Committee is to develop an impartial review and evaluation for identifying streets that have a need for the construction of a new sidewalk. During this process we considered many factors, including but not limited to: Town destinations, ease of construction, environmental impacts, drainage impacts, right-of-way needs, connectivity, etc. More specifically, the Board of Selectmen charged us with the following:

   - Review plans of the Town that indicate "through" streets and sidewalk locations;
   - Develop a list of walking destinations;
   - Create a list of streets where sidewalks would be utilized using the destination list;
   - Develop a list of criteria to prioritize the need for sidewalks; and
   - Prioritize the list of streets based on the criteria developed so the DPW can work toward funding and constructing the priority sidewalks

   The following sections provide more information on **Our Committee**, **Our Process**, and **Our Recommendations**.

2. **Our Committee:**
   The committee was made up of seven members, six were appointed by the Board of Selectmen. The following provides a list of the seven members and their associated committee title.

   - Recreation Director (Doreen A. Ferguson, Vice Chair);
   - One (1) Public Safety Official (Joseph C. Mauro, Fire Chief) ;
   - One (1) member of the Public Works Planning Board (Susan G. Baust, Secretary);
   - One (1) member of the Council on Aging (Bill Harrington);
   - Two (2) Citizens-At-Large (Matthew J. Chase – Chair; and Robert B. Bezokas);
   - One (1) member of the Southborough School System, appointed by the School Superintendent (James Randell, Principal Mary E Finn School); and
   - DPW Superintendent (Karen Galligan, Ex-Officio)

   This Committee worked closely with the DPW Superintendent during this process to develop a comprehensive document that ranks streets based on ten evaluation criteria. The criteria were developed in a manner to assess priorities that should be considered when

evaluating the need for a new sidewalk. The final product developed was an integrated MS Excel evaluation matrix that assesses each street against the selected criteria. The next section describes **Our Process**.

3. Our Process

The Committee developed an Evaluation Matrix to prioritize projects, or "through" streets that justify the need for a sidewalk today and/ or in the future. The criteria that was developed included ten (10) categories where each category received a ranking score between one (1) and ten (10); therefore, the total score for all categories would not exceed 100. In addition, the functional classification of each street was identified. The functional classifications aided the Committee in determining the streets that likely have the highest traffic demand, pedestrian demand, conflict points, etc. The following provides more details on the terms used in our evaluation matrix. The matrix has been attached to this summary and has been provided in an electronic format (excel) to DPW.

Functional Classification: The functional classification noted in the matrix is defined as: Arterial (A), Collector (C), or Local Roadways/ Streets (L). In general, Arterials typically carry more traffic than a Collector since they connect regional destinations. Collectors typically carry more traffic than a Local Street since they connect local/ Town destinations. Local Streets typically have the greatest number of access points/ driveways and serve residential neighborhoods and connecting to Collectors or Arterials. It is noted that there are always exceptions to this rule where Collectors could carry more traffic than Arterials or Local Streets could carry more traffic than Collectors; etc.

Categories: Each category number 1 through 10 in the matrix was assigned a score between 1 and 10. Each Committee member determined a score and through discussions at several of our meetings, the Committee determined the most appropriate score for each category of each street. The total score would be the sum of all 10 categories for a possible score of 100. This total score was used to prioritize the need for the streets identified in the matrix. It is noted that there is a potential for some streets to have the same score. The following summarizes how the scoring of each category works:

1. Traffic Volumes: Streets that carry more traffic could have more opportunities for pedestrian-vehicle conflicts. The higher the score, the higher the amount of traffic.

2. Pedestrian Activity: Is there known pedestrian activity on the street today, are there pedestrian foot paths along the side of the street, etc.? The higher the score in this category indicates that there is a good amount of pedestrian activity.

3. Safety: Does the street have known safety concerns or has there been a number crashes along the street? Is there limited sight distance (vertical or horizontal curves in the street) or high vehicle-speeds? The higher the score, the more issues known.

4. Available Right-of-Way: Is the right-of-way wide enough to accommodate a sidewalk(s), or will property acquisitions and easements be needed? A higher score in this category indicates that right-of-way is NOT likely needed and sidewalks can be accommodated fairly easily.

5. Connections to Destinations: Does the street lead to/ from destinations in Town, or is the street a designated walkway for Town activities, emergency routes, etc.? A high score in this category indicates connections are of significant importance.

6. Connectivity: Is there a sidewalk already on the street today, or would providing a sidewalk make a connection to another street that already has a sidewalk. Improving sidewalk connectivity by constructing a new sidewalk would warrant a high score for this category.

7. Environmental Impacts: Are there environmental impacts associated with the construction of a sidewalk? A high score in this category would indicate that there are NOT any environmental impacts, while a low score would indicate environmental impacts could be expected.

8. Construction Challenges: Are there other challenges when constructing a sidewalk; for example, would the proposed sidewalk abut a stone wall, or does the street have a narrow cross section, thus providing minimal clearances from obstructions or vehicles? Are utility poles to be located within the sidewalk;

which could limit the ability to meet ADA requirements? Does street drainage become an issue with a new sidewalk and associated curb? A high score indicates that there are likely minimal challenges during construction.

9. Conforms to Town Goals: Goals and Visions have been identified in past studies throughout the community. For example, the Town's Master Plan. Has the street been identified as part of a previous goal or vision where improvements are needed? If the street is part of another plan, this category would receive a higher score. It is noted that for this category all streets received a score of five, since is was difficult to identify whether one street conformed to Town goals more so than another.

10. Future Need: Are there any known future developments or potential developments that might warrant consideration of a sidewalk? Areas where land could be redeveloped could be of concern, thus a higher score would be considered in this category.

4. Our Recommendations

The matrix that was developed can be sorted by each category or by the total score of all 10 categories. At the end of our scoring, the streets were ranked and sorted based on their ranking. In developing our rankings, the following construction guidelines were discussed and considered:

- Sidewalks should generally be 6-feet wide (including a 6-inch curb) unless there is some constraint that would prohibit this width; however, all applicable ADA requirements shall be met.

- The street cross section should be of sufficient width to accommodate user demand and provide adequate buffers between sidewalks, shoulders, travel lanes, and obstructions such as walls, utility poles, mail boxes, etc. In general, it was decided that the ideal street width to accommodate shoulders for bicycles and travel lanes for cars is 32-feet (5-foot shoulders and 11-foot travel lanes). In some instances, and dependent on the functional classification of the street, etc., the street cross section could be reduced to 26-feet (13-foot shared travel lanes and shoulders).

- Generally, to reduce costs, sidewalks and curbs could be constructed of asphalt; however, certain publicly important areas, such as, downtown and other high visibility areas could include other construction materials, such as concrete, and granite curbing as funding allows.

The following provides a snap shot of the top 10 streets from the matrix table. It is noted that costs associated for each location were not developed, as limited "plan" information was available and the Committee needed to complete this assignment by January 4, 2016. Preparing cost estimates would have significantly increased the amount of time to complete this assignment.

		Sidewalk Construction Recommendation Committee, Evaluation Matrix												
Street Name	***Functional Classification***	***1. Traffic Volumes***	***2. Pedestrian Activity***	***3. Safety***	***4. Available Right-of-Way***	***5. Connects to Destination***	***6. Connectivity***	***7. Environmental Impacts***	***8. Construction Challenges***	***9. Conforms to Town Goals***	***10. Future Need***	***Total Score (out of 100)***	***RANKING***	***Notes***
Marlboro Rd (Rte 85), north of Rte 30	A	9	9	9	9	9	9	8	8	5	1	76	1	Sidewalk on/ north of RR bridge
Newton Street	A	7	6	7	8	8	9	8	7	5	9	74	2	
Cordaville Rd (Rte 85), south of Rte 30 north of Rte 9 (causeway excluded)	A	9	6	9	9	8	8	9	9	5	1	73	3	
Oak Hill Road	A	5	7	9	8	8	8	8	7	5	5	70	4	
Richards Road (east)	C	7	7	6	8	9	8	8	8	5	1	67	5	
Clifford Street	C	5	8	9	8	8	5	6	6	5	5	65	6	
Main Street (west of Sears Rd)	A	9	6	8	9	5	6	8	8	5	1	65	6	State Owned
School Street	L	3	8	6	6	7	9	8	4	5	7	63	8	
Flagg Road	C	5	9	9	7	6	1	6	5	5	9	62	9	
Latisquama Road	C	3	9	6	8	9	7	8	6	5	1	62	9	
Parkerville Rd (south Rte 9, north I-90)	C	5	9	7	9	8	5	6	7	5	1	62	9	

As seen in the image above, Marlboro Road (Route 85, north of Route 30) received the highest score out of all the streets reviewed. Notes were added where appropriate to call out important information that the reader should be aware of. As previously noted, the matrix can be sorted based on street name, any of the ten categories, total score or ranking. Additional engineering is needed to determine more specific impacts and construction costs. It is noted that Main Street (west of Sears Road) was added by the

Committee for future consideration and coordination with MassDOT.

This Committee recommends this criteria and associated ranking matrix be adopted for current use in evaluating sidewalk construction, and for future use in prioritizing how funding limited tax dollars should be spent to improve Southborough's sidewalk network.

For the Committee,

Matthew J. Chase, PE, PTOE
Committee Chair

		Sidewalk Construction Recommendation Committee, Evaluation Matrix												
Street Name	*Functional Classification*	*1. Traffic Volumes*	*2. Pedestrian Activity*	*3. Safety*	*4. Available Right-of-Way*	*5. Connects to Destination*	*6. Connectivity*	*7. Environmental Impacts*	*8. Construction Challenges*	*9. Conforms to Town Goals*	*10. Future Need*	*Total Score (out of 100)*	*RANKING*	***Notes***
Marlboro Rd (Rte 85), north of Rte 30	A	9	9	9	9	9	9	8	8	5	1	76	1	Sidewalk on/ north of RR bridge
Newton Street	A	7	6	7	8	8	9	8	7	5	9	74	2	
Cordaville Rd (Rte 85), south of Rte 30 north of Rte 9 (causeway excluded)	A	9	6	9	9	8	8	9	9	5	1	73	3	
Oak Hill Road	A	5	7	9	8	8	8	8	7	5	5	70	4	
Richards Road (east)	C	7	7	6	8	9	8	8	8	5	1	67	5	
Clifford Street	C	5	8	9	8	8	5	6	6	5	5	65	6	
Main Street (west of Sears Rd)	A	9	6	8	9	5	6	8	8	5	1	65	6	State Owned
School Street	L	3	8	6	6	7	9	8	4	5	7	63	8	
Flagg Road	C	5	9	9	7	6	1	6	5	5	9	62	9	
Latisquama Road	C	3	9	6	8	9	7	8	6	5	1	62	9	
Parkerville Rd (south Rte 9, north I-90)	C	5	9	7	9	8	5	6	7	5	1	62	9	
Route 30, Meadow St to Framingham Rd	A	9	4	9	9	8	9	5	2	5	1	61	12	
Woodland Road (south of I-90)	C	5	7	7	9	6	5	7	8	5	1	60	13	
Framingham Road	A	7	2	8	9	5	5	9	9	5	1	60	13	
Marlboro Rd (west of Framingham Rd)	C	9	7	7	9	3	1	9	9	5	1	60	13	
Cordaville Rd (Rte 85), south of Rte 30 north of Rte 9 (causeway included)	A	9	6	9	5	8	8	6	2	5	1	59	16	Rte 9 Int State Owned
Deerfoot Rd (north of Clifford Street)	C	5	8	9	8	8	5	5	4	5	1	58	17	
Highland Street	L	3	7	6	6	8	7	6	8	5	1	57	18	
Mt Vickery Road (east of Route 85)	L	3	6	9	6	7	5	6	4	5	5	56	19	
Sears Road	L	3	7	9	8	5	5	6	6	5	1	55	20	
Northboro Road	A	7	3	7	9	2	1	8	8	5	5	55	20	
General Henry Knox Road	L	3	4	5	9	5	5	9	9	5	1	55	20	
Middle Road (north of Route 9)	L	5	7	7	7	9	5	4	4	5	1	54	23	
Atwood Street	L	3	7	7	6	7	7	6	5	5	1	54	23	
Chestnut Hill Road	L	5	5	7	8	6	1	6	4	5	7	54	23	
John Matthews Road	L	3	4	4	9	5	5	9	9	5	1	54	23	
Breakneck Hill Road	C	5	5	9	6	7	1	6	4	5	5	53	27	
Pine Hill Road	C	5	5	9	6	1	3	6	4	5	9	53	27	
Mt Vickery Road (west of Route 85)	L	3	6	9	9	7	5	4	4	5	1	53	27	
White Bagley Road	C	5	6	8	9	6	5	4	4	5	1	53	27	
Fisher Road; Schipper Farm Lane Rd to Marlborough	C	7	6	6	9	1	5	6	6	5	1	52	31	
Parmenter Road	C	5	3	9	8	1	1	4	6	5	9	51	32	
Gilmore Road	L	3	4	8	8	4	5	4	4	5	5	50	33	
Jericho Hill Road	C	5	2	7	8	1	1	8	8	5	5	50	33	
Woodland Road (north of I-90)	C	5	4	7	8	4	1	6	8	5	1	49	35	
Deerfoot Rd (south of Clifford St, north of Rte 9)	C	5	6	7	6	6	1	4	6	5	1	47	36	
Middle Road (south of Route 9)	L	5	6	7	8	4	1	5	5	5	1	47	36	
Johnson Road	A	7	3	5	9	2	1	8	6	5	1	47	36	
Oregon Road	L	5	5	8	6	2	1	4	4	5	5	45	39	
Woodbury Road	L	3	5	7	8	3	5	4	4	5	1	45	39	
Route 30, Framingham Town Line to Meadow St	A	9	2	9	6	2	1	5	4	5	1	44	41	State Owned
Lovers Lane	L	3	5	9	8	2	1	4	4	5	1	42	42	
Acrebridge Road	C	7	1	6	8	4	1	4	4	5	1	41	43	
Lynbrook Road	L	3	5	5	9	2	1	6	4	5	1	41	43	State Owned
Edgewood Road	L	3	5	6	8	3	1	4	4	5	1	40	45	
Deerfoot Rd (south of Route 9)	C	5	1	7	8	1	1	5	4	5	1	38	46	
Meadow Lane; Rte 30 to Kallander Dr	L	3	3	3	6	1	1	9	6	5	1	38	46	
Valley Road	L	3	3	7	6	3	1	4	4	5	1	37	48	
Willow Street	L	3	2	8	6	2	1	4	1	5	1	33	49	

Appendix #3: BioMap 2 Southborough Town Report

BioMap2

CONSERVING THE BIODIVERSITY OF MASSACHUSETTS IN A CHANGING WORLD

Southborough

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 <u>not</u> intended for use in state regulations.

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife

The Nature Conservancy
Protecting nature. Preserving life.™

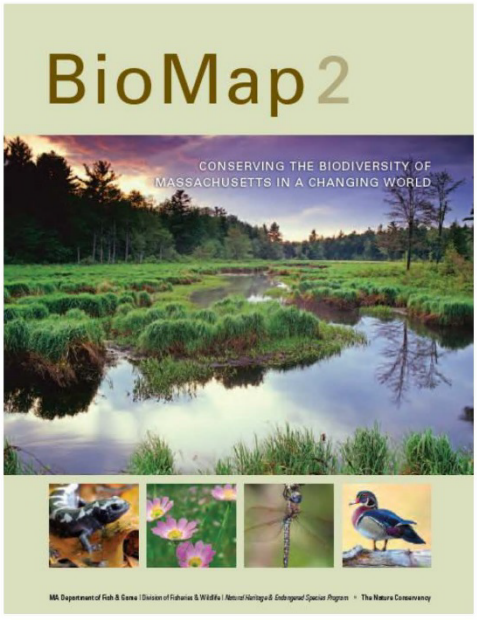
Table of Contents

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.



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

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.
- 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

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
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For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.

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 Habit 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 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.

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 http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/.

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.**

Natural Heritage & Endangered Species Program

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

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.mass.gov/nhesp.

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.mass.gov/nhesp. 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.

Town Overview

Southborough lies within the Southern New England Coastal Plains and Hills Ecoregion, an area 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.

Southborough at a Glance

- Total Area: 9,935 acres (15.5 square miles)
- Human Population in 2010: 9,767
- Open space protected in perpetuity: 2,826 acres, or 28.4% percent of total area*
- *BioMap2* Core Habitat: - acres
- *BioMap2* Core Habitat Protected: - acres or (999.0)%
- *BioMap2* Critical Natural Landscape: 1,358 acres
- *BioMap2* Critical Natural Landscape Protected: 1,209 acres or 89.0%.

BioMap2 Components

Critical Natural Landscape

- 1 Landscape Block

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

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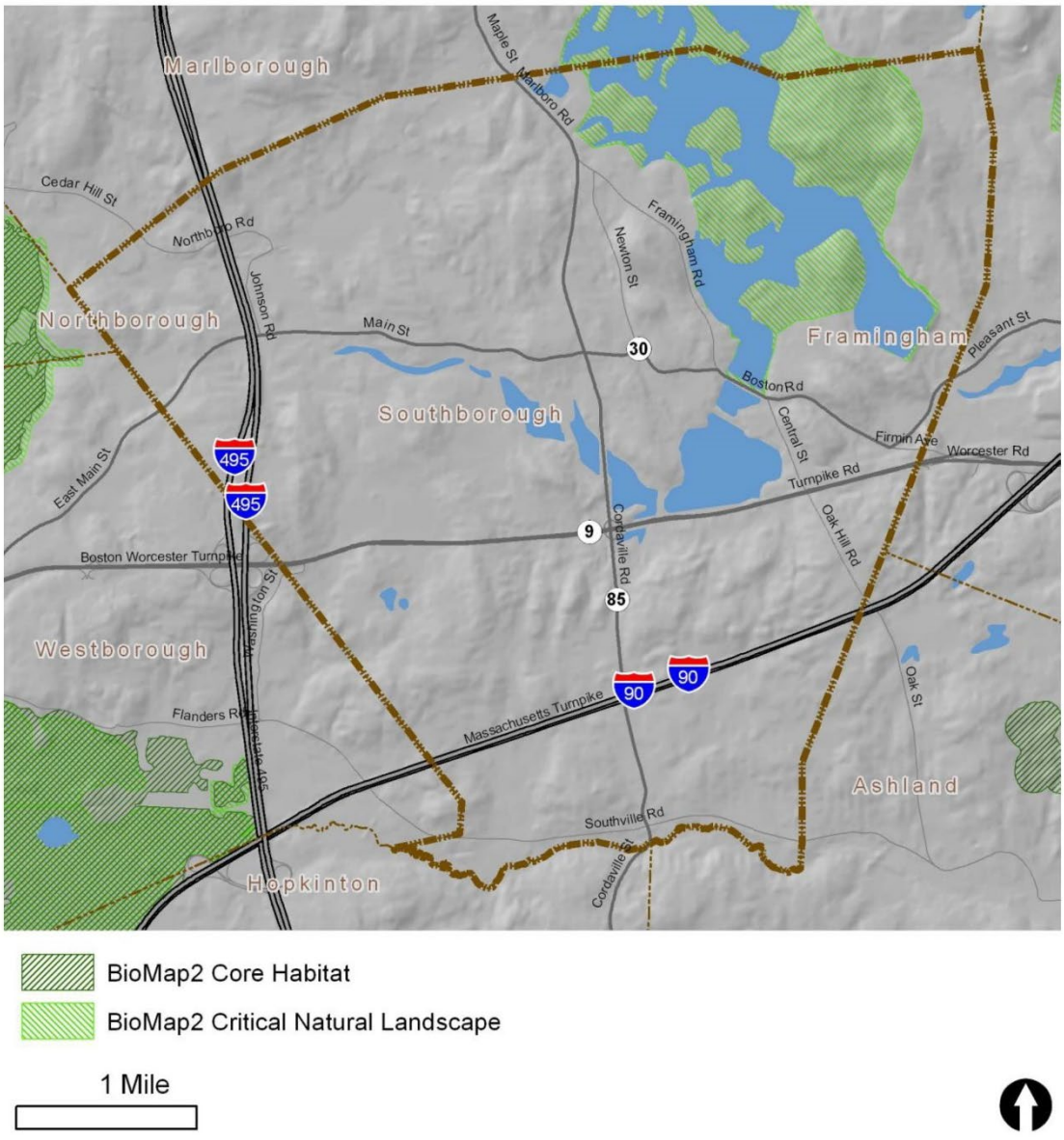
BioMap2 Core Habitat and Critical Natural Landscape in Southborough



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

Other *BioMap2* Components

Landscape Block

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.

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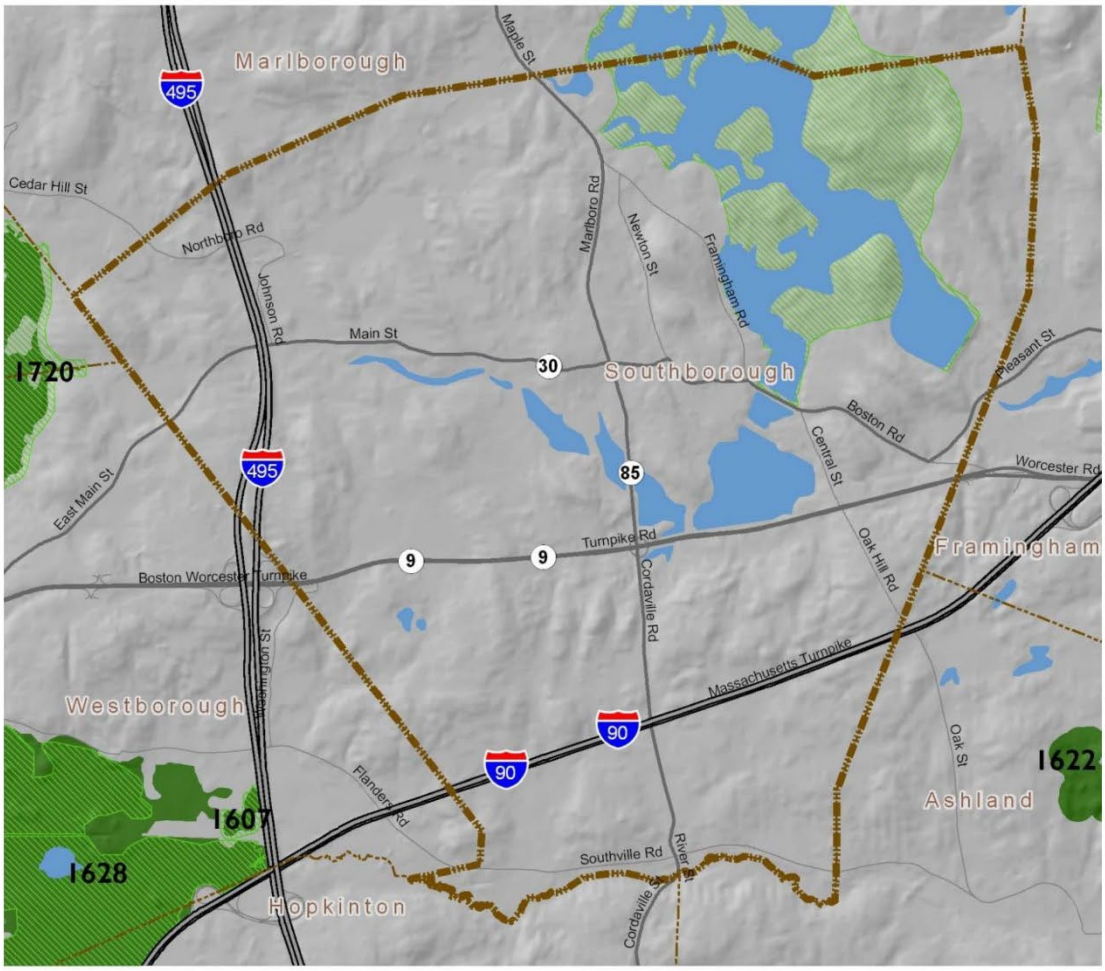
BioMap2 Core Habitat in Southborough

Core IDs correspond with the following element lists and summaries.



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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

Elements of *BioMap2* Cores

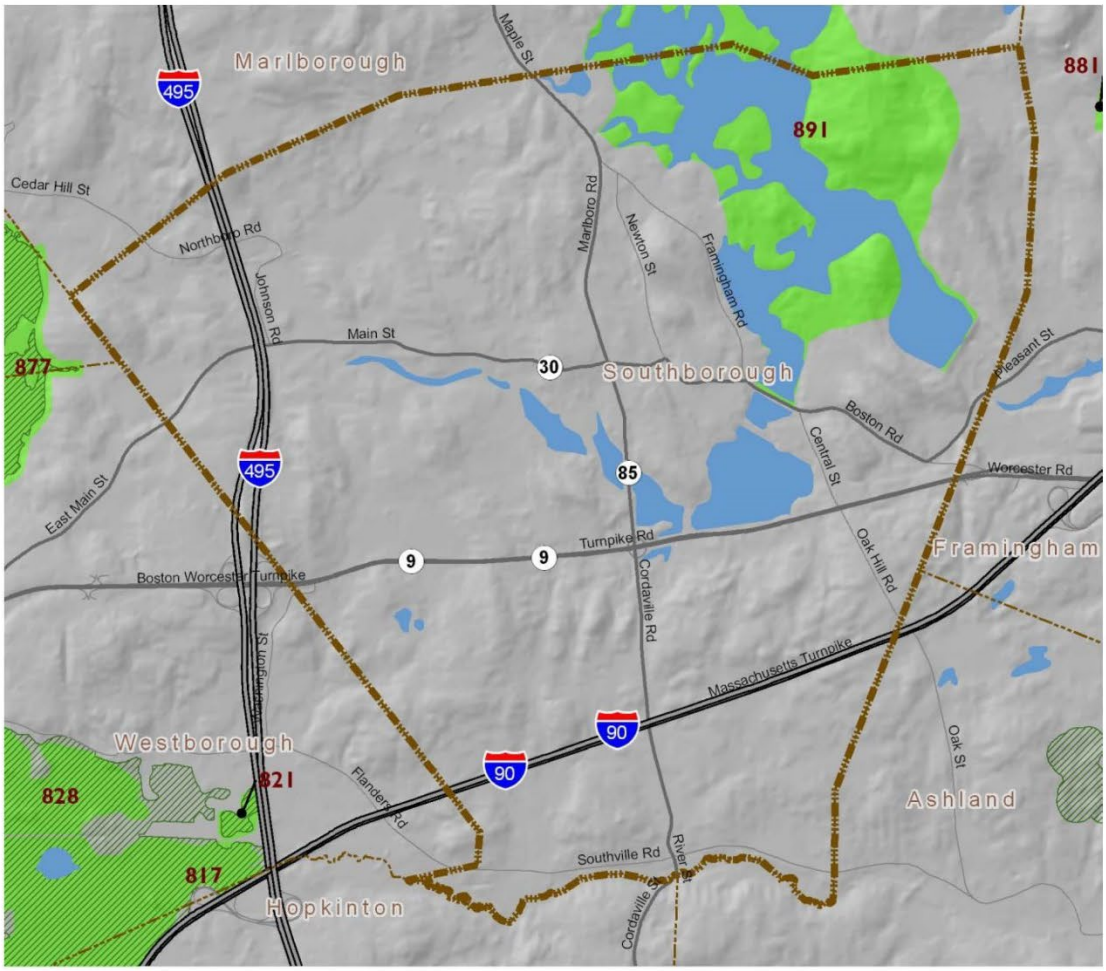
There are no *BioMap2* Cores that fall within Southborough.

Core Habitat Summaries

There are no *BioMap2* Cores that fall within Southborough.

BioMap2 Critical Natural Landscape in Southborough

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



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

Elements of *BioMap2* Critical Natural Landscapes

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

CNL 891

Landscape Block

Critical Natural Landscape Summaries

CNL 891

A 1,852-acre Critical Natural Landscape featuring Landscape Block.

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.

Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the

Natural Heritage &
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program
and the Commonwealth's rare species, visit our web site at www.mass.gov/nhesp.

Appendix #4: NHESP Southborough Letter

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Jack Buckley, *Director*

January 21, 2016

Helmi Hunin & Allison Gramolini
c/o The Conway school
332 South Deerfield Rd
PO box 179
Conway, MA 01341

Via email: hunin16@csld.edu

Re: Open Space and Recreation Plan; Town of Southborough
NHESP File # 16-35222

Dear Ms. Hunin and Ms. Gramolini:

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

Based on the BioMap2 analysis and information discussed below, NHESP recommends land protection in the BioMap2 cores or protecting lands adjacent to existing conservation land – or, best, a combination of both when feasible. All of the areas discussed below are important for biodiversity protection in Southborough. The species of concern observed in Southborough are associated with wetlands and streams, so these are some of the most important areas to protect in this town.

Southborough has a number of Protected Open Space areas, owned by a variety of Conservation organizations. The largest is the land protected by DCR related to the Sudbury Reservoir, providing a greenway and protection to an assortment of wetlands literally crossing through the town. This provides a good building block of protected land and other areas have been protected adjacent to it (see Figure 1, attached).

Enclosed at the end of this letter is a list of rare species and natural communities known to occur or have occurred in Southborough. This list and the list in BioMap2 differ because this list and discussion include all of the uncommon aspects of biodiversity in Southborough that NHESP has documented and BioMap2 focused on occurrences with state-wide significance and included non-MESA listed species of conservation interest from the State Wildlife Action

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www.Mass.gov/NHESP

Plan (SWAP). In addition, the NHESP database is constantly updated.

In early 2013 we sent each town copies of its *BioMap2* Town Report which were developed to provide local biodiversity information to assist in conservation efforts at the town or regional level. We encourage inclusion of the town BioMap2 report and fact sheets on its components in the OSRP; they are available at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/biomap2-town-reports.html. The BioMap2 components relevant to Southborough are BioMap2 Critical Natural Landscape (CNL)_Landscape_Blocks. The components are described in full in the BioMap2 summary report: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/biomap2-overview-and-summary.html. [Please note that all of NHESP's web addresses changed in 2013; web addresses in publications from before June 2013, including inside the BioMap2 report, will not work properly.] I encourage you to download species, natural community, and BioMap2 fact sheets from our website to include in the OSRP with the species list and BioMap2 discussion: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/land-protection-and-management/biomap2/biomap2-overview-and-summary.html. For the spotted turtle, a delisted species, see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/non-listed-species-of-conservation-interest.html. Fact sheets for natural communities can be found at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/natural-communities/natural-community-fact-sheets.html .

There are records of three uncommon species of turtles (Eastern Box, Wood and Spotted Turtle) in Southborough. Protecting all types of wetlands and their surrounding forests and other uplands enhances the habitats of Wood and Spotted Turtle as well as other wetland species, and protects water quality. All three turtle species nest in sandy upland areas and are susceptible to becoming road kill when they move among parts of their habitats. Loss of only a few adults annually can cause populations to decline because of turtles having low replacement rates due to low nest and juvenile survivorship.

The Eastern Box Turtle (SC) is a terrestrial turtle, inhabiting many dry and moist woodland habitats. Habitat for Wood turtles (SC) is streams and rivers, preferably with long corridors of undeveloped, connected uplands extending on both sides of the waterways. Strong populations of Spotted Turtles (Delisted, but included in the 2015 State Wildlife Action Plan as a Species of Conservation Concern) in good habitat – large, unfragmented, protected open space – continue to be of interest to conservation. Spotted Turtles favor wetlands and adjacent forests, and open sandy areas for nesting. They are often associated with vernal pools.

Southborough has one known uncommon plant species. The aquatic plant Featherfoil, *Hottonia inflata*, (Watch List) has submerged feathery leaves and white flowers that rise above the water on a spongy inflated stalk. It grows in quiet backwaters, and pools in streams and swamps.

Southborough has 8 Certified Vernal Pools (CVPs) and 64 Potential Vernal Pools (PVPs) (identified from aerial photographs, needing verification on the ground). It appears that 5 of the CVPs were originally mapped as PVPs, which have been verified. In addition, areas of swamps will provide habitat for many vernal pool species. Southborough's certified vernal pools and potential vernal pools are illustrated on the included Figure 1. Clusters of vernal

pools provide particularly good habitat for species that depend on vernal pools for habitat. The clusters mean that there are alternate habitats if something happens to one pool, and slightly different conditions in each may provide different habitats for pool dependent species. Visiting and evaluating PVPs for certification would provide more protection to these wetlands and the species that use them. Information on certifying vernal pools can be found at: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/vernal-pools/.

NHESP would appreciate all observations of any of the above species or other rare or uncommon animals, plants, vernal pools or natural communities be reported to us, either on paper forms or through the VPRS system (Vernal Pool and Rare Species reporting system), which can be accessed from our website: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/.

The BioMap2 Contributing Natural Landscapes are particularly valuable in ecological terms, and important to the conservation of a variety of species. Completing conservation protection of unprotected land in those areas would enhance the viability of these special areas - size and continuity of open space is particularly important for supporting wildlife populations. Preventing habitat fragmentation is vital in protecting the ecosystem, for the rare species on the enclosed list, as well as for additional common species. Some polygons of both aspects of BioMap2 extend into other municipalities which then provide opportunities to protect large unfragmented areas that will provide the best opportunities to limit further species loss from the Town and region. The BioMap2 Core and CNL polygons are available from MassGIS, and can be viewed at an interactive application to see the broad outlines of the polygons in each Town: http://maps.massgis.state.ma.us/dfg/biomap2.htm.

BioMap2 is more up to date than BioMap and Living Waters, which it replaces. BioMap2 and the original BioMap and Living Waters projects are focused on conservation and intended to be planning tools. They include non-regulated components of biodiversity and include broader areas than do the regulatory maps that NHESP also produces. Estimated Habitat maps are created for use under the Wetlands Protection Act and Priority Habitat maps for use under the Massachusetts Endangered Species Act. These two sets of maps are created for regulatory use, shown in the *Natural Heritage Atlas* (the 2008 Atlas, the 13th edition is the current edition still). Note that Estimated Habitat is a complete subset of Priority Habitat: that is, Estimated Habitat shows a subset of wetland wildlife species' habitats also shown in Priority Habitat with the current habitats of the entire MESA list. These data layers are available from MassGIS, requiring access to some form of GIS to view them (or one can use the on-line viewing tool Oliver at MassGIS) at http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/layerlist.html#ConservationRecreation. Town commissions and boards are encouraged to request the assistance of the Natural Heritage and Endangered Species Program in reviewing any project proposed in the habitat areas of the regulatory areas of the maps in the *Natural Heritage Atlas*.

Much of the BioMap2 Contributing Natural Landscape is already protected by the DCR Sudbury Reservoir, though a portion in the northeastern portion of town remains unprotected and may be a good area to target.

Management and monitoring of conservation lands become important as acquisition and protection are accomplished. All wetlands particularly need to maintain their natural water regime, including normal fluctuations and connections with the uplands and other wetlands. Water quantity and quality are ongoing issues for wetlands. Another aspect of managing

conservation lands that is important in many areas is controlling invasive non-native species that alter the habitat and occupy space that native species would otherwise use. We strongly recommend monitoring conservation land, and removing non-native species before they become a problem and impact native species.

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

Please do not hesitate to contact me at (508) 389-6390 or by email at karro.frost@state.ma.us if you have any questions.

Sincerely,

Karro A. Frost

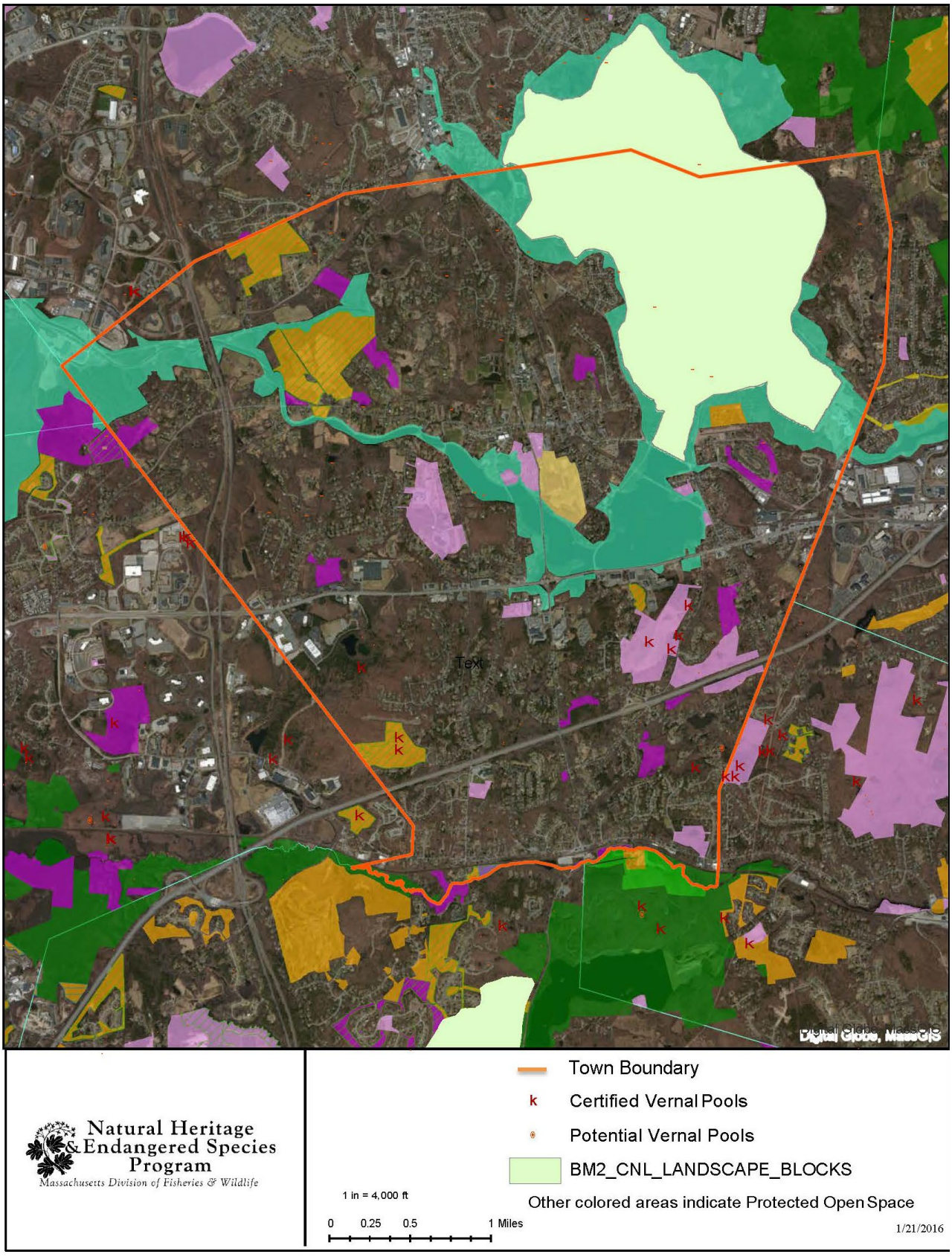
NHESP Conservation Botanist

cc: Melissa Cryan, EOEEA, DCS

TABLE 1: List of Southborough Rare Species and Communities

Taxonomic Group	Scientific Name	Common Name	MESA status	Most Recent Obs.
Reptile	*Glyptemys insculpta*	Wood Turtle	SC	1985
Reptile	*Terrapene carolina*	Eastern Box Turtle	SC	2003
Plant	*Hottonia inflata*	Featherfoil	WL	2002
Reptile	*Clemmys guttata*	Spotted Turtle	SWAP only	1985
Community	*Certified Vernal Pool*	8		
	Potential Vernal Pools	64		

Figure 1: Town of Southborough Open Space and Recreation Plan



Appendix #5: Mass Audubon Southborough Study

Mass Audubon
Protecting the Nature of Massachusetts

Priority Sites for
Wildlife Habitat Protection
in Southborough, Massachusetts

Prepared

August 2007

(Revised January 2008 and July 2008)

for the

Southborough
Community Preservation Committee

By

Massachusetts Audubon Society
Ecological Extension Service
Jeffrey Collins, Director

Ecological Extension Service
Massachusetts Audubon Society
208 South Great Road
Lincoln, Massachusetts 01773

781 259 2159
781 259 2359 (fax)

This project was made possible with funding from Southborough's Community Preservation Act. This was a project of Southborough's Community Preservation Committee with the oversight and review of the Southborough Open Space Preservation Commission.

This report has no regulatory authority. The report is for informational purposes only. This report contains no stated or implied intent to regulate what can or can't be done on any property identified in the report as containing significant wildlife habitat. This report does not restrict the developmental potential of any property listed. However, the development potential of properties listed may be restricted by regulation independent of this report; for example the Massachusetts Wetlands Protection Act, Southborough Wetlands Protection Bylaw or Southborough Zoning Code.

Mass Audubon works to protect the nature of Massachusetts for people and wildlife. Together with more than 100,000 members, we care for 32,000 acres of conservation land, provide educational programs for 200,000 children and adults annually, and advocate for sound environmental policies at local, state, and federal levels. We are the largest conservation organization in New England. Our statewide network of 45 wildlife sanctuaries welcomes visitors of all ages and serves as the base for our conservation, education, and advocacy work. Through the Ecological Extension Service, Mass Audubon is able to share with conservation partners our broad experience in natural resource inventory and conservation land management based on the work we do on our own wildlife sanctuaries.

Introduction

This report proposes wildlife habitat conservation priorities in Southborough, Massachusetts. Of the many reasons to protect land from development – recreation, aesthetics, town character, drinking water protection, flood prevention, etc. – this analysis focuses on those parts of town that, through their natural condition, location, landscape characteristics, and/or history of hosting unusual species are particularly valuable as habitat. Land protected primarily for its habitat value almost always retains other values; and enhancing habitat value – by increasing contiguous area and building corridors, for example – produces concomitant gains in other values. A land protection strategy built around protection of habitat can fulfill long-term goals for passive recreation, town character, and water resource protection.

This report calls specific attention to landscape features and habitat areas which should be the cores of future protection efforts, and uses lot lines to identify actual parcels that should be conservation priorities. While the conclusions of this analysis should not be considered definitive, this objective analysis can support local knowledge in setting priorities. Future on the ground studies will further differentiate protection priorities.

The importance of this project lies in the threats to wildlife habitat currently posed by development. Mass Audubon and others have identified habitat destruction and fragmentation as the two most damaging processes currently affecting the nature of Massachusetts. Southborough is on the front lines of a wave of residential development radiating along major routes driven by many factors, including commercial development along the highways. Mass Audubon's 2003 report on development patterns, *Losing Ground: At What Cost*, the third edition of a series, maps Southborough in the "sprawl frontier" west of Boston. Census figures from 2000 and updated land use interpretation data demonstrate clearly that development is a major threat.

According to the Federal Census, between 1990 and 2000 the population of Southborough grew by 32.5%, from 6,628 to 8,781 residents. Within roughly the same time period (1985 – 1999), the amount of developed land increased from 2,665 acres to 3,751 acres, an increase of 1,086 acres, or 41% (MassGIS).

This is a rapid rate of growth, and more important is the change in development pattern: with a 677 acre increase in low density residential development – lots greater than ½ acre in size – the number of developed acres per resident has accelerated. In 1985 the developed residential area was 0.30 acres per person (based on 1985 population estimated from 1980 and 1990 census data). In 1999/2000 it was 0.33 acres per person. During the 1990s, **new residential development occurred at the rate of 0.42 acres per person**. As newcomers to town seek their own piece of 'the country', habitat is being converted, fragmented, and degraded.

Perhaps with the type of information provided in this study, the most important wildlife habitat in Southborough can be protected and landscape function can be maintained.

Theory of Conservation Planning

The following section is adapted from Focus Areas for Wildlife Habitat Protection in the Nashua River Watershed *(Collins 2000). Some of the theory discussed has greater*

relevance when applied to areas larger than Southborough, but the concepts remain applicable.

Historically, land conservation efforts have neglected landscape scale planning for habitat protection. Conservation areas, reflecting human values more than habitat values, are often set aside for recreational uses, as drinking water supply buffers, or simply because the land is of little economic value. When biodiversity is considered, acquisition is still frequently driven by threat or opportunity (Prendergast et al. 1997). In the absence of an overall strategy, acquisition of properties for multiple use, with the hope that they will provide functional wildlife habitat, can actually do more harm than good to the long range goal of representing biodiversity. Such uncoordinated efforts are problematic in that they usually do not represent the diversity of natural communities in a region, and, in the end, they increase the cost of establishing a representative system of protected lands (Pressey 1994).

This report is a first attempt at identifying conservation targets in Southborough that will contribute specifically to the representation and maintenance of biodiversity and designing a network of conservation lands that will allow for maintenance of ecosystem integrity in the long term. Targeting lands for habitat protection is an iterative process, and further analyses, at finer scales, will be required to refine the recommendations made here.

Before constructing a habitat protection plan with the goal of representing biodiversity, it is important to understand the four components of biodiversity: genetic, population-species, community-ecosystem, and landscape or regional (Noss 1990). Genetic diversity is the variability of the genetic code in a given species caused by propagation of random mutations. A species that is limited in range, in which the entire population mixes freely, may have very low genetic diversity since there is constant genetic mixing. For another species, one in which populations are largely separated by a mountain range, an ocean, or a highway for instance, genetic diversity may be high as mutations present in one population are rarely introduced into another population by interbreeding.

Population-species diversity is the level most people consider when they think of *biodiversity*. This level involves the number of plant and animal species present in an area *and* their arrangement across the landscape. Ecologists have defined three types of species diversity: alpha-, beta-, and gamma-diversity. Alpha-diversity is simply the number of species present in a single habitat type, the species *richness*; a habitat type with high alpha diversity, such as a rich, mesic forest, would be a conservation priority; beta-diversity is the rate of change in species composition between two habitat types within the same general area; and gamma diversity refers to the rate of change in species composition over larger spatial scales such as ecoregions. High beta- or gamma-diversity would indicate that species face barriers to movement between adjacent communities or ecoregions and indicates the need for many wildlife reserve areas as opposed to one large area that might not capture the full diversity of a region. (Scott et al. 1999).

In order to maintain species level biodiversity, it is essential that a habitat conservation plan capture the full diversity of communities-ecosystems native to an area. A natural community is generally defined as an assemblage of plant species that tend to occur together given similar environmental conditions. A community is frequently named for

the dominant canopy species and/or a landscape feature that controls its occurrence, e.g.: Pitch Pine-Oak Forest, Hemlock Ravine, or Acidic Rocky Summit. If across the landscape of the watershed we found low community diversity, such as second growth White Pine-Oak forests, homogenized by fragmentation and the introduction of exotic plant species, we would expect to find lower species diversity. Thus it is crucial to protect the full variety of natural communities found in the watershed. While conservation efforts often focus on examples of uncommon natural communities, such as Spruce-Tamarack Bogs, it is also important to locate and protect the finest examples of our more common natural communities. Likewise, areas of high community diversity, such as a large, undisturbed core areas with extensive and varied wetlands adjacent to a floodplain forest and a steep rocky slope, should be conservation priorities.

Landscape or regional biodiversity refers to spatial scales that begin to lose relevance to this analysis. In a conservation plan for all of Massachusetts, we would want to balance protection of the coastal landscape with that of marble valleys in the western part of the state. Focusing on the Town of Southborough, we do not face such landscape diversity; however conservation efforts should focus on representing a variety of natural community types found in town.

A well-planned network of protected, undeveloped land, a *reserve system*, should aim to allow for maintenance of biodiversity at each of the four levels of biodiversity: genetic, species, community, and landscape. Higher diversity at each level increases redundancy in ecosystem functions which leads to greater resilience to disturbance.

Reserve Design

Current reserve design theory is based on the core-corridor-buffer model which states that biodiversity at multiple levels will best be maintained in a system of large, undisturbed core areas, surrounded by buffer zones of limited disturbance, and connected by functional corridors for wildlife dispersal (Forman 1995). There are five basic principles of reserve design:

- Large blocks of habitat, containing large populations, are better than small blocks with small populations.
- Blocks of habitat close together are better than blocks far apart.
- Habitat in contiguous blocks is better than fragmented habitat.
- Interconnected blocks of habitat are better than isolated blocks.
- Blocks of habitat that are roadless or otherwise inaccessible to humans are better than roaded and accessible blocks. (Noss et al. 1999)

Large, roadless core areas perform many functions: they provide habitat for species that are extremely sensitive to human disturbance; they serve as "biological fortresses" against invasion of exotic species; and they can serve as control sites for ecosystem research in a landscape where human alteration is nearly all-pervasive (Noss et al. 1999). Smaller core areas serve as secondary habitat and as stepping stones for movement of individuals and populations. Buffers are areas of limited human presence surrounding

core areas. Areas of compromise between conservation and human use, such buffers could include farms, orchards, athletic fields, and low-density residential zones.

Placing pressure on the goals of maintaining contiguity are the many land uses that encourage fragmentation. Mass Audubon and others have identified habitat fragmentation as one of the state's most significant threats to wildlife habitat integrity. Fragmentation, the process of dividing natural lands into smaller and smaller units, is destructive in many ways; it:

- limits foraging area of animals;
- decreases area of interior habitat;
- disturbs natural migration routes;
- limits genetic interaction;
- inhibits dispersal and recolonization after local extinction; and
- restricts scale of natural disturbance regimes.

Depending on the mobility and sensitivity of a given animal species, an insurmountable barrier could be a highway such as Route 9 or a smaller town road, a strip development of buildings and parking lots, a residential cul-de-sac, or a corn field. Plant response to ecological barriers depends largely on habitat requirements and dispersal mechanisms of individual species, but impacts on animals such as pollinators indirectly affect plants. Fragmentation favors habitat generalists and tends to reduce the populations of larger predators. Overabundances of some species can have far reaching impacts on the landscape, as in the case of white tailed deer: their browsing directly impacts diversity and structure of the shrub layer in many of our forests, degrading shrub habitat to the point that heavily browsed areas host fewer shrub-nesting bird species (McShea and Rappole 2000). Increased fragmentation also leads to decreased populations of large carnivores. The removal of top predators can cause the population boom of smaller carnivores no longer competing with or hunted by top carnivores, a process called mesopredator release. Increased populations of mesopredators, such as raccoons and skunks, can negatively impact small mammals, amphibians, birds and their eggs.

Another major threat to wildlife habitat in Massachusetts is the invasion of exotic plant and animal species. "Invasives" are invasive due to dispersal and growth habits (and lack of pathogens and browsers) that allow them to out-compete native plants, thus depressing populations of native plants, and creating a homogenized natural community which is of reduced habitat value to native animals. Seeds of invasive plants disperse along roads and pathways, carried by wind or with vehicle and foot traffic. One small road through an otherwise contiguous forest can serve as a conduit for the introduction of invasive plants. Thus habitat fragmentation contributes directly to the spread of invasive plants.

Edge habitat, or the boundary area between two distinct vegetation types, such as forest and grassland, is often touted as a contributor to biodiversity since many different species make use of such transition zones between cool, shady, tall canopy forest and warm, sunlit openings. In truth these are ecologically important and diverse areas for plants and invertebrates, and edges are heavily used by animals taking advantage of the openings for food and the forest for cover. This information is often used as support for logging or

other land clearing operations with the reasoning that if edge is diverse, and diversity is good, more edge must be better. However edge is a common characteristic of suburban development, and more edge only means larger populations of the same species that currently make use of the area's already abundant edge habitat.

Interior is not exclusive to forests. Grassland, a rapidly declining habitat type in the Northeast, is unique breeding habitat for many bird species that require not just a small grassy opening, but large expanses of treeless meadow. Any increase in edge comes at the expense of interior – of any community type including forest, grassland, water body, etc. – and impacts negatively on the species that specialize in making use of that interior habitat. Populations of scarlet tanager, an interior forest nesting bird, have been shown to decrease in more fragmented landscapes, where there are concurrent increases in avian and mammalian nest predators and nest parasites such as cowbirds (Rosenberg et al. 1998).

Thoughtful reserve design will allow for the long-term integrity of landscapes and ecosystems by maintaining functional relationships at all levels of biological organization, allowing individual organisms to obtain nutrients, shelter, security, and protection from pathogens, parasites, and pollutants; populations sufficient area to maintain genetic variability, and connectivity to allow for recolonization after local extinctions; communities functional relationships between associated species such as predator/prey, parasite/host, and plants/pollinators-seed dispersers; and regions maintenance of landscape level processes such as floods, weathering, and migration (Scott et al. 1999).

Landscape Scale Conservation Planning

Perhaps the leading proponent of landscape-scale planning for the restoration and protection of naturally functioning ecosystems in North America is the Wildlands Project. The Nature Conservancy, with their Ecoregional Planning process, is also working on identifying important areas for land protection on the regional scale. These two groups often work with much larger land areas than we are analyzing in Southborough, such as the Wildlands Project's effort to identify and protect grizzly bear habitat from Yellowstone National Park to the Yukon Territory in Canada. However the techniques developed through their large-area planning efforts, and the lessons learned can be borrowed and adapted for this analysis. In an ecoregional reserve design completed in Oregon and California, Noss et al. (1999) state four goals to be met by a reserve system; to:

- represent all kinds of ecosystems, across their natural range of variation, in protected areas;
- maintain viable populations of all native species in natural patterns of distribution and abundance;
- sustain ecological and evolutionary processes; and
- maintain a conservation network that is resilient to environmental change.

Noss and others have developed a three-prong approach to identifying specific areas that go into a reserve design to meet those goals:

- protection of special elements, such as rare species hotspots, old-growth forests, and critical watersheds for aquatic biota;
- representation of all habitats and vegetation types within a network of reserves; and
- meeting the needs of particular focal species, especially those that are area-dependent or sensitive to human activities.

Special Elements – Rare, threatened, and endangered plants and animals; uncommon landforms such as ledges, caves, and eskers; and rare and exemplary natural communities are all special elements that any reserve design should take into consideration. Rare natural communities and habitat for rare species is not always the most species diverse habitat, so targeting these locations for protection while neglecting other areas is not a sound approach to overall habitat protection. Locating *hotspots* where many special elements occur together one way of maximizing protection effort. A balanced reserve design must aim to protect special features where possible, while remaining focused on the coarser scale need for landscape connectivity.

Representation – In an ideal reserve design, all native natural communities would be represented within protected areas; but realistically, one must decide which communities are more important for the protection of biodiversity, and then how many examples of each community to include in a conservation network. In *Guidelines for Representing Ecological Communities in Ecoregional Conservation Plans*, The Nature Conservancy presents a framework for considering these questions and developing answers. They recommend setting conservation targets by considering Heritage Program information on the rarity and diversity of natural communities with expert input by those familiar with the study area. For deciding how much of a given community type is enough to protect, they consider three factors. First is the geographic scale and spatial pattern of the community in the conservation planning unit -- is it a *matrix* community, such as white pine-oak in the Nashua that needs protection over wide areas, or is the target red maple swamps that are local in extent. Second, the proportion of the community's total distribution contained within the planning unit – is the community common all over the Northeast or are all known examples found only within our study area. Finally, the resolution of the vegetation classification and the ecological variability of each community – is the classification so specific that a few examples of each captures variability, or is it a broad classification in which many examples of each community type should be protected to guarantee representation of several varieties (Groves and Valutis 1999).

Focal species – Even with unlimited time to study an ecosystem, it would still be impossible to know all the needs of every species and all of the myriad interactions between species. As a substitute for designing reserves with hundreds of species in mind, ecologists use a small number of representative species to plan for the protection of many species. By managing for the protection of these *focal species*, a successful reserve design will maintain ecosystem conditions upon which many other species rely, thus contributing to their protection (Miller et al 1999; Lambeck 1997). Generally, there are six types of focal species as described by Foreman et al. (2000):

- umbrella – species that generally cover large and ecologically diverse areas in their daily or seasonal movements; protection of enough of their habitat to assure a viable population of these organisms would provide habitat and resources to many other species more restricted in range.
- keystone – species that enrich ecosystem function in a unique and significant manner through their activities, and the effect is disproportionate to their numerical abundance. The extirpation of keystone species often triggers other extirpations and significant changes or loss of habitats. Large carnivores are often keystone species. The beaver, through its modification of the landscape is another keystone species (Mills et al 1993)
- flagship – charismatic animals, like wolves and eagles, which build popular support for the protected area.
- habitat quality indicator – species that require natural habitat of high ecological integrity and that provide an early warning system because they are sensitive to ecological changes.
- wilderness quality indicator – species that are sensitive or vulnerable to human disturbance and thus require remote, wilderness habitat.
- prey – key prey species for focal predators in the above categories.

Having identified focal species from a number of taxa, the next step is to consider the primary habitat requirements of those species. These required landscape elements, be they large waterbodies, ledgey slopes, or red maple swamps, then become the basic units of a reserve network.

This introduction provides a brief overview of the theory and practice of reserve design. Excellent references include *Continental Conservation: Scientific Foundations of Regional Reserve Networks* by Soule and Terbourgh, *The Science of Conservation Planning* by Noss, O'Connell, and Murphy, and *Land Mosaics: The Ecology of Landscapes and Regions* by Richard Forman. Given the limited timeline of this project, we were not able to fully pursue every step outlined above. The process is presented as a framework for conservation planning with the hope that land protection efforts in Southborough will build on the results of this report to identify and protect a network of habitat that functions to maintain biodiversity at multiple levels.

Methods

Landscape-level analysis for this project was performed with a geographic information system (GIS) built in ArcView 9.2 relying almost exclusively on data available through MassGIS. GIS is a computer software package which enables the user to combine layers of various spatial data to create and analyze maps. USGS topographic quads (Figure 1) and 2005 color orthophotos (Figure 2) were used as base maps, with the town line delimiting the study area.

The first step was to locate large areas undeveloped and unbisected by roads. In the MassGIS land use datalayer, each land use unit is assigned one of 21 land use types. We

used these categories to code each polygon as low-value, marginal, or potential high-value habitat according to Table 1. Low-value habitat was displayed in black, and agricultural and other land use types of marginal-value were shown in gray, leaving undeveloped areas of potentially high-value habitat transparent. The MassGIS land use layer, edited to include new development, was displayed atop the orthophoto to identify large areas of potential habitat (Figure 3).

Table 1: Habitat codes for land use types in MassGIS land use datalayer.

Low quality	Marginal	Potential high quality
Spectator recreation	Participation recreation	Forest
Residential	Water-based recreation	Wetland
Commercial	Waste disposal	Open land
Industrial		Water
Urban open		Cropland
Transportation		Pasture
		Mining
		Woody perennial (orchards, etc.)

We used the MassGIS bedrock geology, surficial geology, and soils datalayers to locate uncommon or exemplary landscape elements. A number of MassGIS datalayers were used to show wetland features: hydrography (1:25,000), orthophoto wetlands and streams, National Wetlands Inventory (Figure 4).

Areas of specific, known habitat for listed species were identified with the Natural Heritage and Endangered Species Program's Priority Habitat datalayer, and larger areas of habitat value were identified with the Heritage Program BioMap and Living Waters datalayers. Certified and potential vernal pools were also used to locate important habitat features (Figure 5).

Draft Focus Areas were created by combining large, little-developed, roadless areas and Priority Habitat areas. Focus Areas were then modified to add any unique landscape features, such as bedrock elements or wetland clusters, that were not originally included.

Parcels were then scored for conservation priority using an algorithm designed to weight parcels based on a range of habitat values (Equation 1). Parcels that have already been conserved were eliminated from the analysis. Each parcel was assigned a single point if it: lies within an aquifer, FEMA flood zone, Focus Area from this report, SUASCO priority area as identified by Clark (2000), Important Bird Area as mapped by the Mass Audubon IBA Program, or if it is within 100 feet of a mapped wetland or 200 feet of a mapped stream or river; is currently in Chapter 61; or is adjacent to existing conservation land. Each parcel was assigned two points if it has or is within a 100 foot buffer of a certified or potential vernal pool. Points were summed for each parcel, added to 10% of

Equation 1.

PRIORITY SCORE =
(% Habitat) x [(Acres/10)+(2 x Vernal_Pool_Buffer)+(SUASCO)+(Focus_Area)+(Aquifer)
+(Flood_Zone)+(Wetland_Buffer)+(Chapter_61)+(IBA)+ (Conservation_Buffer)]

parcel area in acres, then multiplied by percent habitat of the parcel. This algorithm places high value on parcel size and connection to protected land, and on habitat for rare species. Parcels were assigned a priority level on the scale found in Table 2.

Table 2. Parcel priority scoring.

Parcel Score	Conservation Priority
3 - 4	Lower Priority
4 - 10	Medium Priority
10 - 15	High Priority
15 - 20	Highest Priority

Protection Priorities

We identified fourteen Focus Areas for protection of wildlife habitat (Figures 6a and 6b), several of which are drawn across town lines to emphasize the importance of connecting to other large habitat areas. Most of the Focus Areas contain land which is already protected (Figure 7). Unprotected parcels within these Focus Areas represent the highest conservation priorities (Figure 8).

The section of town south of the turnpike is not included in any of the Focus Areas. This section does host two of the three NHESP Priority Habitat Areas, however it is almost entirely built or divided into small building lots. There are a few opportunities for land protection here, and protection could be meaningful in providing habitat for the listed species. Additional information from NHESP would assist in protection planning in this area.

We identified 81 parcels that ranked as protection priorities in our GIS analysis including: 3 Highest Priority parcels; 6 High Priority parcels; 34 Medium Priority parcels; and 38 Lower Priority parcels. Data on each is presented in Table 2, including the priority ranking score, ownership (where available), assessor's map and lot number, and acreage. More detailed information on the habitat values behind the priority scoring is in Appendix A. Figures 9-16 provide a fine-scale look at the Focus Areas and the highest priority parcels for conservation.

Discussion and Conclusions

Clearly the highest conservation priorities in Southborough are the large undeveloped parcels. Smaller parcels are important as buffers to existing conservation land, as corridors between blocks of conserved land, and as smaller islands of habitat.

Within the Focus Areas, we recommend that protection efforts focus on:

- expanding and buffering large existing conservation areas within town
- protecting land that connects to large conservation blocks in adjacent towns
- maintaining buffers to large water bodies and wetland systems

Resources – including time, expertise, and funding – are always limited for land protection. Thus protecting one piece of land can result in missing out on protection of another piece. The results of this analysis will hopefully supplement local expertise and awareness so that land protection resources are directed towards the most important areas of town for habitat protection.

Table 3. Priority parcels for conservation in Southborough, MA.

Priority Score	Owner	Map-Lot	Acreage
18.01	EMC CORPORATION	26-09	141.1
15.14	PARMENTER PINE LLC	96-01	123.6
12.03	EMC CORPORATION	06-03	72.4
10.20	ST MARKS SCHOOL	45-02	58.8
9.98	PRESIDENT & FELLOWS OF HARVAR	95-01	88.0
9.21	ST MARKS SCHOOL	53-09	80.7
7.98	SOUTHBOROUGH TOWN OF	43-18	81.2
7.54	FLATLEY, TJ & CR NICHOLS TRS	33-04	62.5
7.46	MCGILLICUDDY, J D & E R TRUSTEES	44-01.B	4.6
7.09	MILLEA, J FRANKLIN & DOROTHY H	52-21	20.9
6.78	ST MARKS SCHOOL	74-06	48.2
6.75	COOK, JOHN L & KATHRYN M	88-22	16.1
6.66	SULLIVAN, KEVIN	57-02	16.6
6.52	PIETRO, RALPH A &	82-01	15.8
6.08	JOHNSON CAMBELL REALTY INC	61-05	11.3
5.96	HALLORAN, THOMAS & KATHLEEN	13-18	31.5
5.85	HASEOTES, BYRON & JOYCE E	41-05	22.2
5.85	DOYLE, PATRICIA B & DENNIS M	44-01.D	3.0
5.56	PLB INC	39-29	17.9
5.52	JOHNSON CAMBELL REALTY INC	72-03	15.2
5.49	JACKSON, MATTHEW TRUSTEE	48-18	6.4
5.45	FAY SCHOOL INC	53-17	6.5
5.41	ORENTLICH, FREDERICK M & LINDA	81-22	4.1
5.37	RADLER, STANLEY & GLORIA C TRU	88-03	12.9
5.30	SOUTHBOROUGH TOWN OF	44-10	4.8
5.24	FEINBERG, MICHAEL E & MARIBETH	81-21	2.4
5.23	BALL, SHERMAN H & ADRIENNE F	30-06	15.4
5.11	BLANCHARD, JOHN A & MARY K	89-01	11.7
4.79	CAPASSO, DONATO D TRUSTEE	75-34	18.2
4.77	BLYNN, EDGAR JR & SVETLANA	40-06	8.3
4.65	JOHNSON CAMBELL REALTY INC	61-04	6.5
4.65	MT VICKERY ESTATE CONDOS	29-52	17.1
4.48	FLATLEY, TJ & CR NICHOLS TRS	41-04.A	24.8
4.34	KALLANDER, PETER I &	56-14	11.7
4.33	PEDRAZA, EVARISTO G & NOEMI M	48-37	11.1
4.27	BEALS, PHILIP C & THOMAS R MOUN	72-08	22.5

Priority Score	Owner	Map-Lot	Acreage
4.27	JOHNSON CAMBELL REALTY INC	61-14	2.6
4.24	CAPASSO, DONATO D TRUSTEE	84-22	2.4
4.22	SOUTHBOROUGH TOWN OF	38-45.A	2.2
4.19	HERCZEG, ATTILA E & SUSANNE K H	41-04	1.9
4.19	CARRIAGE HILL LLC	57-20	1.9
4.15	140 TURNPIKE ROAD LLC	29-47	15.4
4.14	HOLMBLAD, CHRISTIAN J &	81-07	1.4
4.13	JOHNSON, MARK W & AMY L	61-13	1.3
4.12	SWANEY, THOMAS II & KELLY D	81-09	1.2
4.12	BRADY, CHARLES D & KEIRENY S	81-08	1.2
4.12	TIEDEMANN, JON C & JOELLEN W	30-09	0.9
4.11	MCGRATH, KEVIN B	81-20	1.1
4.10	STEVENS, RITA	30-14	9.7
4.08	JOHNSON CAMBELL REALTY INC	71-01.A	10.8
4.07	MDC	04-44	0.7
4.03	DEPIETRI, DAVID P TRUSTEE	04-28	3.9
4.02	MBTA	04-41	2.5
3.95	HALL, RICHARD W J & ANN E	49-14	5.0
3.94	HEAVEY, ROBERT J TRUSTEE	38-10	13.3
3.92	JACKSON, MICHAEL JR & JANE L	53-08	5.7
3.91	ROUSSEAU, CHARLES F & J R & A J II	87-01	9.1
3.87	PLB LLC	39-28	6.9
3.84	KAMINSKI, JOHN A & MAUREEN S	79-42	1.0
3.82	JOHNSON CAMBELL REALTY INC	71-06	9.3
3.70	WHITTEMORE, CHARLES RICHARD &	11-02	17.2
3.69	SCHOFIELD, STEPHANIE M & GARY I	02-04	10.4
3.60	ST MARKS SCHOOL	75-34.A	6.0
3.60	SOUTHBORO MEADOWS CONDOS	48-47	17.1
3.52	PEARL, DANIEL D &	84-33	4.0
3.44	KWAN, PETER & AGNES KWAN WEN	65-18	13.8
3.40	TEXEIRA, RUSSELL D & ANITA L	51-18	1.7
3.39	JOHANSEN, KAREN J	63-11	14.7
3.36	CAPASSO REALTY CORP	75-38	3.6
3.36	XIZHONG, ALAN HUANG & HONG CA	49-02	4.5
3.32	NEW ENGLAND POWER COMPANY	80-01.A	13.2
3.31	COLDWELL, STEPHEN O & MARJORIE	35-14.A	9.9
3.31	COLDWELL, RAYMOND E & MARY D	44-08	3.1
3.28	PICARDI, WILLIAM J JR TRUSTEE	53-03	6.0

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Appendix 1 – Priority Scoring Tables

This table displays the wildlife habitat values associated with each of the priority parcels listed in Table 2. The Priority Score is given first, calculated using Equation 1 in the text. The following columns represent the variables used in Equation 1. Percent Habitat is the percent of each parcel that is classed in a potential wildlife habitat category in the MassGIS Land Use/Land Cover map; e.g. a 10 acre parcel that includes 2 acres of buildings and 8 acres of woods would score 80%. "ACREAGE" is area in acres. The remaining columns are binary, or yes-no categories. For example, if a parcel has or is within 100 feet of a Certified or Potential Vernal Pool, it receives a "Buffer of Certified or Potential Vernal Pool" score of 1. "SUASCO Priority Area" refers to priority areas identified by Clark (2000). "FOCUS_AREA" refers to the focus areas for protection identified in this report. "Aquifer" is based on DEP aquifer mapping. "FEMA Flood Zone" is based on Federal Emergency Management Agency flood zone mapping. "Wetland Buffer" includes properties that are within 100 feet of a wetland or 200 feet of a river as mapped by MassGIS. "Important Bird Area" refers to areas of critical importance for bird habitat as identified by Mass Audubon. "Conservation Buffer" refers to properties located adjacent to existing conservation land. "Map-Lot" is the Southborough Assessor reference for each parcel.

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
18.01	100%	141.1	1	0	1	0	0	1	0	0	0	26-09	Turnpike Road	Emc Corporation
15.14	99%	123.6	0	0	1	0	0	1	0	1	0	96-01	Pine Hill Road	Parmenter Pine Llc
12.03	98%	72.4	1	0	1	0	0	1	0	0	1	06-03	Gilmore Road	Emc Corporation
9.98	78%	88	0	0	1	0	0	1	0	1	1	95-01	1 Pine Hill Drive	President & Fellows Of Harvard
9.21	76%	80.7	1	0	1	0	0	1	0	0	0	53-09	30 Marlboro Road &	St Marks School
7.98	61%	81.2	1	0	0	0	1	1	0	1	0	43-18	53 Parkerville Road	Southborough Town Of
7.54	91%	62.5	0	0	1	0	0	1	0	0	0	33-04	Turnpike Road	Flatley, Tj & Cr Nichols Trs
7.46	100%	4.6	1	0	1	0	1	1	0	1	1	44-01.B	24 Parkerville Road	Mcgillicuddy, J D & E R Trustees
7.09	100%	20.9	0	0	1	0	1	1	1	0	1	52-21	Deerfoot Road	Millea, J Franklin & Dorothy H

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
6.78	100%	48.2	0	0	1	0	0	1	0	0	0	74-06	Sears Road	St Marks School
6.75	89%	16.1	1	0	1	0	0	1	0	1	1	88-22	11 Graystone Way	Cook, John L & Kathryn M
6.66	100%	16.6	0	0	1	0	0	1	1	1	1	57-02	70 Valley Road	Sullivan, Kevin
6.52	99%	15.8	1	0	1	0	0	1	1	0	0	82-01	Fisher Road	Pietro, Ralph A &
6.08	99%	11.3	0	0	1	0	1	1	1	0	1	61-05	Northboro & Johnson	Johnson Cambell Realty Inc
5.96	97%	31.5	1	0	0	0	0	1	0	0	0	13-18	Rock Point Road	Halloran, Thomas & Kathleen
5.85	94%	22.2	1	0	1	0	0	1	0	0	0	41-05	Lovers Lane	Haseotes, Byron & Joyce E
5.85	80%	3	1	0	1	0	1	1	0	1	1	44-01.D	22 Parkerville Road	Doyle, Patricia B & Dennis M
5.56	96%	17.9	1	0	1	0	0	1	0	0	0	39-29	22 Turnpike Road	Plb Inc
5.52	100%	15.2	0	0	1	0	0	1	1	0	1	72-03	Chestnut Hill Road	Johnson Cambell Realty Inc
5.49	97%	6.4	0	0	1	0	1	1	0	1	1	48-18	Boston Road	Jackson, Matthew Trustee
5.45	97%	6.5	0	0	1	0	1	1	0	1	1	53-17	Main Street	Fay School Inc
5.41	100%	4.1	1	0	1	0	0	1	0	0	1	81-22	8 Schipper Farm Lane	Orentlich, Frederick M & Linda
5.37	85%	12.9	1	0	1	0	0	1	0	1	0	88-03	78 Pine Hill Road	Radler, Stanley & Gloria C Tru
5.3	97%	4.8	0	0	1	0	1	1	0	1	1	44-10	Middle Road	Southborough Town Of
5.24	100%	2.4	1	0	1	0	0	1	0	0	1	81-21	6 Schipper Farm Lane	Feinberg, Michael E & Maribeth
5.23	80%	15.4	1	0	1	0	0	1	0	0	1	30-06	42 Woodland Road	Ball, Sherman H & Adrienne F
5.11	99%	11.7	1	0	1	0	0	1	0	0	0	89-01	Fisher Road Off	Blanchard, John A & Mary K
4.79	99%	18.2	0	0	1	0	0	1	1	0	0	75-34	Newton Street	Capasso, Donato D Trustee
4.77	99%	8.3	0	1	1	0	0	1	0	0	1	40-06	Main Street	Blynn, Edgar Jr & Svetlana

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
4.65	99%	17.1	1	0	0	0	0	1	0	0	0	29-52	Vickery Road	Mt Vickery Estate Condos
4.65	100%	6.5	0	0	1	0	1	1	0	0	1	61-04	67 Northboro Road	Johnson Cambell Realty Inc
4.48	100%	24.8	0	0	1	0	0	1	0	0	0	41-04.A	Route 495 Off	Flatley, Tj & Cr Nichols Trs
4.34	84%	11.7	0	0	1	0	0	1	0	1	1	56-14	30 Meadow Lane	Kallander, Peter I &
4.33	85%	11.1	0	0	1	0	0	1	0	1	1	48-37	25 Valley Road	Pedraza, Evaristo G & Noemi M
4.27	81%	22.5	0	0	1	0	0	1	0	0	1	72-08	Chestnut Hill Rd Off	Beals, Philip C & Thomas R Moun
4.27	100%	2.6	0	0	1	0	1	1	0	0	1	61-14	Northboro Road	Johnson Cambell Realty Inc
4.24	100%	2.4	0	0	1	0	0	1	0	1	1	84-22	Framingham Road	Capasso, Donato D Trustee
4.22	100%	2.2	0	0	1	0	0	1	0	1	1	38-45.A	Central Street	Southborough Town Of
4.19	100%	1.9	1	0	1	0	0	1	0	0	0	41-04	Lovers Lane (Off)	Herczeg, Attila E & Susanne K H
4.19	100%	1.9	0	0	1	0	0	1	0	1	1	57-20	Valley Road	Carriage Hill LLC
4.15	92%	15.4	0	0	1	0	0	1	0	0	1	29-47	Breakneck Hill Road	140 Turnpike Road Llc
4.14	100%	1.4	1	0	1	0	0	1	0	0	0	81-07	74 Fisher Road	Holmblad, Christian J &
4.13	100%	1.3	0	0	1	0	1	1	0	0	1	61-13	51 Northboro Road	Johnson, Mark W & Amy L
4.12	81%	0.9	1	0	1	0	0	1	0	0	1	30-09	59 Woodland Road	Tiedemann, Jon C & Joellen W
4.12	100%	1.2	1	0	1	0	0	1	0	0	0	81-08	76 Fisher Road	Brady, Charles D & Keireny S
4.12	100%	1.2	1	0	1	0	0	1	0	0	0	81-09	78 Fisher Road	Swaney, Thomas Ii & Kelly D
4.11	100%	1.1	1	0	1	0	0	1	0	0	0	81-20	4 Schipper Farm Lane	Mcgrath, Kevin B
4.1	69%	9.7	1	0	1	0	0	1	0	0	1	30-14	4 Bay Path Lane	Stevens, Rita
4.08	100%	10.8	0	0	1	0	0	1	1	0	0	71-01.A	Northboro Road	Johnson Cambell Realty Inc
4.07	100%	0.7	0	0	0	1	1	1	0	0	1	04-44	Southville Road	MDC

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
4.03	92%	3.9	1	0	0	0	0	1	0	0	1	04-28	Southville Road	Depietri, David P Trustee
4.02	95%	2.5	0	0	0	1	1	1	0	0	1	04-41	River Street	MBTA
3.95	88%	5	0	1	1	0	0	1	0	0	1	49-14	195 Main Street	Hall, Richard W J & Ann E
3.94	91%	13.3	0	0	1	0	0	1	0	0	1	38-10	84 Turnpike Road	Heavey, Robert J Trustee
3.92	86%	5.7	1	0	1	0	0	1	0	0	0	53-08	55 Main Street	Jackson, Michael Jr & Jane L
3.91	100%	9.1	0	0	1	0	0	0	0	1	1	87-01	Pine Hill Road Off	Rousseau, Charles F & J R & A J Ii
3.87	83%	6.9	1	0	1	0	0	1	0	0	0	39-28	18 Turnpike Road	Plb Llc
3.84	94%	1	0	0	1	0	0	1	0	1	1	79-42	2 Joslin Lane	Kaminski, John A & Maureen S
3.82	97%	9.3	0	0	1	0	0	1	1	0	0	71-06	Northboro Road	Johnson Cambell Realty Inc
3.7	100%	17.2	0	0	1	0	0	1	0	0	0	11-02	Banfill Lane Off	Whittemore, Charles Richard &
3.69	92%	10.4	1	0	0	0	0	1	0	0	0	02-04	236 Parkerville Road	Schofield, Stephanie M & Gary I
3.6	100%	6	0	0	1	0	0	1	1	0	0	75-34.A	Newton Street Off	St Marks School
3.6	54%	17.1	0	0	1	0	1	1	0	1	1	48-47	Boston Road	Southboro Meadows Condos
3.52	80%	4	0	0	1	0	0	1	0	1	1	84-33	15 Buffalo Run	Pearl, Daniel D &
3.44	79%	13.8	0	0	1	0	0	1	0	0	1	65-18	Newton Street	Kwan, Peter & Agnes Kwan Wen
3.4	82%	1.7	0	0	1	0	1	1	0	0	1	51-18	Main Street	Texeira, Russell D & Anita L
3.39	76%	14.7	0	0	1	0	0	1	0	0	1	63-11	40 Sears Road (Lane)	Johansen, Karen J
3.36	100%	3.6	0	0	1	0	0	1	1	0	0	75-38	118 Framingham Road	Capasso Realty Corp
3.36	97%	4.5	0	1	1	0	0	1	0	0	0	49-02	197 Main Street	Xizhong, Alan Huang & Hong Ca
3.32	100%	13.2	0	0	1	0	0	1	0	0	0	80-01.A	Jericho Hill Road	New England Power Company
3.31	100%	3.1	0	0	1	0	0	1	0	1	0	44-08	28 Parkerville Road	Coldwell, Raymond E & Mary D

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
3.31	83%	9.9	0	0	1	0	1	0	0	1	0	35-14.A	85 Middle Road	Coldwell, Stephen O & Marjorie
3.28	71%	6	0	0	0	0	1	1	0	1	1	53-03	14 Deerfoot Road	Picardi, William J Jr Trustee
3.27	99%	3.1	0	0	0	0	1	1	0	0	1	29-20	5 Breakneck Hill Road	Trolley Tracks Inc
3.27	97%	3.9	1	0	0	0	0	1	0	0	0	29-14	18 Mt Vickery Road	Croatti, Mary Ann L & Donald J
3.27	100%	2.7	0	0	1	0	0	1	0	1	0	35-52	30 Parkerville Road	Stewart, Laura & James R
3.25	90%	16.3	0	0	1	0	0	1	0	0	0	26-01	135 Deerfoot Road	Dowd, Peter G & Betty Jo
3.24	99%	2.7	0	0	0	0	1	1	0	1	0	48-17	Boston Road	Southborough Town Of
3.24	72%	34.9	0	0	0	0	0	1	0	0	0	48-01	1 Harvest Lane	Southborough Warehouse Real
3.24	100%	2.4	0	0	1	0	0	1	0	0	1	66-65	16 Hillside Avenue	Ferris, David M & Ann Salceda F
3.23	99%	2.7	0	0	1	0	0	1	0	1	0	88-19	5 Graystone Way	Veranth, Lauren A
3.22	60%	13.8	1	0	1	0	0	1	0	0	0	31-31	60 Oak Hill Road	Bartolini, Josephine J
3.16	100%	1.6	0	0	0	0	1	1	0	0	1	29-51	Mt Vickery Road	Gulbankian, John & Armine
3.16	100%	11.6	0	0	1	0	0	1	0	0	0	41-32	Lovers Lane	Christopher, Christopher Trust
3.15	70%	5	0	1	1	0	0	1	0	0	1	60-06	11 Bigelow Road	Coffman, Howard M & Cathy S
3.13	100%	1.3	0	0	0	0	1	1	0	0	1	01-25	Southville Road Off	New York Central Lines Llc
3.13	100%	1.3	0	0	1	0	0	1	1	0	0	75-46	Framingham Road	Capasso, Donato D Trustee
3.13	100%	1.3	1	0	1	0	0	0	0	0	0	82-32	92 Fisher Road	Pietro, Matthew A & Allisa A
3.12	76%	1	0	0	1	0	0	1	0	1	1	79-46	2 Witherbee Lane	Partridge, Terri L B & John K
3.12	100%	0.3	0	0	0	0	1	0	0	0	0	04-58	40 Southville Road	Petry, Marjorie I & Charles S Tr
3.11	100%	1.1	0	0	0	0	0	1	0	1	1	57-14	39 Meadow Lane	Borges, Mark A & Lorie Savel Bo
3.1	100%	1	0	0	1	0	0	1	1	0	0	75-47	Framingham Road	Capasso, Donato D Trustee

PRIORITY SCORE	% Habitat	ACREAGE	Buffer of Certified or Potential Vernal Pool	SUASCO Priority Area	FOCUS_AREA	Aquifer	FEMA Flood Zone	Wetland Buffer	Chapter 61	Important Bird Area	Conservation Buffer	Map-Lot	Address	Owner
3.1	100%	1	0	0	1	0	0	1	1	0	0	75-48	Framingham Road	Capasso, Donato D Trustee
3.1	100%	1	0	0	0	0	0	1	0	1	1	79-40	14 Joslin Lane	Farello, Thomas A & Marilyn T
3.1	55%	16.7	0	0	1	0	0	1	0	1	1	53-11	48 Main Street	Fay School Inc
3.09	100%	0.9	0	0	1	0	0	1	0	0	1	52-09	Main Street	Beals, Philip C & Thomas R Moun
3.09	70%	4	0	1	1	0	0	1	0	0	1	60-06.A	11 Bigelow Road	Shea, Christopher & Stacey A
3.08	100%	0.8	0	0	1	0	0	1	0	0	1	66-44	Overlook Drive	Kwan, Peter & Agnes Kwan Wen
3.07	76%	10.6	1	0	0	0	0	1	0	0	0	10-24	Nathan Stone Road	Southborough Town Of
3.07	95%	2.2	0	0	1	0	0	1	0	1	0	88-18	3 Graystone Way	Dewey, Bradley E & Suzanne W M
3.07	99%	1	0	0	1	0	1	1	0	0	0	51-40	151 Main Street	Wang, Desheng & Amy Z Li
3.05	100%	0.6	1	0	0	0	0	1	0	0	0	16-06	Edgewood Road	Kiley, Arthur J Estate
3.04	99%	0.7	0	0	1	0	0	1	0	0	1	30-17	Bay Path Lane Off	Southborough Town Of
3.04	97%	21.5	0	0	0	0	0	1	0	0	0	82-20	Presidential Drive	Northside Corporation
3.01	96%	1.3	0	0	0	0	0	1	0	1	1	79-39	15 Joslin Lane	Antino, Andrea

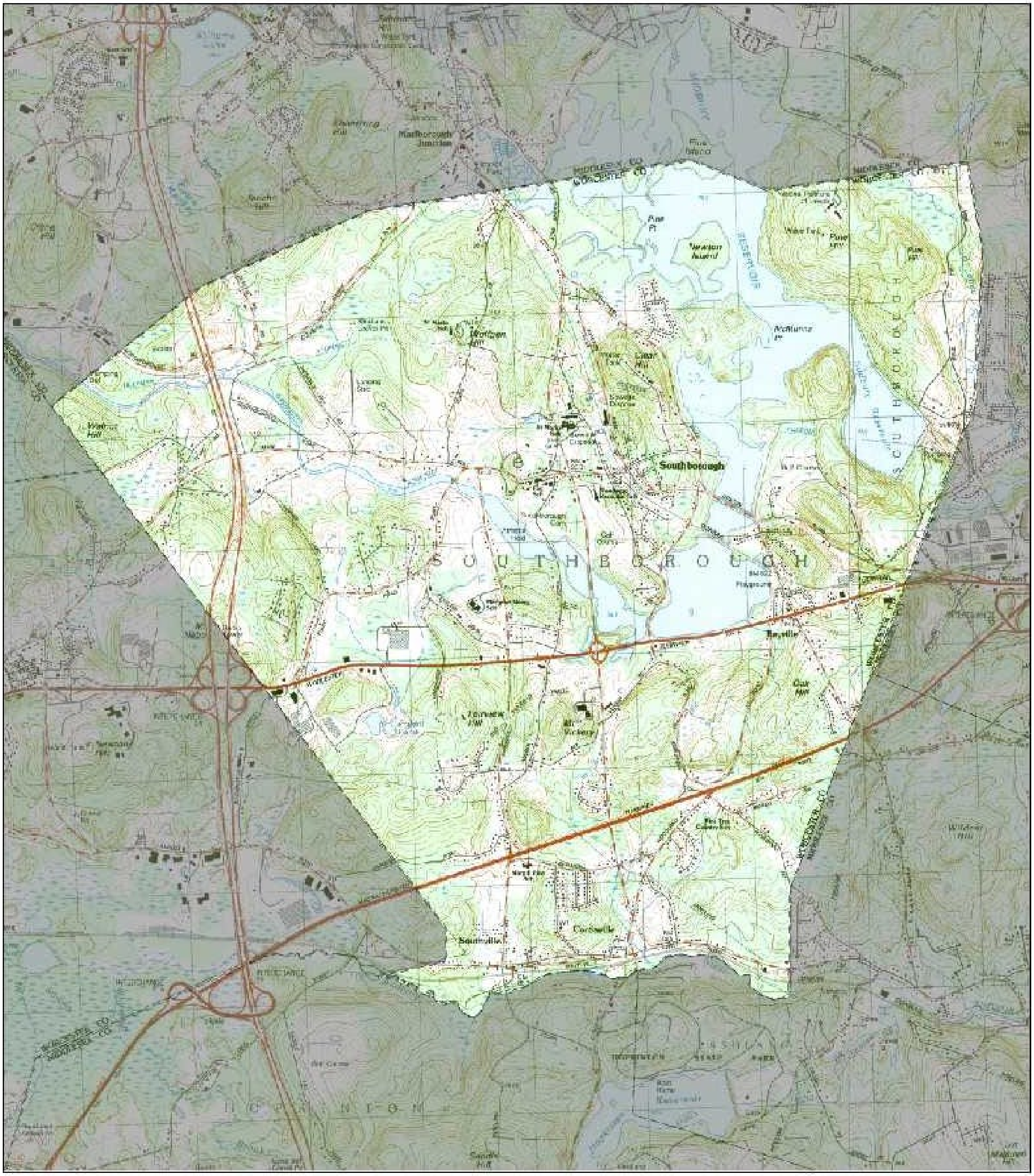

Figure 1. USGS Topography Map of Southborough, Massachusetts.

0 1 2 Miles

Notes: USGS Marlborough (1983) and Framingham (1987) quads and town boundaries from MassGIS.

Figure 2. Color Aerial Orthophoto of Southborough, Massachusetts.

0 1 2 Miles

Notes: 2005 aerial photography and town boundaries from MassGIS.

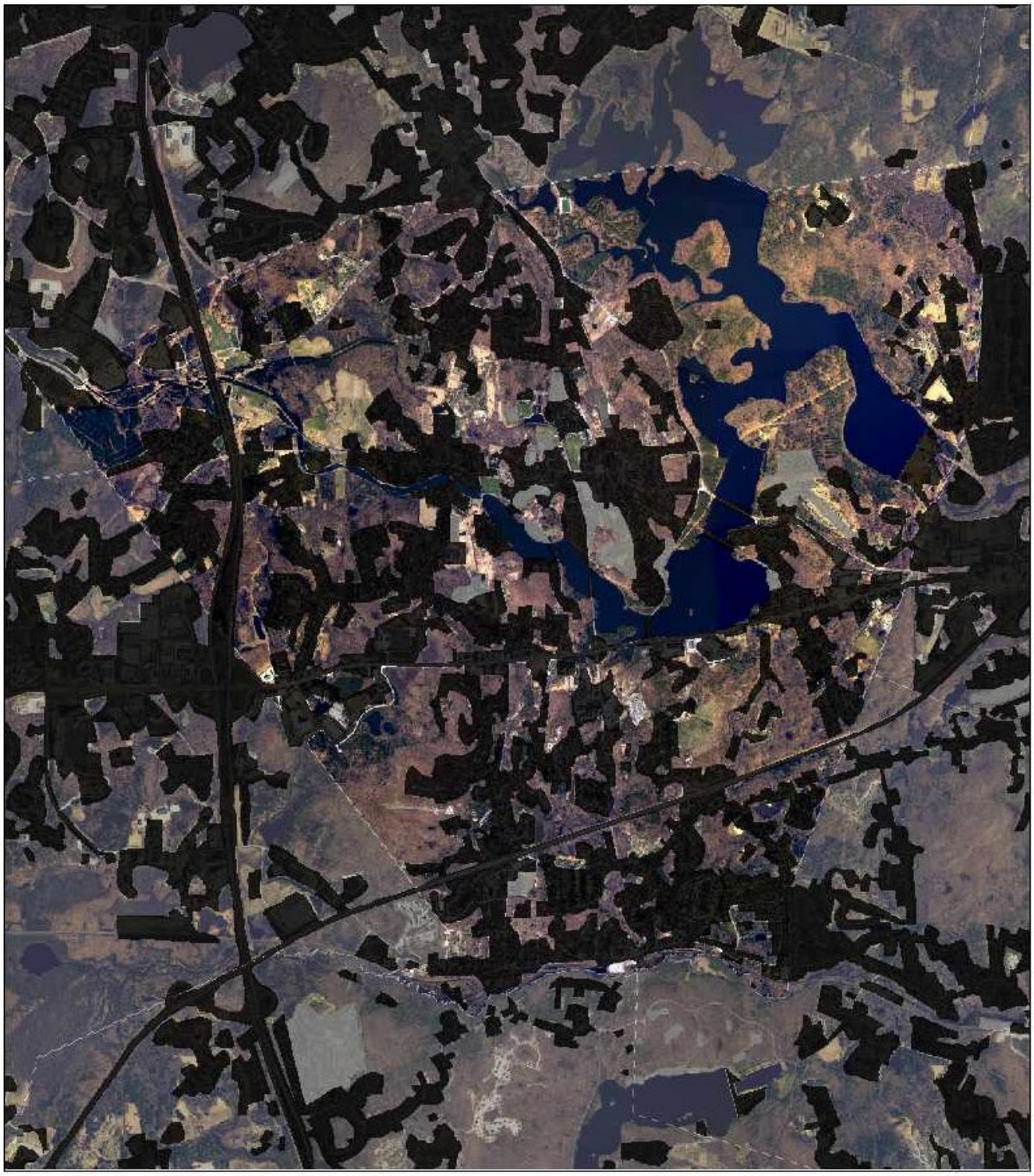

Figure 3. Potential Wildlife Habitat in Southborough, Massachusetts.

Non-Habitat Areas Marginal Habitat 0 1 2 Miles

Notes: Land use data, 2005 aerial orthophotography and town boundaries from MassGIS.

Figure 4. Wetland Systems in Southborough, Massachusetts.

Notes: 2005 aerial photography, wetlands, and town boundaries from MassGIS.

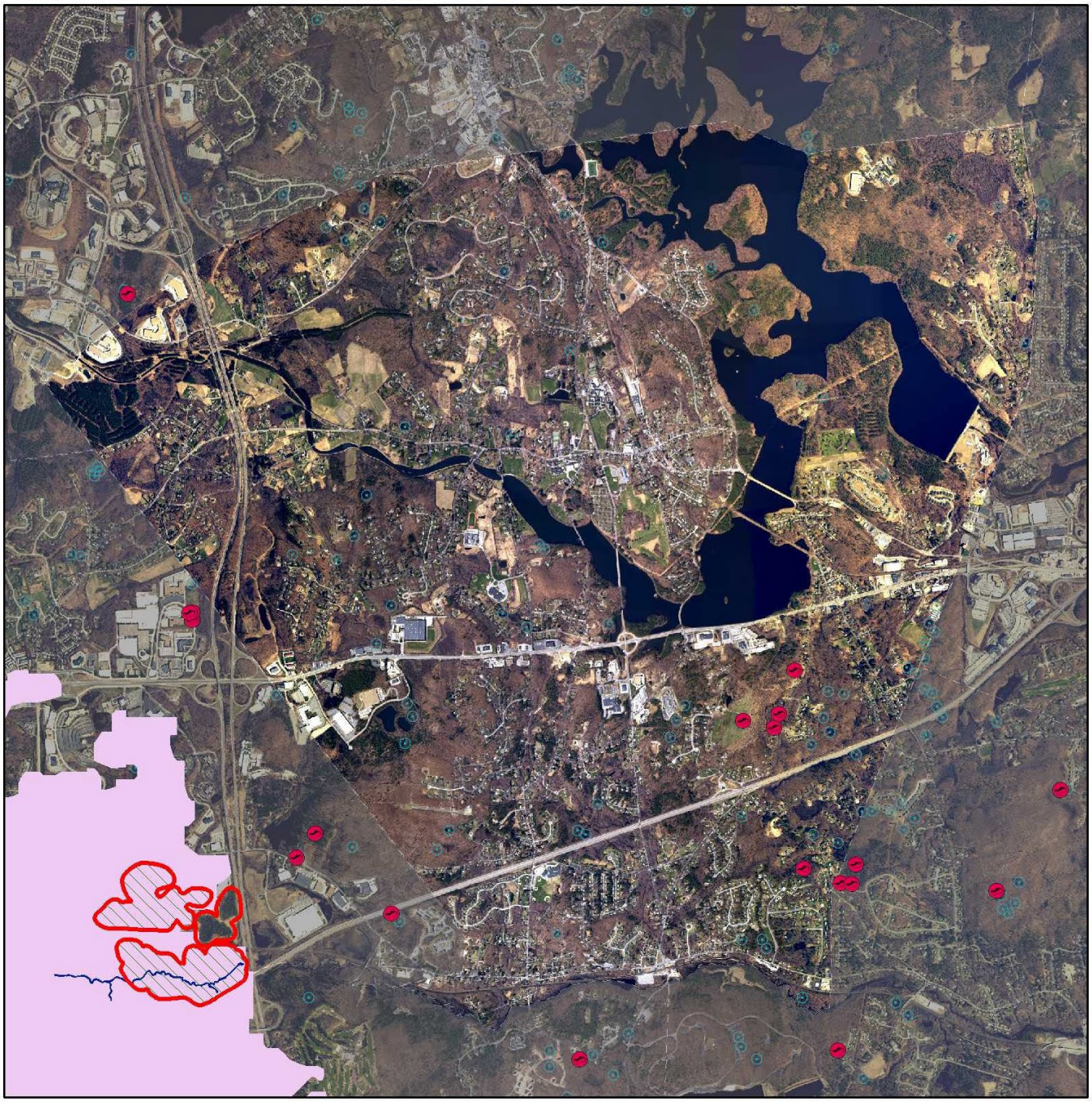

Figure 5. Natural Heritage Program Data for Southborough, Massachusetts.

Notes: 2005 aerial photography, Heritage Program data, and town boundaries from MassGIS.

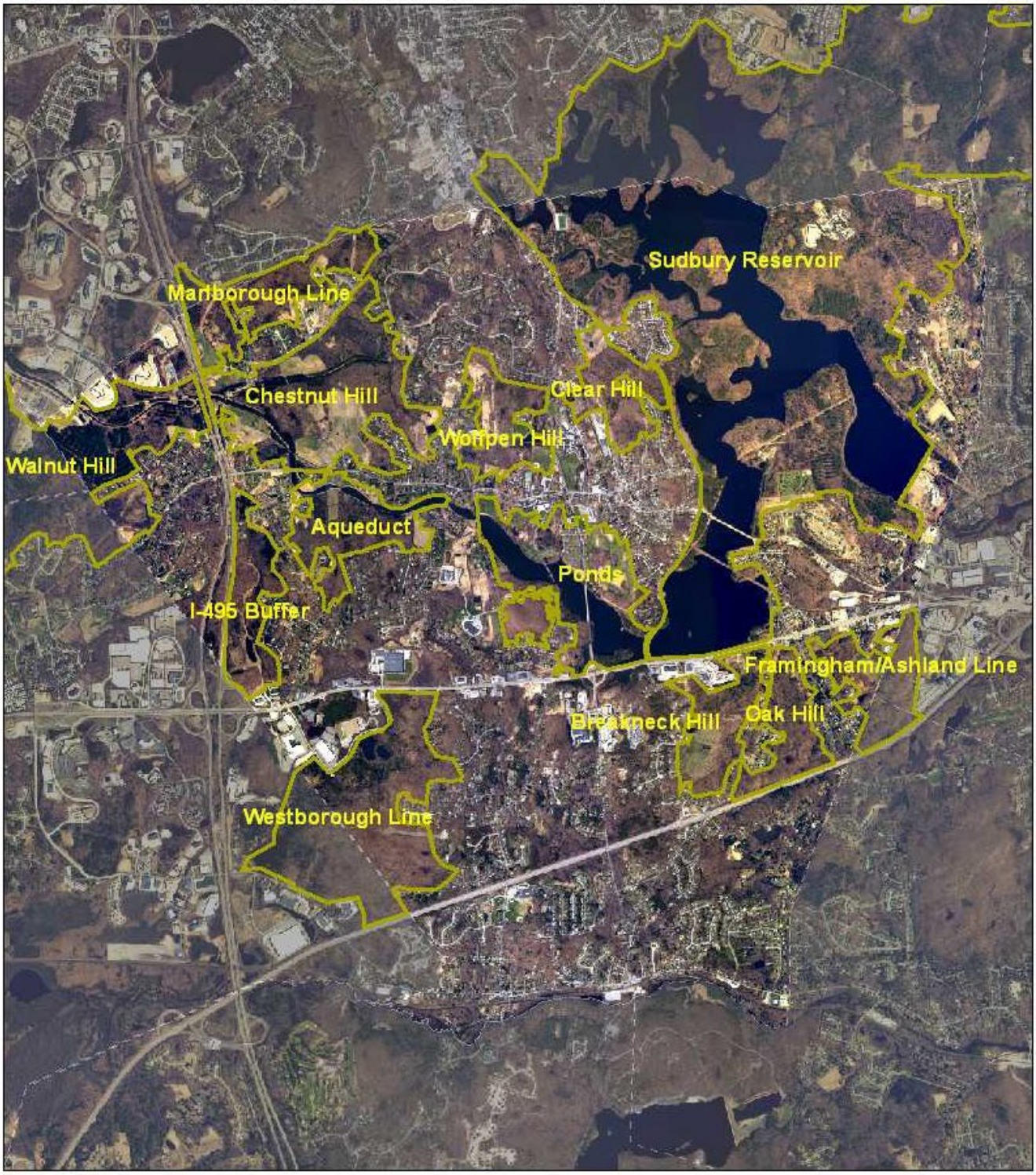

Figure 6a. Focus Areas for Land Protection in Southborough, Massachusetts.

Focus Areas

0 1 2 Miles

Notes: 2005 aerial photography and town boundaries from MassGIS.

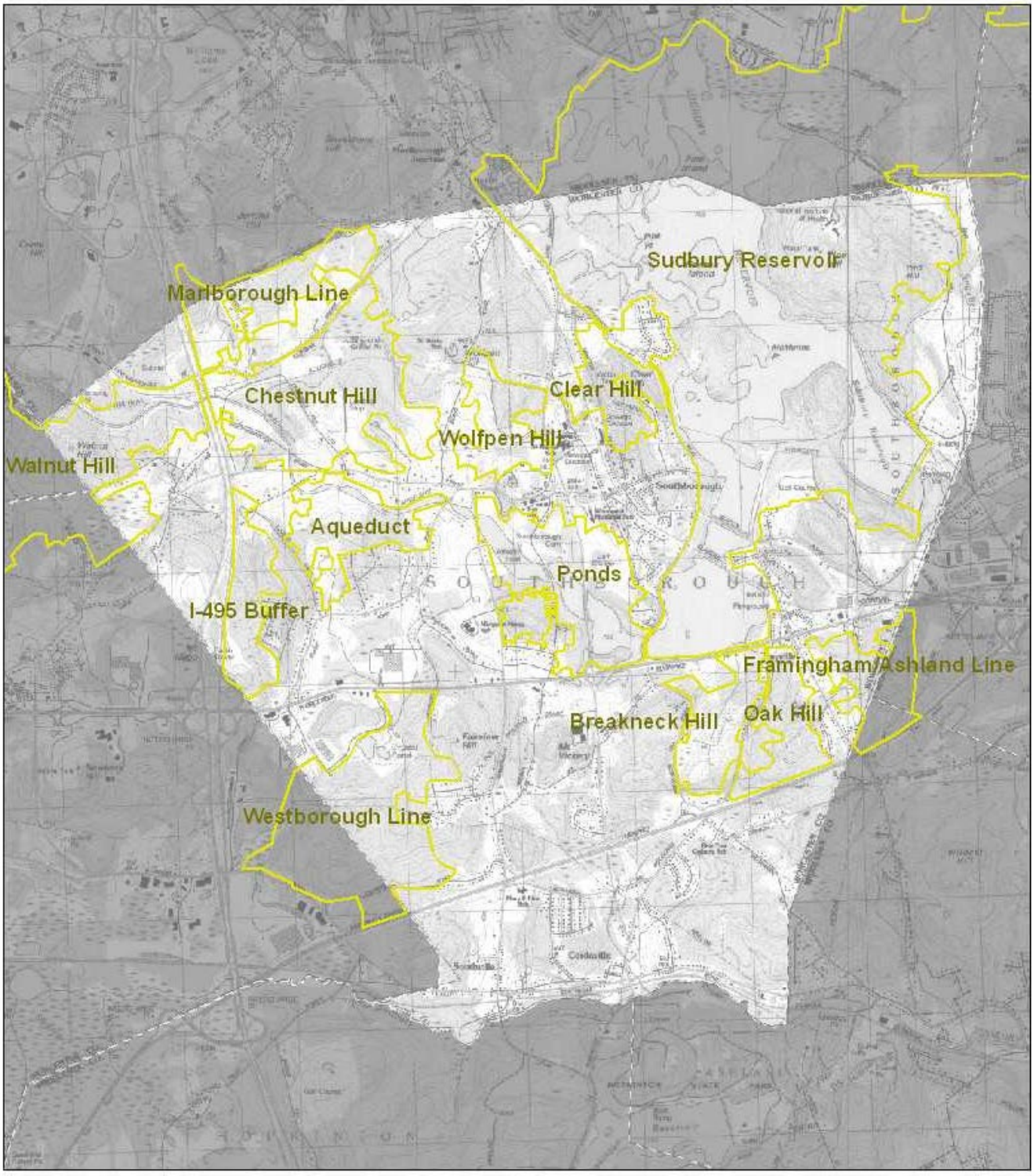

Figure 6b. Focus Areas for Land Protection in Southborough, Massachusetts.

Notes: USGS topo maps and town boundaries from MassGIS.

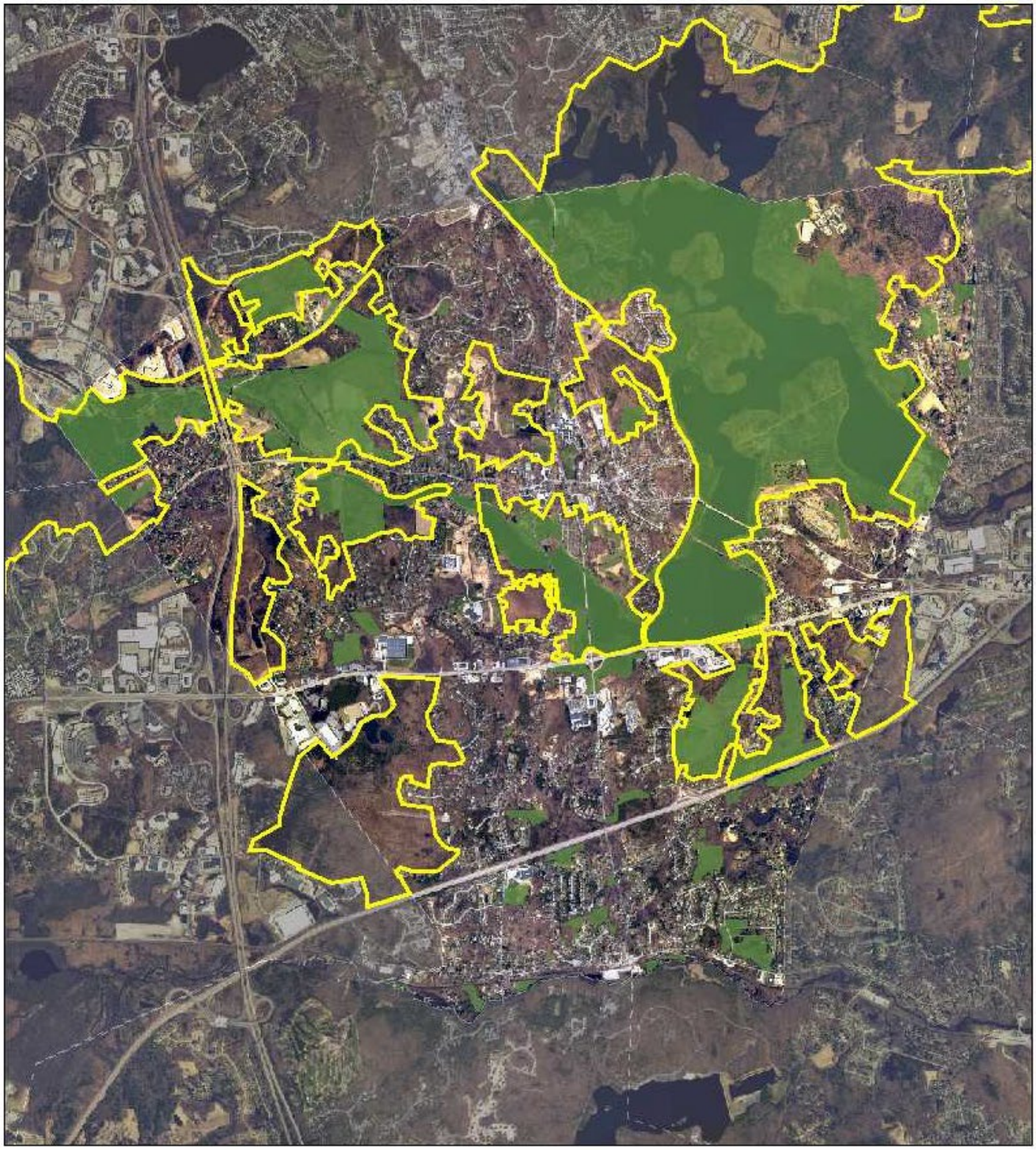

Figure 7. Protected Land in Southborough, Massachusetts.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees.

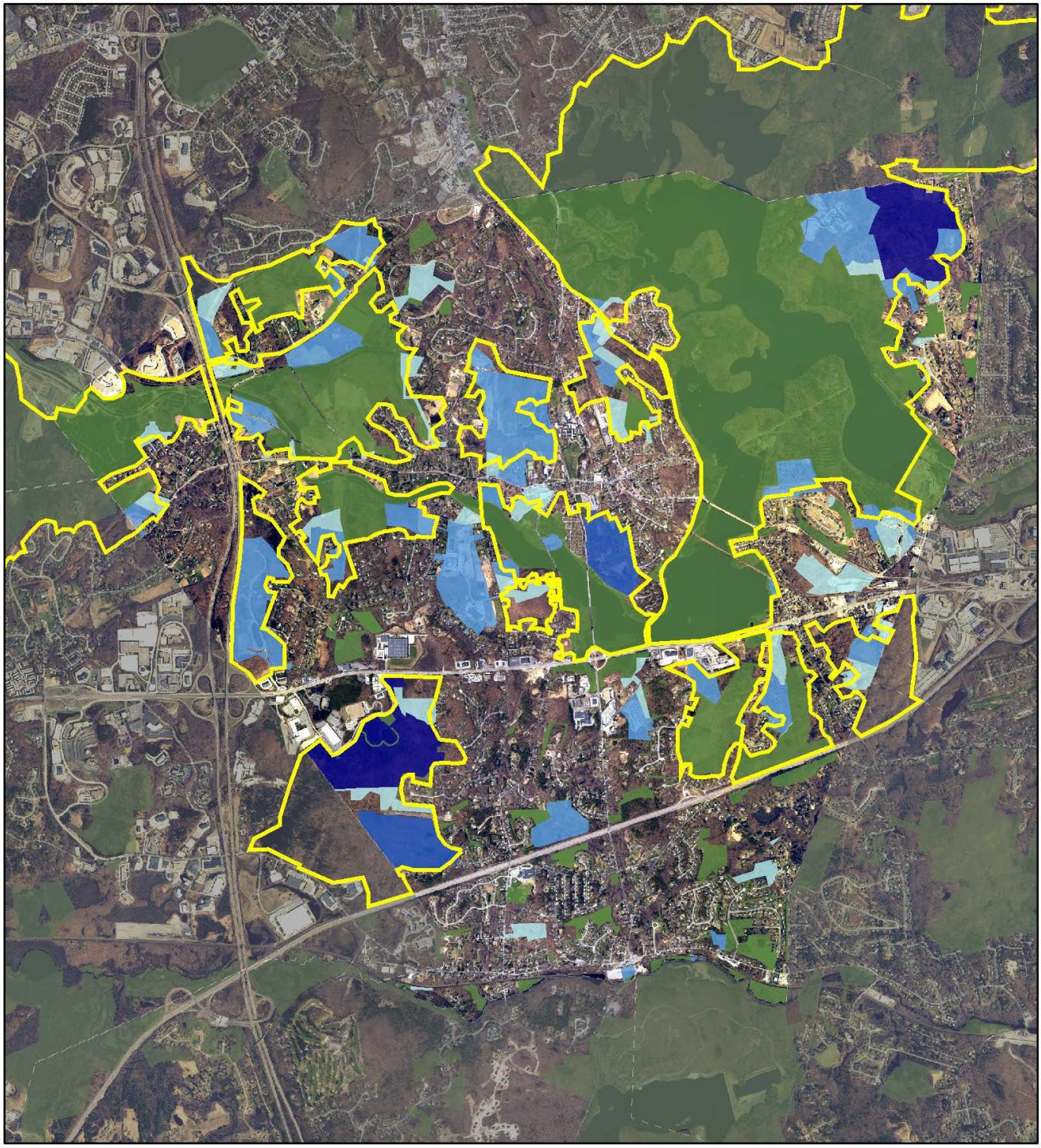

Figure 8. Conservation Priorities in Southborough, Massachusetts.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 9. Conservation Priorities in the Marlborough Line and Chestnut Hill Focus Areas.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 10. Conservation Priorities in the Walnut Hill Focus Area.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

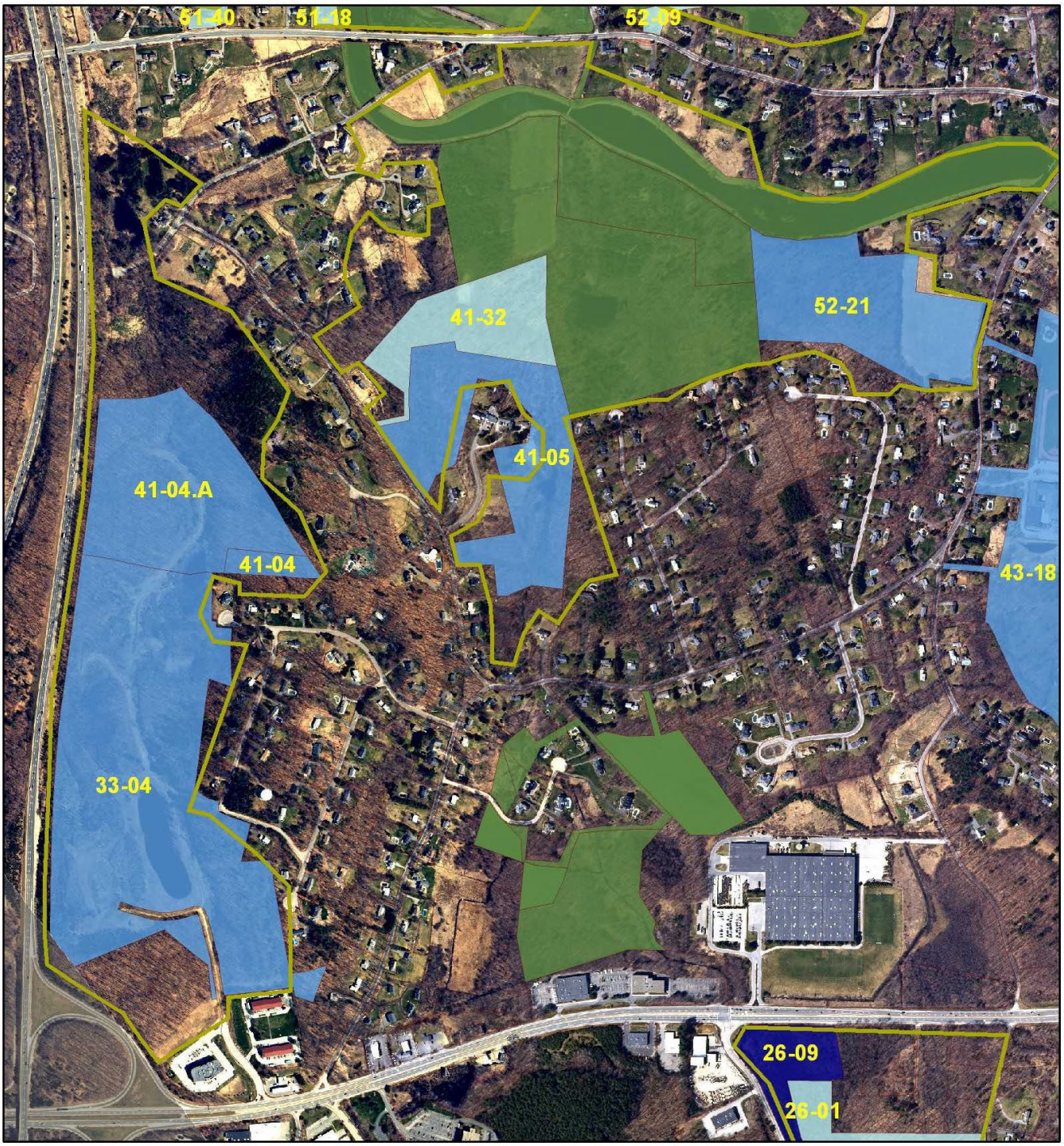

Figure 11. Conservation Priorities in the I-495 Buffer and Aqueduct Focus Areas.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 12. Conservation Priorities in the Westborough Line Focus Area.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 13. Conservation Priorities in the Breakneck Hill, Oak Hill, and Framingham Line Focus Areas.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 14. Conservation Priorities in the Ponds Focus Area.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Figure 15. Conservation Priorities in the Wolfpen Hill and Clear Hill Focus Areas.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

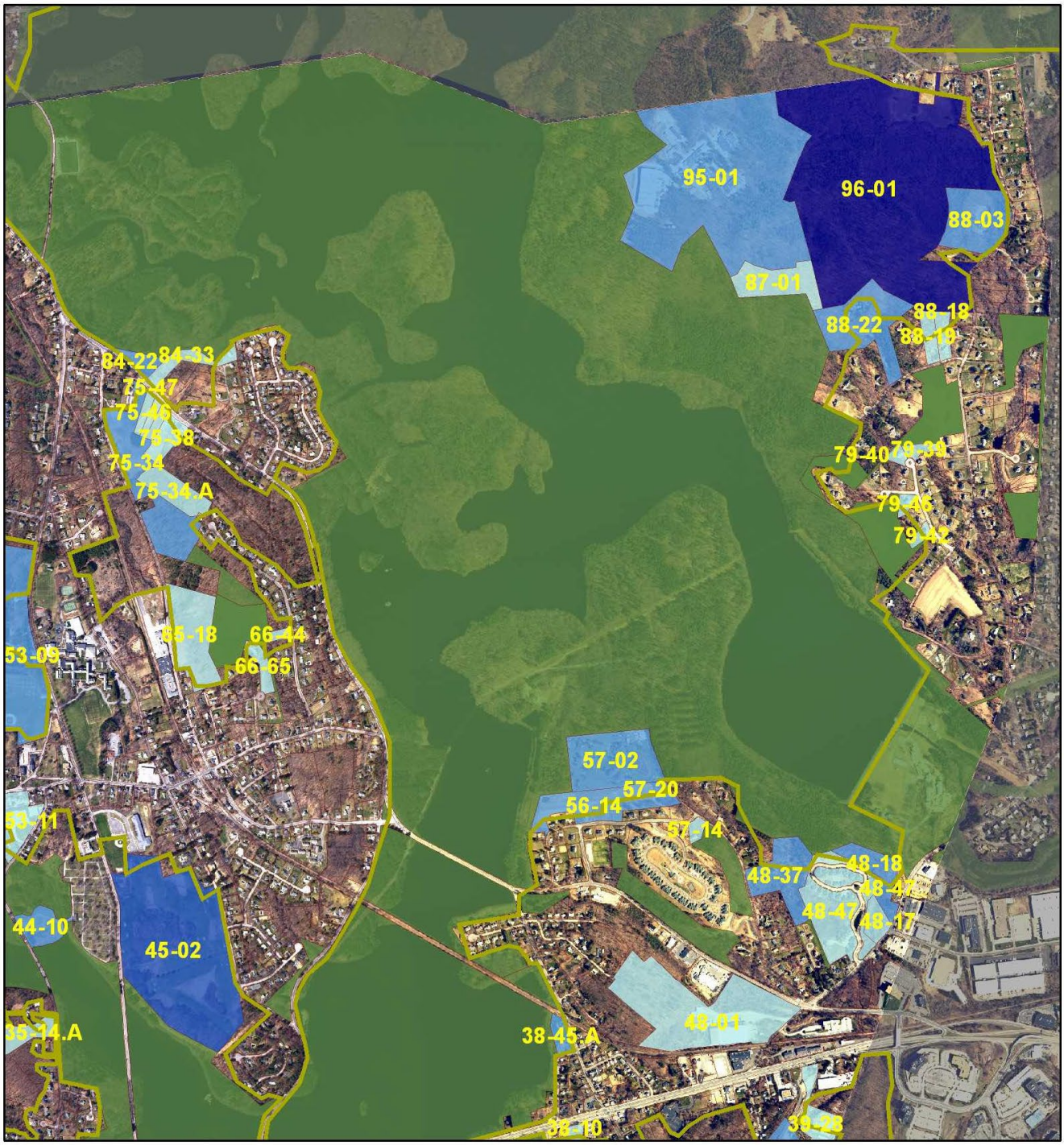

Figure 16. Conservation Priorities in the Sudbury Reservoir Focus Area.

Notes: 2005 aerial photography and town boundaries from MassGIS. Protected land data from MassGIS, Southborough parcel data, and Sudbury Valley Trustees. Priority data from analysis by Mass Audubon Ecological Extension Service.

Appendix #6: ADA Self-Evaluation and Transition Plan

Introduction

The ADA Self-Access Evaluation is "a detailed assessment of the recreation department and conservation commission [that]… includes a site-by-site inventory of all recreation and conservation areas and buildings, programs or services and a transition plan if any changes are necessary to make these public facilities, programs, or services accessible. The Assessment should ensure compliance with Federal anti-discrimination regulations under the Americans with Disabilities Act of 1990, as Amended ("ADA").[1]

The requirements of the ADA are administered in Massachusetts by the Architectural Access Board ("AAB"), as set forth in the Code of Massachusetts Regulations.[2] The purpose of the ADA requirements is to "seek to create or adapt sites, buildings and facilities so that they can be approached, entered, and used by persons with disabilities." For the purpose of an OSRP, public recreational and conservation facilities must be evaluated for compliance with the ADA in accordance with the Code of Massachusetts Regulations. It should be noted, however, that the DCS Workbook emphasizes the creation of an accessible system of facilities rather than an inventory of facilities in which every site is fully accessible.

A. ADMINISTRATIVE REQUIREMENTS

1. Designation of an ADA Coordinator

The ADA Coordinator for the Town of Southborough is:

Mark Purple
Southborough Town House
17 Common Street
Southborough, MA 01772-9109
Telephone #: 508-485-0710
Email: mpurple@southboroughma.com

The following letter signed by Brian Shea, Chairman of the Board of Selectmen, officially designates Mark Purple as the ADA Coordinator: A letter from Mark Purple certifying the Town's nondiscrimination policy also follows.

[1] ADA
[2] 521 CMR 19:00

TOWN OF SOUTHBOROUGH

OFFICE OF THE BOARD OF SELECTMEN
TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710 · FAX (508) 480-0161 · selectmenoffice@southboroughma.com

December 18, 2019

Ms. Melissa Cryan, Grants Manager
Division of Conservation Services
100 Cambridge Street — Suite 900
Boston, MA 02114

Dear Ms. Cryan:

Please be advised that Mark J. Purple is currently Southborough's ADA Coordinator. If you have any questions, please contact me.

Sincerely,

Brian E. Shea, Chairman
Board of Selectmen

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December 18, 2019

Ms. Melissa Cryan, Grants Manager
Division of Conservation Services
100 Cambridge Street — Suite 900
Boston, MA 02114

Dear Ms. Cryan:

As the Town of Southborough's ADA Coordinator, I hereby confirm that Southborough's employment practices, including recruitment, personnel actions, leave administration, training tests, medical exams/questionnaires, social and recreational programs, collective bargaining agreements and wage and salary administration, are consistent with ADA requirements.

In the event you have questions regarding this matter, please advise.

Sincerely,

Mark J. Purple
ADA Coordinator

2. Grievance Procedures

The following ADA Compliance Policy is in place for the public to follow in the event that a complaint must be made in connection with accessibility of conservation or recreation facilities:
Maximum opportunity will be made available to receive citizen comments, complaints, and/or to resolve grievances or inquiries.

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

The complaint should be in writing and contain information about the alleged discrimination such as name, address, telephone number of complainant and location, date and description of the problem. Reasonable accommodations, such as personal interviews or a tape recording of the complaint, will be made available for persons with disabilities who are unable to submit a written complaint.

The complaint should be submitted by the grievant and/or his/her designee as soon as possible but no later than 60 calendar days after the alleged violation to:

Mark Purple
ADA Coordinator
Southborough Town House
17 Common Street Southborough, MA 01772-9109
Telephone #: 508-485-1710
Email: mpurple@southboroughma.com

Within 15 calendar days after receipt of the complaint ADA Coordinator will meet with the complainant and the appropriate department head and/or board to discuss the complaint and possible resolutions. Within 15 calendar days after the meeting ADA Coordinator Mark Purple will respond in writing, and where appropriate in a format accessible to the complainant such as audio tape. The response will explain the position of the Town of Southborough and offer options for substantive resolution of the complaint.

If the response by ADA Coordinator Mark Purple, does not satisfactorily resolve the issue, the complainant and/or his/her designee may appeal the decision of the ADA Coordinator within 15 calendar days after receipt of the response to the Board of Selectmen or its designee.

Within 15 calendar days after receipt of the appeal, the Board of Selectmen or its designee will meet with the complainant to discuss the complaint and possible resolutions. Within 15 calendar days after the meeting the Board of Selectmen or its designee will respond in writing, and where appropriate in a format accessible to the complainant such as audio tape, with a final resolution of the complaint.

All complaints received by ADA Coordinator Mark Purple appeals to the Board of Selectmen or its designee and responses from the ADA Coordinator and the Board of Selectmen or its designee will be kept by the Town of Southborough for at least three years. [adopted by Selectmen August 18, 1992]

3. Public Notification Requirements

3.0 EQUAL EMPLOYMENT OPPORTUNITY
3-1. EQUAL EMPLOYMENT OPPORTUNITY POLICY AND AFFIRMATIVE ACTION PROGRAM The Town of Southborough commits itself to the principles and practices of equal

employment opportunity, in compliance with Titles VI and VII of the Civil Rights Act of 1964; Executive Order No. 227 as amended; MGL Chapter 151B; and all other applicable Federal and State laws and regulations. The Town of Southborough, recognizing the right of an individual to work and to advance on the basis of merit, ability, and potential without regard to race, gender, sexual orientation, color, disability, religion, national origin, national ancestry, or age, resolves to take affirmative action measures to ensure equal opportunity in the areas of hiring, promotion, demotion or transfer, recruitment, layoff or termination, rate of compensation, training programs, and all terms and conditions of employment. The Town of Southborough shall strive to eliminate any systemic discrimination that may be pervasive throughout the place of employment, or throughout the personnel program that could adversely affect the Town's goals relative to equal employment opportunity. It is intended that the affirmative action plan of the Town shall constitute a formalization of philosophy and practice sufficient to guarantee equality for all persons employed by or seeking employment with the Town of Southborough, and shall serve as a firm statement of public policy endorsed by the highest levels of Town Government.

3-2. STRUCTURE AND IMPLEMENTATION The Town Administrator shall annually appoint an Affirmative Action Officer. In the absence of such appointment, said position shall be filled by the Town Administrator.

3-3. THE AFFIRMATIVE ACTION OFFICER SHALL (A) Be responsible for the development and implementation of policies, procedures, guidelines, and regulations for the Town to ensure that the Town employment process operates in compliance with Titles VI and VII of the Civil Rights Act of 1964 and all subsequent amendments, relevant State laws, and Municipal policy; and (B) Monitor hiring practices and appointments of all Town departments and agencies of Town Government for compliance with federal and state law as cited above.

3-4. COMPLAINT PROCEEDINGS Any written complaint alleging violation of the procedural terms and intent of this section shall be processed in accordance with the provisions of the Affirmative Action Program, except that complaints of discriminatory treatment on the basis of a disability should be referred to the Affirmative Action Officer.

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

The ADA Coordinator reviewed the report.

B. PROGRAM ASSESSBILITY

The DCS Workbook calls for an inventory and a future transition plan that includes the buildings, recreation facilities and equipment (swimming areas, tot lots, etc.), programs, and services under the jurisdiction of the Conservation Commission or Recreation Department, including lessees or concessionaires. The inventory is an analysis of the existing conditions at conservation and recreation sites for compliance with the Architectural Access Board (AAB) regulations, while the transition plan identifies a path towards improved accessibility and ADA compliance.

Facility Inventory:

There are ten sites in the Town of Southborough that are under the jurisdiction of the Conservation Commission or Recreation Department and include the requisite facilities to require study for ADA compliance. All ten are under the jurisdiction of the Recreation Department. The sites offer a variety of opportunities for public use, however, their most frequently-reviewed facilities were fields or playground equipment with associated parking, paths, picnic areas, and restrooms.

1. Recreation Facilities

Recreation facilities in Southborough include picnic sites, trails, tot lots, and playing fields and courts. The facilities were reviewed for their proximity to accessible paths and their compliance with accessibility requirements set forth by the AAB. Common requirements include accessible dimensions and features on equipment, proper signage including for the visually impaired, and accompanying programs and services that provide opportunities to the disabled community.

2. Parking

Any public recreation or conservation site with designated off-street parking shall comply with the parking and passenger loading zone provisions set forth in 521 CMR 23.00 ("the Parking Requirements"). The Parking Requirements set forth a minimum number of accessible spaces that must be provided according to the number of total spaces available in the lot, as follows:

Total Spaces in Lot	Required Minimum Number of Accessible Spaces
15-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	2% of total
1,001+	20 plus 1 for each 100 over 1000

Source: 521 CMR 23.2.1

Furthermore, one in every eight accessible spaces, but not less than one space, shall be van accessible.[3] Van accessible spaces must provide a minimum vertical clearance of eight feet, two inches at the parking space and along at least one vehicle access route to such spaces from site entrances and exits. The space shall also

[3] 521 CMR 23.2.2

have a minimum dimension of eight feet in width as well as an eight-foot-wide adjacent access aisle, and be marked by a sign designating it as "Van Accessible".[4] Alternatively, the van requirement may be satisfied by having all handicapped spaces eleven or more feet wide.[5]

3. Ramps

For the purposes of ADA compliance, any part of an accessible route with a slope greater than 5% shall be considered a ramp.[6] Ramp designation triggers slope, rise, width, and landing requirements as well as gripping requirements on rails and surfaces.

4. Site Access, Path of Travel and Entrances

Any accessible route shall provide a continuous unobstructed path connecting accessible spaces and elements inside and outside a facility.[7] The route must adhere to width, turning radius, passing space, and slope requirements. Furthermore, an accessible route may also be designated as a walkway, giving rise to further requirements set forth in 521 CMR 22:00.

5. Rest Rooms

None of the facilities include permanent public toilet rooms.

6. Picnicking

Picnic areas are regulated under recreational facilities in 521 CMR 19.6. The regulations require that picnic facilities be accessible from an accessible route that is paved or hard packed.[8] Additionally, 5% of tables provided at a site shall comply with 521 CMR 19.5.2, which sets forth dimensional requirements for accessible tables. By and large, the picnic facilities at Southborough recreation sites do not comply with the requirements.

The following Facility Inventory is a comprehensive accessibility evaluation of all under the jurisdiction of the Recreation Department or Conservation Commission with public facilities. **The Conservation Commission properties that do not have forms completed are natural areas with no facilities to evaluate.**

[4] 521 CMR 23.4.7
[5] 521 CMR 23.4.7
[6] 521 CMR 24:00
[7] 521 CMR 20.1
[8] 521 CMR 19.6.1

911 Memorial Field

Address: Acre Bridge Road
Parcel No.: 58-002A
Acreage: 2± acres (on Department of Conservation and Recreation's Sudbury Reservoir land)
Facilities: Artificial turf field, parking lot

The 911 Memorial Field is on Sudbury Reservoir property but is operated and maintained by the Recreation Commission. It occupies about 2 acres and has a gravel parking lot. There is a small set of bleachers for spectators that can be reached by an accessible path from the handicapped spaces in the parking lot.

911 Memorial Field		
Facilities		
Game Area 1: Multi-purpose turf field	Access Routes	Accessible path provides access to spectator seating but not onto the field
		Access onto the field is difficult at gates due to terrain and physical barriers
	Equipment	One set of open bleachers at the rear of the site can be reached by the accessible path. There is no other equipment
Programming	Special program availability	There is no programming currently available at 911 Memorial Field
PARKING		
Total Spaces	*55*	
Required Accessible Spaces:	3	
Existing Accessible Spaces:	4	Two spaces appear to be van spaces, but there is no specific signage.

Parking Features			
Specification	**Yes**	**No**	**Comments**
Accessible space located closest to accessible entrance	√		All accessible spaces are located at the entrance to the accessible path
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100ft			n/a
Minimum width of 13' includes 8' space plus 5' accessible aisle	√		The spaces are not striped, but dimensions appear sufficient
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5' aisle	√		There are two van spaces and two standard handicapped spaces
Sign with international symbol of accessibility at each space or pair of spaces	√		
Sign minimum 5', maximum 8'	√		
Surface evenly paved or hard-packed (no cracks)		√	Gravel surface is difficult to traverse

911 Memorial Field (Continued)			
Parking Features			
Specification	**Yes**	**No**	**Comments**
Surface slope less than 1:20 or 5%	√		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)	√		
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted yellow		√	Not painted, but curb is minimal
Site Access			
Specification	**Yes**	**No**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	√		
Disembarking area at accessible entrance	√		
Surface evenly paved or hard-packed	√		Hard-packed stone dust could use maintenance.
Path of Travel			
Specification	**Yes**	**No**	**Comments**
Path does not require the use of stairs	√		
Path is stable, firm, and slip resistant	√		
3' wide minimum	√		
Slope maximum 5% and maximum cross pitch 2%	√		Estimated
Continuous common surface	√		Hard-packed stone dust could use maintenance
Any objects protruding into pathway are detectable by a person with a visual disability using a cane			n/a
Objects protruding more than 4% from the wall must be within 27" of the ground or higher than 80%			n/a
Curb on the pathway must have curb cuts at drives, parking, and drop-offs	√		

Fayville Park – Memorial Field

Address: Central Street
Parcel No.: 38-045A
Acreage: 2.37 acres
Facilities: Soccer, outdoor basketball, softball, playground, tot lot

This newly-renovated site features a completely accessible playground and tot lot. It includes several pieces of playground equipment serving younger (2-5) as well as older (5-12) children. It also includes a picnic pavilion, and has 2 van-accessible handicapped parking spaces. It has a soccer and softball field and there is an accessible path to reach those fields.

Fayville Park – Memorial Field		
Facilities		
Picnic Facilities	Tables and Benches	Tables and benches are located adjacent to the accessible path
		There are no back and arm rests on picnic table benches. There are back rests on benches
		There are at least six picnic tables and six benches
	Trash and Recycling	Trash cans, but not recycling bins, were observed adjacent to accessible paths
	Picnic Shelters	A four-table picnic shelter is located along the accessible path.
		The picnic shelter is located near trash cans, porta-potties, and parking.
Play Area-Tot Lot	All play equipment	The same experience is provided to all
	Access Routes	The tot lot is located adjacent to the accessible path
		There is enough space between equipment for wheelchair
Game Area 1: Little League field	Access Routes	The accessible path provides access to the little league field
		A set of open bleachers could be moved closer to the accessible path
Game Area 2: Basketball court	Access Routes	The court is located adjacent to the accessible path
		The accessible path provides a smooth transition onto the court
	Equipment	There is no spectator seating at the basketball court
Programming	Special program availability	There is no programming currently available at Fayville
PARKING		
Total Spaces	2	All facility parking is off-street, but a small paved lot provides two handicap spaces.
Required Accessible Spaces:	1	
Existing Accessible Spaces:	2	One is a van space

Fayville Park – Memorial Field (Continued)			
Parking Features			
Specification	**Yes**	**No**	**Comments**
Accessible space located closest to accessible entrance	√		
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100ft			n/a
Minimum width of 13' includes 8' space plus 5' accessible aisle	√		
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5' aisle	√		There is one van space and one traditional accessible space
Sign with international symbol of accessibility at each space or pair of spaces	√		
Sign minimum 5', maximum 8'	√		
Surface evenly paved or hard-packed (no cracks)	√		
Surface slope less than 1:20 or 5%	√		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)	√		
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted yellow	√		
Site Access			
Specification	**Yes**	**No**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	√		
Disembarking area at accessible entrance	√		
Surface evenly paved or hard-packed	√		New asphalt

Continued

Fayville Park – Memorial Field (Continued)			
Path of Travel			
Specification	**Yes**	**No**	**Comments**
Path does not require the use of stairs	√		
Path is stable, firm, and slip resistant	√		
3' wide minimum	√		
Slope maximum 5% and maximum cross pitch 2%	√		
Continuous common surface	√		
Any objects protruding into pathway are detectable by a person with a visual disability using a cane			n/a
Objects protruding more than 4% from the wall must be within 27" of the ground or higher than 80%			n/a
Curb on the pathway must have curb cuts at drives, parking, and drop-offs	√		
Picnicking			
Specification	**Yes**	**No**	**Comments**
Minimum of 5% of tables are accessible with clear space under table not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. Additional 29" clear space must extend beyond the 19" clear space under the table to provide access.	√		
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide, and 24" deep			n/a
Top of table no higher than 32" above ground	√		
Surface of the clear ground space under and around the table must be stable, firm, and slip-resistant, and evenly graded with a maximum slope of 2% in all directions	√		
Accessible tables, grills, and fire rings must have clear ground space at least 36" around perimeter	√		

South Union Playground

Address: 21 Highland Street
Parcel No.: 03-003
Acreage: 3.0 acres
Facilities: Playground

This playground is on the grounds of the historic South Union Building, which now hosts an art center. Access to the playground is from Atwood Street to the rear of the building. There are handicapped spaces and an accessible path to the playground and its equipment.

South Union Playground		
Facilities		
Picnic Facilities	Tables and Benches	The three picnic tables are located adjacent to accessible paths
		There are no back and arm rests on the table benches
		There is an adequate number of tables and benches
	Trash and Recycling	One trash can and zero recycling bins were observed adjacent to accessible paths
	Picnic Shelters	The picnic shelter is located adjacent to the accessible path
		The shelter is located near accessible trash cans, parking, and porta potties.
Play Areas (Tot lots)	All play equipment	The same experience is provided to all
	Access Routes	The tot lot is located adjacent to accessible paths
		There is enough space between equipment for wheelchairs
Programming	Special program availability	There is no programming currently available at South Union Playground
PARKING		
Total Spaces	19	The lot is shared with the South Union building. Designated handicapped spaces are adjacent to the building, but an additional unmarked van-capable space is located adjacent to the tot lot entrance.
Required Accessible Spaces:	1	
Existing Accessible Spaces:	2	One is a van space.

Continued

South Union Playground			
Parking Features			
Specification	**Yes**	**No**	**Comments**
Accessible space located closest to accessible entrance		√	Designated accessible spaces are located at the entrance to the building, and not to the tot lot. However, undesignated spaces meet the physical requirements for handicap accessible spaces at the entrance to the tot lot.
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100ft			n/a
Minimum width of 13' includes 8' space plus 5' accessible aisle	√		
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5' aisle	√		
Sign with international symbol of accessibility at each space or pair of spaces	√		
Sign minimum 5', maximum 8'	√		
Surface evenly paved or hard-packed (no cracks)	√		
Surface slope less than 1:20 or 5%	√		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)			n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted yellow			n/a

Continued

South Union Playground			
Site Access			
Specification	**Yes**	**No**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	√		
Disembarking area at accessible entrance	√		
Surface evenly paved or hard-packed	√		
Path of Travel			
Specification	**Yes**	**No**	**Comments**
Path does not require the use of stairs	√		
Path is stable, firm, and slip resistant	√		
3' wide minimum	√		
Slope maximum 5% and maximum cross pitch 2%	√		
Continuous common surface	√		
Any objects protruding into pathway are detectable by a person with a visual disability using a cane			n/a
Objects protruding more than 4% from the wall must be within 27" of the ground or higher than 80%			n/a
Curb on the pathway must have curb cuts at drives, parking, and drop-offs			n/a

Continued

South Union Playground			
Picnicking			
Specification	**Yes**	**No**	**Comments**
Minimum of 5% of tables are accessible with clear space under table not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. Additional 29" clear space must extend beyond the 19" clear space under the table to provide access.	√		Clearance requirements are met on some but not all sides. Middle table does not meet 29" additional clearance
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide, and 24" deep	√		
Top of table no higher than 32" above ground	√		
Surface of the clear ground space under and around the table must be stable, firm, and slip-resistant, and evenly graded with a maximum slope of 2% in all directions	√		
Accessible tables, grills, and fire rings must have clear ground space at least 36" around perimeter	√		Tables have 36" clear ground space on some but not all sides

Lunblad Memorial Field

Address: 53 Parkerville Road
Parcel No.: 43-018
Acreage: 80.7 acres (On Neary School grounds)
Facilities: Baseball, track soccer

This field is on the grounds of the Neary School. There are 2 handicapped parking spaces on a pull-out off Parkersville Road. The pull-out and spaces are in need of repair. There is a paved path up to the fields but stops at the top of the hill. It appears to be too steep to qualify as an accessible path.

Lunblad Memorial Field				
Facilities				
Game Areas: Multiple grass soccer/multi-purpose fields	Access Routes	A paved (but not accessible) path leads to the edge of the field from the drop-off and parking area, but it provides very minimal access.		
		No spectator seating or other equipment was observed.		
Programming	Special program availability	No programming is currently offered at Lundblad Memorial Field		
Parking Count				
Total Spaces	2			
Required Accessible Spaces:	1			
Existing Accessible Spaces:	2	Parking is limited to two parallel spaces, both handicap, but neither van.		
Parking Features				
Specification		**Yes**	**No**	**Comments**
Accessible space located closest to accessible entrance		√		
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100ft				n/a
Minimum width of 13' includes 8' space plus 5' accessible aisle			√	
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5' aisle			√	
Sign with international symbol of accessibility at each space or pair of spaces		√		
Sign minimum 5', maximum 8'		√		
Surface evenly paved or hard-packed (no cracks)		√		
Surface slope less than 1:20 or 5%		√		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)		√		
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted yellow			√	Meets all requirements except texture or yellow paint

Richardson Tennis Courts

Address: 53 Parkerville Road
Parcel No.: 43-018
Acreage: 80.7 acres (On grounds of Trottier Middle and Neary Elementary School)
Facilities: Tennis courts, parking

Richardson Tennis Courts are located on the grounds of the Trottier Middle and Neary Elementary Schools. There are 3 recently repaved courts. There are no handicapped spaces in the parking lot.

Richardson Tennis Courts				
Facilities				
Game Area: Tennis Courts	Access Routes	Accessible path from parking to courts		
		Entryway to parking area would benefit from curb cut at sidewalk		
	Equipment	There is a bench near the accessible path and a handicap porta potty in the parking area.		
Programming	Special program availability	There are no current offerings at Richardson tennis courts		
Parking Count				
Total Spaces	18			
Required Accessible Spaces:	1			
Existing Accessible Spaces:	0			
Parking Features				
Specification			**Yes**	**No**	**Comments**
Accessible space located closest to accessible entrance				√	
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100ft				√	
Minimum width of 13' includes 8' space plus 5' accessible aisle				√	
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5' aisle				√	
Sign with international symbol of accessibility at each space or pair of spaces				√	
Sign minimum 5', maximum 8'				√	
Surface evenly paved or hard-packed (no cracks)			√		
Surface slope less than 1:20 or 5%			√		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)					n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted yellow					n/a

Continued

Richardson Tennis Courts (Continued)			
Site Access			
Specification	**Yes**	**No**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	√		
Disembarking area at accessible entrance	√		
Surface evenly paved or hard-packed	√		
Path of Travel			
Specification	**Yes**	**No**	**Comments**
Path does not require the use of stairs	√		
Path is stable, firm, and slip resistant	√		
3' wide minimum	√		
Slope maximum 5% and maximum cross pitch 2%	√		
Continuous common surface	√		
Any objects protruding into pathway are detectable by a person with a visual disability using a cane			n/a
Objects protruding more than 4% from the wall must be within 27" of the ground or higher than 80%			n/a
Curb on the pathway must have curb cuts at drives, parking, and drop-offs			n/a

Kallander Field

Address: Kallander Drive
Parcel No.: 56-012
Acreage: 2.63 acres
Facilities: Grass field, parking

Kallander Field is a grass field used primarily for soccer. It has a gravel parking lot.

Kallander Field		
Facilities		
Game Area 1: Soccer field	Access Routes	A paved sidewalk and access area provides access to the
	Equipment	There is no spectator seating or additional equipment at the field
Programming	Special program	There are no programs currently offered at the field.
Parking Count		
Total Spaces	30	Count is an estimate since the lot is unpaved and there is neither lines nor signs.
Required Accessible	2	
Existing Accessible Spaces:	0	The gravel lot does not designate spaces, and there are no designated handicapped spaces.

Parking Features			
Specification	**Yes**	**N**	**Comments**
Accessible space located closest to accessible		*V*	
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is			n/a
Minimum width of 13' includes 8' space plus 5'			Spaces are not striped
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5'		*V*	
Sign with international symbol of accessibility at each space or pair of spaces			
Sign minimum 5', maximum 8'		*V*	
Surface evenly paved or hard-packed (no cracks)		*V*	Paved area is good, but gravel is difficult to traverse
Surface slope less than 1:20 or 5%	*V*		
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)			n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted			n/a

Site Access			
Specification	**Yes**	**N**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance		*V*	There is no accessible path, but the field directly abuts the parking lot.
Disembarking area at accessible entrance	*V*		
Surface evenly paved or hard-packed	*V*		There is a small paved area, the rest is gravel

Liberty Estates Field

Address: Liberty Road
Parcel No.: 05-050
Acreage: 4.46 acres
Facilities: Grass field

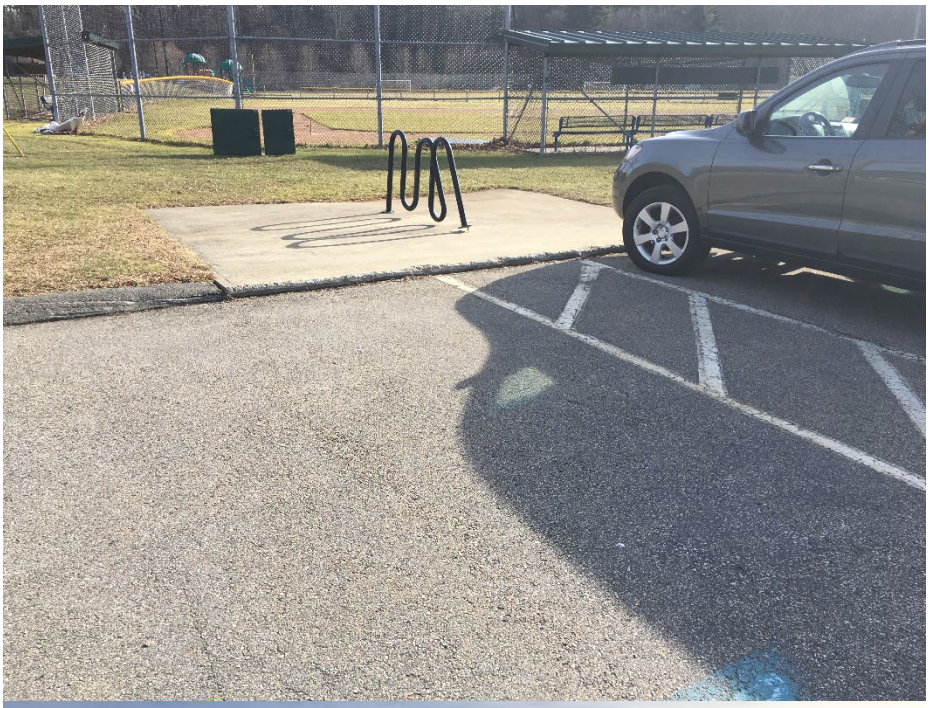
This field occupies about 2-2.5 acres of the 4.46-acre site which the Assessors records indicate is under the jurisdiction of the Conservation Commission. There is no off-street parking, though there is on-street parking. There is no accessible path or any accommodations for the disabled.

Liberty Estates Field				
Facilities				
Game Area: Grass field	Access Routes	A paved public sidewalk provides access to the edge of		
	Equipment	There is no equipment at the field		
Programming	Special program availability	A "Special Olympics Soccer Challenge" is available in September and October. The program will provide children with intellectual disabilities an opportunity to learn the game in a non-competitive environment.		
Parking Count				
Total Spaces	0	Parking is limited to on-street		
Required Accessible	0			
Existing Accessible Spaces:	0			
Site Access				
Specification			**Yes**	**No**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance				*V*	There is only on-street parking and drop-off.
Disembarking area at accessible entrance				*V*	
Surface evenly paved or hard-packed				*V*	

George Mooney Park

Address: Parkerville Road
Parcel No.: 07-023
Acreage: 7.03 acres
Facilities: Three baseball diamonds, batting cages, softball diamond, 2 tennis courts

George Mooney Park offers multiple baseball and softball venues as well as batting cages and tennis courts. There is a van-accessible handicapped space at each end of the parking lot, but no accessible path from those spaces to anywhere.



George Mooney Park				
Facilities				
Game Areas: Baseball, softball, tennis	Access Routes	No accessible route.		
	Equipment	There is no spectator seating.		
Programming	Special program	There are no programs currently offered at the field.		
Parking Count				
Total Spaces	45			
Required Accessible	2			
Existing Accessible Spaces:	2			
Parking Features				
Specification		**Yes**	**N**	**Comments**
Accessible space located closest to accessible		V		But no accessible path
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is			V	n/a
Minimum width of 13' includes 8' space plus 5'		V		
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5'		V		
Sign with international symbol of accessibility at each space or pair of spaces		V		
Sign minimum 5', maximum 8'		V		
Surface evenly paved or hard-packed (no cracks)			V	In lot is good, but no path off lot.
Surface slope less than 1:20 or 5%				n/a
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)			V	n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted				n/a
Site Access				
Specification		**Yes**	**N**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance			V	There is no accessible path, but the field directly abuts the parking lot.
Disembarking area at accessible entrance			V	
Surface evenly paved or hard-packed		V		

Town Forest

Address: Kidder/Woodland/Walnut
Parcel No.: 22-002, 22-003, 22-014, 22-015, 23-008
Acreage: 45.29 acres
Facilities: Forest

Town Forest is a natural forest area with no facilities for parking other than a spot where people pull off onto the side of the road.

Town Forest		
Facilities		
Trails	Access Routes	n/a
		n/a
Programming		n/a
Parking Count		
Total Spaces	0	
Required Accessible	0	
Existing Accessible Spaces:	0	

Parking Features			
Specification	**Yes**	**N**	**Comments**
Accessible space located closest to accessible		V	
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is			n/a
Minimum width of 13' includes 8' space plus 5'			n/a
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces are 11' wide with 5'		V	
Sign with international symbol of accessibility at each space or pair of spaces			
Sign minimum 5', maximum 8'		V	
Surface evenly paved or hard-packed (no cracks)		V	
Surface slope less than 1:20 or 5%		V	
Curb cut to pathway from parking lot at each space or pair of spaces (if applicable)		V	n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or painted		V	n/a

Site Access			
Specification	**Yes**	**N**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance		V	There is no parking or disembarking area.
Disembarking area at accessible entrance		V	
Surface evenly paved or hard-packed		V	

Triangle Park

Address: Southville Road
Parcel No.: 04-001
Acreage: 0.74 acres
Facilities: Walking path, benches, garden

Triangle Park is a passive park located in a triangle of Town-owned land surrounded by Southville Road, Cordaville Road and River Street. It has a walking path and benches as well as several trees, shrubs and flowers. There are no parking facilities, though there is an accessible path from a privately-owned parking lot across River Street.

Triangle Park				
Facilities				
Walking path, benches	Access Routes	A paved walkway provides access throughout the park		
	Equipment	n/a		
Programming		n/a		
Parking Count				
Total Spaces	0			
Required	0			
Existing Accessible Spaces:	0			
Parking Features				
Specification		**Ye**	**N**	**Comments**
Accessible space located closest to			*V*	
Where spaces cannot be located within 200 ft of accessible entrance,				n/a
Minimum width of 13' includes 8' space plus				n/a
Van space -minimum of 1 van space for every accessible space. 8' wide plus 8' aisle. Alternative is all spaces			*V*	
Sign with international symbol of accessibility at each space or pair of				
Sign minimum 5', maximum 8'			*V*	
Surface evenly paved or hard-packed (no cracks)		*V*		
Surface slope less than 1:20 or 5%		*V*		
Curb cut to pathway from parking lot at each space or pair of spaces (if				n/a
Curb cut is a minimum width of 3', excluding sloped sides, has sloped sides, all slopes not to exceed 1:12,				n/a
Site Access				
Specification		**Ye**	**N**	**Comments**
Accessible path of travel from passenger disembarking area and parking area to accessible entrance			*V*	There is no parking or disembarking area.
Disembarking area at accessible entrance				There is an accessible path from an off-site parking area.
Surface evenly paved or hard-packed		*V*		The path is smooth, flat and easily accessible