Conserving the Irreplaceable

Open Space and Recreation Plan

2019

Pembroke, MA

The Old Colony Planning Council

Fall 2019

ACKNOWLEDGEMENTS

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Section 1: PLAN SUMMARY

Pembroke is a growing south shore community with a rich history and wealth of natural, cultural, and historic resources. Foremost amongst these are copious ponds, rivers, streams, and wetlands that dominate the landscape. It is a town that many of its residents identify as being semi-rural, and possessing a charming, small New England town character. This character and the sense of community that accompany it are some of the most highly enjoyed aspects of living within Pembroke. Part of what makes up this character is the abundance of open spaces where people can enjoy recreating or simply basking in the beauty and wonder of undeveloped natural landscapes. The 2019 Open Space and Recreation Plan (OSRP) Update provides guidance for protecting and enhancing the many valued natural and cultural resources within the town.

Through two community meetings, an online survey, and conversations with members of assorted town boards and committees, five main goals have been articulated to satisfy Pembroke's conservation and recreation needs moving into the future:

1. Pembroke's abundant water resources are clean and sustainably managed.
2. Future development is consistent with and protects Pembroke's environmental, historic, and cultural resources.
3. An interconnected network of forest, riparian and wildlife habitats enhance Pembroke's ecological integrity and sustain a resilient landscape.
4. The citizens of Pembroke enjoy better access and increased recreational use of town open space.
5. Planning and management for Pembroke's extensive open space and recreation lands is more efficient and coordinated with an accessible database.

To achieve these goals, this plan recommends that the Town of Pembroke, in cooperation with neighboring towns, private and nonprofit organizations, and landowners, undertake the following:

- Protect the town's ground and surface water resources;
- Prioritize areas of environmental, historic, and culturally significant resources for protection;
- Explore smart growth strategies to focus development away from valued resources;
- Increase public awareness of existing resources;
- Extend and connect protected areas to create contiguous corridors;
- Educate the public about the value of healthy ecosystems;
- Increase and improve access to open spaces;
- Connect existing trail systems for enhanced recreational use;
- Create an accessible electronic data repository for information pertaining to Pembroke's open space and recreation lands;
- Monitor and manage open space lands in Pembroke;
- Provide adequate staffing for the planning and management of open space lands; and,
- Improve inter-departmental and inter-town communication regarding open space.

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Section 2: INTRODUCTION

A. STATEMENT OF PURPOSE

The town of Pembroke is committed to the preservation and protection of its natural, social, and cultural resources, and to providing its citizens with opportunities to interact with and enjoy these resources. This 2019 update to Pembroke's Open Space and Recreation Plan, brings the previous 2005 plan up to date with state requirements. It makes recommendations to help guide planning and development and suggests criteria and actions for protecting and stewarding Pembroke's many resources and recreational spaces.

While many of the goals and the actions from the 2005 plan have been revised for this new update, a few actions from the previous plan were carried out and should be recognized as significant accomplishments. Of particular importance is Pembroke's adoption of the Community Preservation Act (CPA) in 2006. According to the Executive Office of Energy and Environmental Affairs, the CPA allows communities to create a fund to raise money through a surcharge of up to 3 percent of the real estate tax levy on real property. This money can then be used for open space protection, historic preservation and the provision of affordable housing. As an incentive for communities to pass the CPA, the act also creates a significant state matching fund.

Since the 2005 update many parcels have been acquired and put into permanent protection in Pembroke, one of which was acquired with CPA funding. Maintenance and improvements have been performed on many of the town's historical and recreational properties through use of CPA funds as well.

Pembroke's first Open Space and Recreation Plan was prepared in 1971. This original plan was subsequently updated in 1999 with the addition of a 5-year action plan, then again in 2005.

This 2019 Open Space and Recreation Plan for the town of Pembroke:

- Updates the 2005 plan in accordance to Massachusetts state guidelines
- Identifies natural and recreational resources within Pembroke and takes inventory of all open space within the town
- Incorporates public input to better serve the community's needs, build support for various efforts, and encourage public participation in protection of important resources.
- Addresses threats of climate change and recommends actions to adapt to and mitigate these threats.
- Identifies strategies for directing development and resource protection

In reviewing and updating the 2005 plan, it is clear that while strides have been made to protect Pembroke's various resources, the dominant pattern of urban sprawl continues to place pressure on these resources, and this type of growth has gone largely unchecked. Pembroke finds itself at a crossroads, and should be deliberate in choosing which path it will take as a community.

B. PLANNING PROCESS AND PUBLIC PARTICIPATION

In winter of 2017 Pembroke's Conservation Commission and Open Space Committee contracted The Conway School to assist in the update of their Open Space and recreation plan. Graduate students created the required maps, conducted public forums for community input, updated the Open Space and Recreation survey, and helped to develop goals and actions towards furthering the protection of Pembroke's many resources based on community input, relevant data, and through contact with the town governments many departments. The draft plan was then submitted to Pembroke's Open Space Committee for further review and edits.

As of March 2019, Pembroke's Open Space Committee board consists of:

Robert Clarke

Denise Moraski

Linda McCollum

Patricia Lynch

Michael McDonough

Updating an OSRP is an enormous undertaking and requires the collection, coordination, and analysis of large amounts of information. This effort would not have been possible without valuable input and assistance from many people working within the town of Pembroke, as well as in the region. Below is a partial list of public and private organizations that contributed to the making of this plan:

Pembroke Conservation Commission
Pembroke Board of Assessors
Pembroke Board of Health
Pembroke Planning Board
Pembroke Water Department
Pembroke Department of Public Works
Pembroke Recreation Commission
Pembroke Town
Administrator Old Colony
Planning Council
The Wildlands Trust of Southeastern Massachusetts

Public participation in the process was achieved through an online open space survey, and two public meetings.

Open Space Survey
An existing Open Space and Recreation survey which had been conducted in 2005 and 2014 was revised by the Conway team and Pembroke's Open Space Committee and made available for public participation in February of 2017. The survey was published on the town's website as well as posted to various town Facebook pages and Pembroke Public Schools websites. The survey provided multiple choice, rate-by-importance, and open-ended questions regarding citizens' needs and concerns about open space and recreation needs in Pembroke. The survey was active for three weeks and received 278 participants, about 1.4% of the town's population. Survey results can be seen in Appendix A and Chapter 7 under *Summary of Community Needs*.

Public forum #1 - Collecting data
This initial meeting was held by the Conway team in early February of 2017 to report initial findings and collect relevant input to the update process. A brief presentation was made by the students covering what they understood to be relevant trends and information relating to Pembroke's current state of development in relation to conservation of areas of importance and recreational use. Attendees were encouraged to provide input through a series of activities regarding the relevance of community goals stated in the previous OSRP, as well as areas of Pembroke that require additional protection.

Public forum #2 - Collecting Feedback
A second public meeting was held in early March of 2017. At this meeting the Conway team presented initial recommendations and conducted activities aimed at collecting feedback on recommendations, and areas where citizens would like to see directed towards and protected from development.

Economic Justice Population Although there is no Economic Justice population in Pembroke, it is extremely important that open space and recreational opportunities are available to all citizens regardless of socioeconomic status.

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Section 3: COMMUNITY SETTING

3. A REGIONAL CONTEXT

LOCATION

Pembroke is located in the South Shore area of southeastern Massachusetts, 26 miles southeast of Boston and 12 miles east of Brockton. Pembroke has a total area of 23.5 square miles (15,040 acres). The predominant land covers in town are forests (40.9%), wetlands and water (21.3%), and residential (21.3%) (MassDEP, 2006).

Pembroke shares its borders with Hanover, Norwell, and Marshfield to the north, Duxbury to the east, Kingston, Plympton, and Halifax to the south, and Hanson to the west.

Pembroke's proximity to Boston has a large influence on the town in terms of its development pressure. Over the last forty years the South Shore has been rapidly developing as improvements to roads and other transportation infrastructure has enticed commuters to live further away from the city and their places of employment. Today 92 percent of Pembroke's working residents commute out of town for work (towncharts.com).

SHARED RESOURCES

Pembroke also shares numerous water bodies with neighboring towns, including two rivers, and five ponds. Two of the major waterbodies in Pembroke serve as reservoirs for neighboring towns. Given these shared resources, and the fact that many of these water bodies are hydrologically connected with other water resources in the area, regional efforts to protect and manage these resources are incredibly important to ensure the long-term health of these water bodies and the sustainability of their continued use.

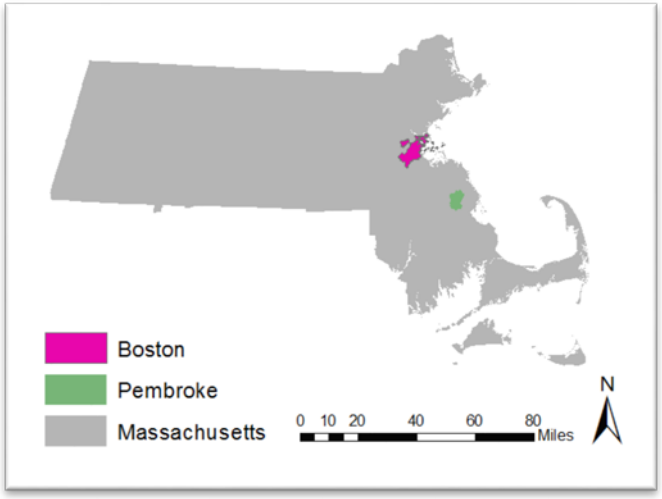


Figure 1: Pembroke's relation to Boston and the coast

According to Biomap2 (see **Map 4.9** Wetland Habitats) core habitat areas are shared across town boundaries to the north with Hanover and Norwell, and to the east with Duxbury. Efforts to adequately protect these areas need to be coordinated across town borders. The Wildlands Trust of southeastern Massachusetts, a regional non-profit land trust, is carrying out this work.

WATER

Water is a dominant feature in Pembroke's landscape, and is present in a myriad of forms. It has defined the town's character and has had a strong influence on its history and development. It is also an invaluable resource for recreation and municipal use.

Pembroke straddles two watersheds (**Map 3.2**). Most of the town is in the South Coastal watershed which drains to the Massachusetts Bay, while the southwest corner of the town is located in the Taunton River watershed, which eventually drains into Narragansett Bay in Rhode Island. Both bays are considered important resources in the region for their recreation, scenic and cultural qualities. Efforts to maintain healthy waters are needed throughout their watersheds to attain a healthy coastline.

The Indian Head River and North River form Pembroke's northern border and are connected hydrologically to the town's many water bodies. These rivers once served as a major transportation route in the region and ship building along the rivers was one of the first industries in Pembroke.

Figure 2: Pembroke drains into two major watersheds

Multiple brooks and streams meander across Pembroke's landscape, connecting the lakes and ponds to marshes and to the rivers to the north. In addition to their historical value once powering mills significant to the town's economy, these brooks provide migration routes for species, such as herring, which have historic, cultural, and ecological value to Pembroke and the region. Pembroke has a Herring Fisheries Commission dedicated to the protection of these fish and their habitat and migration routes within the town.

The largest concentration of surface water is located in the western side of Pembroke where there are six major lakes and ponds. This is one of the most densely populated areas of the town where once seasonal cottages have been converted to year-round residences.

Two of these water bodies are shared across town borders: Oldham Pond is shared with Hanson to the west, and Silver Lake on Pembroke's southern border straddles both Halifax and Kingston to the south. Two water bodies serve as reservoirs for neighboring towns: Great Sandy Bottom Pond is the drinking water for the Abington Rockland Water Supply; and, Silver Lake provides water to the city of Brockton. Oldham Pond is a natural Great Pond and under the Colonial Ordinances of 1641-1647 which allows anglers to pass over unimproved land on foot to gain access to the pond.

This water body is a public water supply (tributary to Furnace Pond MA94043). Oldham Pond is listed in Category 4c of the 2002 Integrated List of Waters due to impairment from exotic species (MassDEP 2003a). A MA DCR Lanes and Ponds Program grant was awarded in FY2000 to the Town of Pembroke for a study of the potential sources of phosphorous and recommendation for

BMPs. This was an implementation action of the 1993 Diagnostic & Feasibility Study performed by BayState Environmental Consultants (BEC 1993). The results of the investigation suggested high total phosphorus concentrations (CEI 2000).

Figure 3: Oldham Pond, Pembroke, MA

Marshes and wetlands scattered around the town have strongly influenced Pembroke's development which has largely been directed to available dry land and avoided the wet areas. With continued development pressure, the town is seeing increased encroachment upon these wetland areas.

A second project was also implemented to remove sediment and other stormwater pollution (Appendix F, Project 01-19/319). The 1996 MassDEP synoptic survey found sparse surface plant cover throughout the pond that included the non-native wetland species *Lythrum salicaria* (Appendix C, Table C-1). Historic records indicate the pond was infested with *M. spicatum* (BEC 1993) so the *Aquatic Life Uses* is assessed as impaired.

There were no closures/postings during the 2002 or 2003 bathing beach seasons at the Pembroke town bathing beach and therefore the *Primary and Secondary Contact Recreational* uses are assessed as support (MDPH 2003 and MDPH 2004b). Camp Pembroke is authorized (MA0027006 issued in March 1981) to discharge a flow of 0.004 MGD (average monthly) of treated sanitary wastewater to Oldham Pond. The permit requires discharge limits for BODs, TSS, settle able solids, chlorine, fecal and total coliform bacteria. EPA is currently investigating alternative wastewater treatment operations in place of a surface water discharge (Malone 2005).

Pembroke's abundance of water in combination with its sandy soils once made it an ideal location for the cultivation of cranberries. Bright red berries would fill these bogs in fall, contributing to the town's rural character as well as its economy. Ice-skating on these flooded bogs in winter was common. While these bogs were culturally and economically significant, they did negatively affect water quality. Synthetic water-soluble fertilizers were commonly used which would run off into connected waterways, eventually reaching the Atlantic Ocean. Today, cranberry bogs in the region are struggling to remain economically viable. There is only one cranberry bog left in operation within Pembroke, a couple of others lay fallow. There are many decommissioned bogs in Pembroke

which continue to contribute to the town's semi-rural scenery as they make their slow their slow return to forested wetlands. Tubb's Meadow located off Route 36 is a large area of protected open space highly valued by town residents as a recreation space for walking and nature watching. It has multiple bogs and irrigation ponds intersected by trails.

Pembroke draws its potable water from a large aquifer via six wells located around town. Due to the low water table and highly permeable soils across the town, efforts to protect the aquifer from pollutants and contaminants are particularly important to maintaining water quality (NRCS 2016).

3. B HISTORY OF THE COMMUNITY

Pembroke has a long and rich history intimately tied to its resources. The lands today called Pembroke were once home to the Massachusett and Wampanoag tribes, who settled in the area and relied on the abundant fertile soils and copious fish and other wildlife. In the 1600's, European settlers came to the continent, settling first in Plymouth and eventually making their way farther north and west. Sometime around 1650, Robert Barker, Dolor Davis, and an accompanying servant traveled along the North River, eventually coming to, and overwintering at the area today known as Herring Run. It is believed that these were the first white settlers in what would eventually become the town of Pembroke. In the preceding years, there would be other European settlers to make the journey from the established settlements in the south and east, and in 1662 Josiah Wampatuck, grand sachem of the Massachusett tribe, sold a large tract of land known as Mattakeesett meaning "the place between the two lakes where the corn grows best", to the European settlers for twenty-one English pounds. This land deal included areas to the north that would later become Marshfield, Norwell, and Hanson (Pembroke 300th Anniversary Committee 2012).

In 1711, the people in the western reaches of Duxbury had grown increasingly frustrated with the long journey to the Duxbury Parish. In the following year, in 1712, after successfully petitioning the local government officials, the area once known as Mattakeesett broke away from Duxbury and was officially incorporated as the town of Pembroke, which soon thereafter built its own meeting house.

The eighteenth century was a prosperous time for the town, which flourished with mills powered by the towns many streams and brooks, as well as iron works utilizing iron ore found in some abundance in the sediments of the many ponds in town. Today's Furnace Pond was named for an iron furnace constructed on its shores in 1702 (Pembroke Historical Society 2014).

As the eighteenth century wore on, ship building grew to be one of the leading industries in the town, with shipyards predominantly along the North River. There were at least five shipyards in Pembroke turning out over a thousand ships before the end of the nineteenth century. The most famous was the Brick Kiln Shipyard. It turned out many well-known ships including the *Beaver*, which in 1773 was one of the ships involved in the Boston Tea Party, as well as the Columbia, which was the first U.S. ship to successfully circumnavigate the globe (Boston Harbor Beacon 2015). During this time period, box and nail manufacturing were important economic drivers, with the Jonathan Jackson nail factory being potentially the very first of its kind in the America. Aside from powering mills and factories, the abundant waters of Pembroke also contributed to the local industry in the form of ice harvesting for summer storage and food preservation, as well cranberry cultivation, which would prove to be one of the longer lived industries within the town (although

declining over recent years, there are still at least a handful of commercial cranberry bogs within Pembroke's borders) (2005 OSRP).

The early 1900s were a time of more leisurely industry in Pembroke with the development of the town's designation as a vacation and tourism destination. The many lakes and ponds throughout the town provided scenic shores which attracted great throngs of vacationing visitors. This time period saw the merging of the Brockton and Pembroke trolley lines which brought scores of passengers through town by rail. This increase in travelers helped usher in a booming tourism industry with a great many vacation homes and resorts constructed along the town's picturesque water bodies, most notable of which was the Mayflower Grove Resort on the shores of Little Sandy Bottom Pond. This resort operated and thrived for nearly forty years until it suffered terrible damages in the great 1938 hurricane and was demolished, with the land being quickly sold off to developers (2005 OSRP).

Today, Pembroke's character and development continue to be influenced by its rich and abundant water resources, as well as its charming scenic qualities. These characteristics continue to draw people in and have been a great driver of the town's growth and development in the 21st century.

3. C POPULATION CHARACTERISTICS

The town of Pembroke conducts population and demographic updates every ten years to comply with the national census updates. The most recent up-to-date census data was conducted in 2010. More recent information comes from the American Community Survey (ACS) and the Population Estimate Program (PEP), both of which provide population estimates for 2017. According to the Town of Pembroke's 2015 Annual Report, Pembroke had a population of 19,473. The 2015 population count shows 11.8 percent increase from the 2000 population (17,701). The ACS population estimate for 2017, which was 18, 230, was 6.4 percent lower than the recorded population of 2015. There is an estimated average of 819 people per square mile. As the population continues to grow in Pembroke, there will be more demands placed on access to open space and recreation resources.

Table 1: 50 Year Population Count

Population by Town

Year	Pembroke	Norwell	Hanover	Hanson	Halifax	Plympton	Kingston	Duxbury	Marshfield
1970	11,193	7,796	10,107	7,148	3,537	1,224	5,999	7,636	15,223
1980	13,453	9,182	11,358	8,617	5,513	1,974	7,362	11,807	20,961
1990	14,704	9,279	11,912	9,028	6,526	2,384	9,045	13,895	21,531
2000	17,425	9,765	13,164	9,495	7,500	2,673	11,780	14,248	24,324
2010	18,892	10,506	13,879	10,209	7,518	2,820	12,629	15,059	25,132

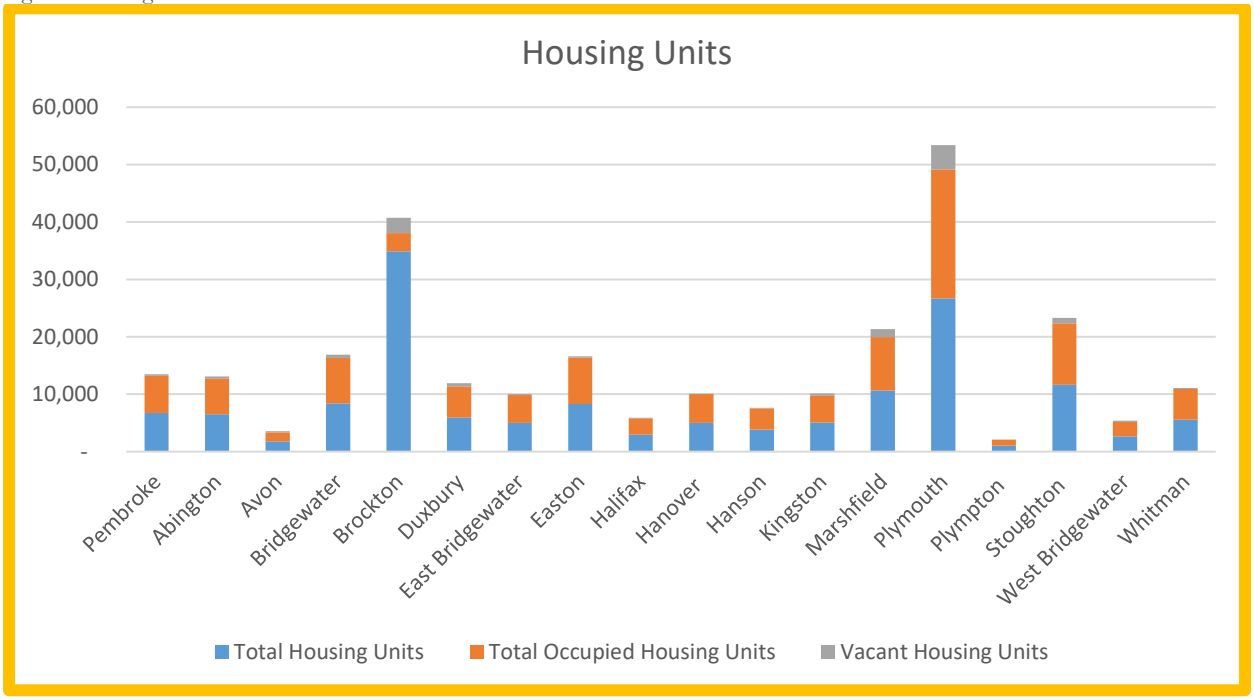
Table 2: Population Change 1990-2010

				Change 1990-2010		Change 2000-2010	
	1990	2000	2010	Number	Percent	Number	Percent
Pembroke	**14,544**	**16,927**	**17,837**	**3,293**	**18.5%**	**910**	**5.37%**
Abington	13,817	14,605	15,985	2,168	13.6%	1,380	9.49%
Avon	4,558	4,443	4,356	(202)	(4.6%)	(87)	(1.95%)
Bridgewater	21,249	25,185	26,563	5,314	20.0%	1,378	5.47%
Brockton	92,788	94,304	93,810	1,022	1.1%	(494)	(0.52%)
Duxbury	13,985	14,248	15,059	1,074	7.1%	811	5.69%
East Bridgewater	11,104	12,974	13,794	2,690	19.5%	820	3.67%
Easton	19,807	22,299	23,112	3,305	14.3%	813	3.64%
Halifax	6,526	7,500	7,518	992	13.2%	18	0.24%
Hanover	11,912	13,164	13,879	1,967	14.2%	715	5.43%
Hanson	9,028	9,495	10,209	1,181	11.6%	714	7.51%
Kingston	9,045	11,780	12,629	3,584	28.4%	849	7.20%
Plymouth	45,608	51,701	56,468	10,860	19.2%	4,767	9.22%
Plympton	2,384	2,637	2,820	436	15.5%	183	6.94%
Stoughton	26,777	27,149	26,962	185	0.7%	(187)	(0.69%)
West Bridgewater	6,389	6,634	6,916	527	7.6%	282	4.25%
Whitman	12,240	13,882	14,489	1,249	8.6%	607	4.37%
Plymouth County	435,276	472,822	494,919	59,643	13.7%	22,097	4.67%
Massachusetts	**6,016,425**	**6,349,097**	**6,547,629**	**531,204**	**8.8%**	**198,532**	**3.13%**

Source: US Census Bureau, 1990, 2000, & 2010 Census

As of 2017 there were 6,731 housing units in Pembroke with an average of 2.80 people per dwelling. This tends to be a married couple household (63%) and another family member, a child under 18 about 33 percent of the time. The median age in Pembroke is 42.5 years, equal to the county median age (42.6) and slightly older than the state median age of 39.4 and the national median age (38). As this population ages in the coming seven years, it will be important for open space and recreation to be accessible to people with limited mobility (ACS).

Figure 4: Housing Units

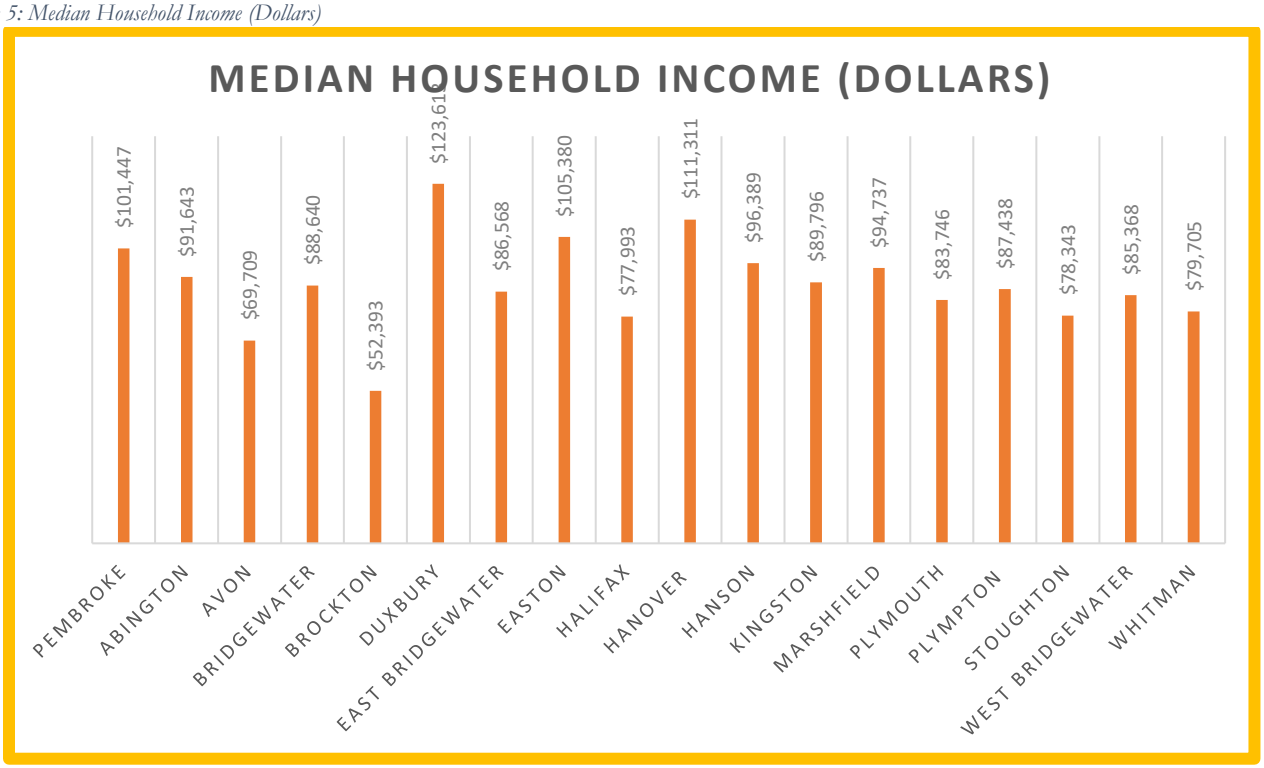


Source: 2013-2017 American Community Survey, DP04

According to the 2013-2017 American Community Survey, the median income of Pembroke is $101,447, about $27,280 more than the state median income per household ($74,167) and $19,366 more than the median income in Plymouth County. The average commute to work is 35 minutes, suggesting that most people commute outside of town for employment.

According to ACS regarding industry, the workforce in Pembroke consists of 10,434 people that are 16 years or older. Education, healthcare, and social services account for the highest sector of employment, making up an estimated 23.6 percent of the workforce.

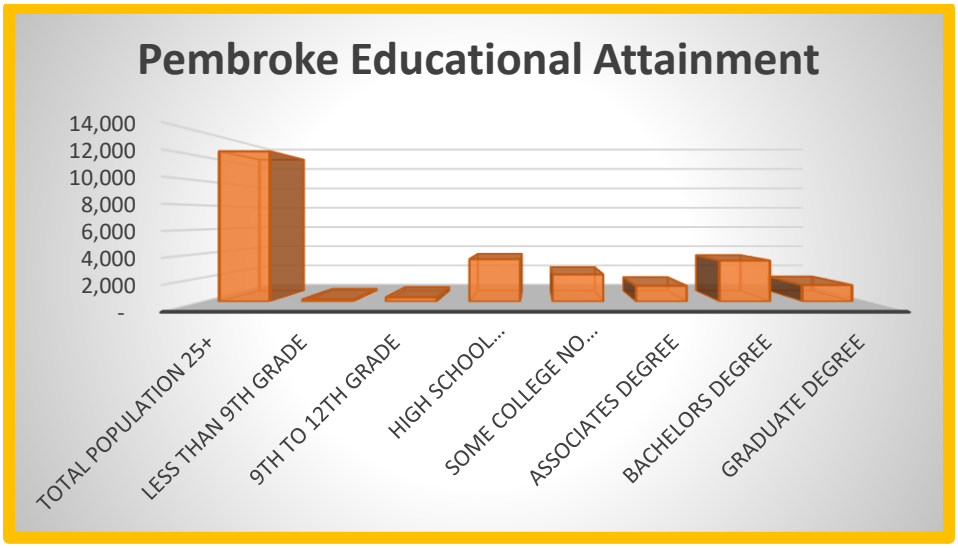
Figure 5: Median Household Income (Dollars)



Source: 2013-2017 American Community Survey, Selected Economic Characteristics, DP03

Pembroke is a well-educated community, with 95.5 percent of residents over the age of 25 having graduated from high school and 38.4 percent of residents have a bachelor degree or higher. These figures are similar to most of its neighboring communities, Plymouth County and the Commonwealth. Table 3 shows the educational profile of adults aged 25 years and older in the region.

Figure 6: Pembroke Educational Attainment



Source: 2013-2017 American Community Survey, S1501

Table 3: Educational Attainment OCPC Region

	Less than High School Diploma	High School Graduate or GED	Some College	Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Avon	319	1,185	593	276	697	186
Abington	381	3,076	2,465	1,363	2,840	1,018
Bridgewater	868	4,960	3,177	1,770	3,700	1,886
Brockton	6,045	20,964	13,282	5,076	7,664	3,211
Duxbury	77	1,207	1,271	675	4,124	3,023
East Bridgewater	301	3,113	2,405	944	1,691	1,082
Easton	421	3,179	2,579	1,643	4,624	2,830
Halifax	180	2,082	889	737	958	532
Hanover	237	2,182	1,593	973	2,636	1,710
Hanson	350	2,182	1,543	883	1,746	610
Kingston	274	2,398	1,359	834	2,659	1,248
Pembroke	**364**	**3,721**	**2,260**	**1,311**	**3,411**	**1,372**
Plymouth	1,397	3,532	8,442	5,066	9,768	5,702
Plympton	103	12,134	358	251	455	243
Stoughton	918	5,182	3,860	2,041	4,888	2,637
West Bridgewater	225	1,655	821	491	1,112	600
Whitman	458	3,431	1,789	1,165	2,107	902
Plymouth County	15,855	99,509	66,538	34,688	79,833	45,718
Massachusetts	**241,431**	**1,162,683**	**741,582**	**363,330**	**1,101,605**	**879,256**

Source: 2013-2017 American Community Survey, S1501

Environmental Justice Populations

The Commonwealth of Massachusetts Department of Energy and Environmental Affairs, defines an Environmental Justice Population as a block group whose annual median household income is equal to or less than 65 percent of the statewide median; or 25 percent or more of the residents identify as a race other than white; or 25 percent or more of households have no one over the age of 14 who speaks English only or very well.

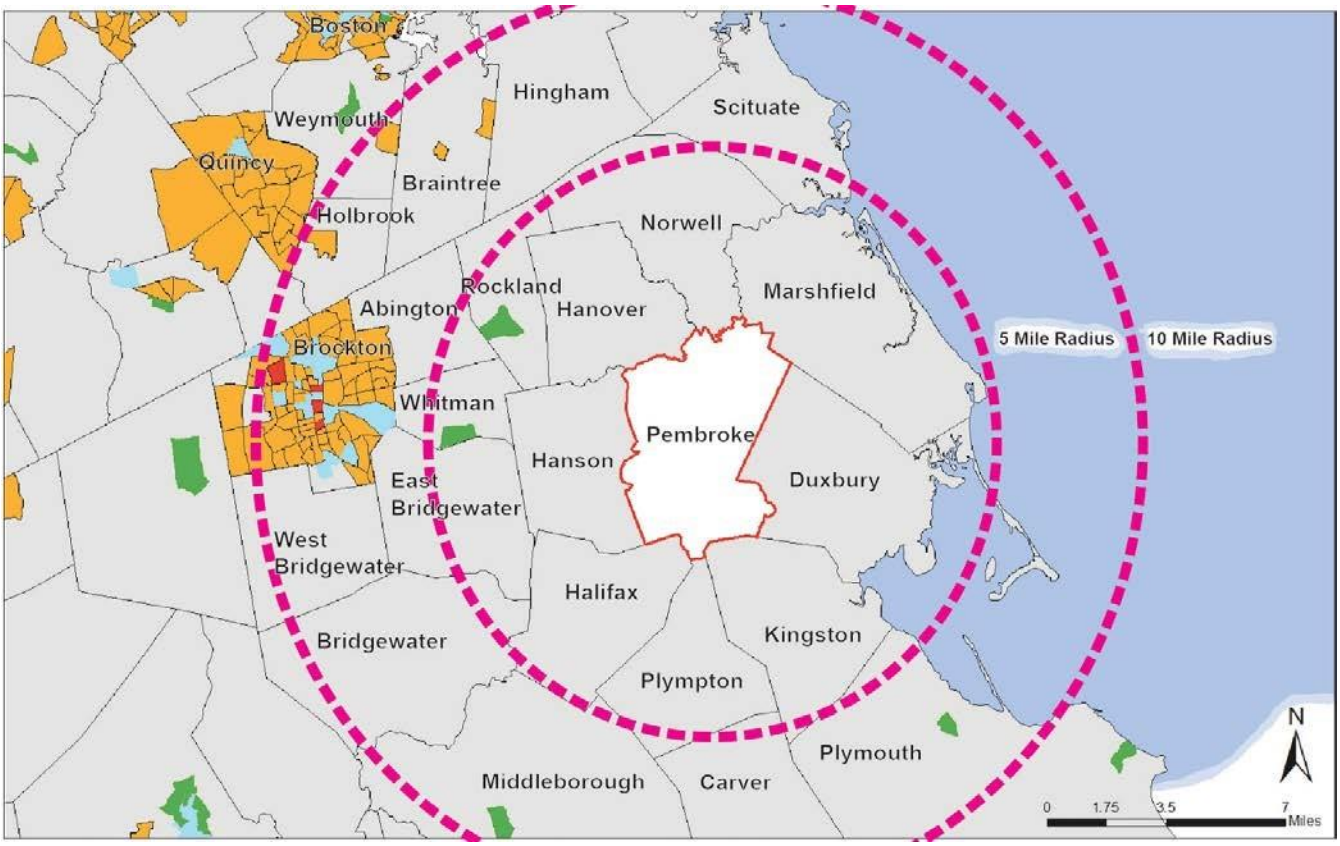


Figure 7: Environmental Justice Populations

Environmental Justice Populations were defined so that all people, regardless of race, class, income, color, origin, or English proficiency, would have the right to be protected from environmental pollution and to live and enjoy a clean and healthful environment. Environmental Justice is the equal protection and meaningful involvement of all people with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies and the equitable distribution of environmental benefits.

As of 2010 there are no state-recognized Environmental Justice populations found within the town boundaries of Pembroke. Within a 5-mile radius there are two small Environmental Justice populations in the towns of Whitman and Rockland. Both populations are recognized as lower income populations. Within a 10-mile radius there are six more towns that have Environmental Justice Populations, the largest being in the City of Brockton, which has income, minority, and

English isolation populations. Environmental Justice Populations continue to increase in number and density past the 10-mile radius, especially in the Boston Metropolitan area (MassGIS 2010).

Because there are no state-recognized Environmental Justice populations found in Pembroke, preservation, and maintenance of open space land, both existing and proposed, will not take into account the bolstering of income, minority, or English isolated neighborhoods in Pembroke. Although these populations may not be recognized in Pembroke, it is important that residents of the town have access to a safe, hazard-free environment.

Table 4: Pembroke Population by Age

Pembroke 2000			***Pembroke 2010***		
Age	**Population**	**Percent**	***Age***	**Population**	**Percent**
Total Population	16,927	100%	***Total Population***	17,837	100%
Under 5	1,342	7.9%	***Under 5***	1,033	5.8%
5 to 9	1,349	8%	***5 to 9***	1,339	7.5%
10 to 14	1,423	8.4%	***10 to 14***	1,466	8.2%
15 to 19	1,104	6.5%	***15 to 19***	1,221	6.8%
20 to 24	632	3.7%	***20 to 24***	809	4.5%
25 to 34	2,287	13.5%	***24 to 34***	1,644	9.2%
35 to 44	3,262	19.3%	***35 to 44***	2770	15.5%
45 to 54	2,472	14.6%	***45 to 54***	3,221	18%
55 to 59	974	5.8%	***55 to 59***	1321	7.4%
60 to 64	670	5%	***60 to 64***	1,012	5.7%
65 to 74	849	4%	***65 to 74***	1,252	7.1%
75 to 84	433	2.6%	***75 to 84***	573	3.2%
85 and Over	130	0.8%	***85 and Over***	176	0.9%

3. D GROWTH AND DEVELOPMENT PATTERNS

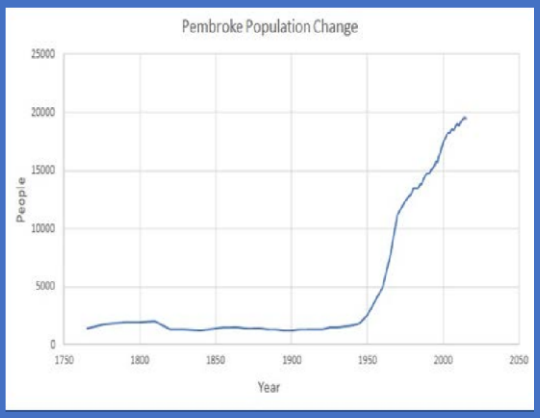
PATTERNS AND TRENDS

Through the nineteenth century, Pembroke, was largely an agricultural and industrial community. As early as the turn of the twentieth century though, the town became a center for vacation and recreation activity, in large part drawing on its scenic and picturesque water bodies and forests to attract throngs of city dwellers looking to escape the crowded hustle and bustle of the metropolitan areas. This led to an extensive development of the areas around the lakes and ponds within Pembroke for seasonal vacation homes, many of which have since been converted into year-round residences. Today, the abundance of water resources and the accompanying scenic character of the town, in combination with its proximity to larger urban areas (Boston in particular), has helped push the town's residential growth, rather than commercial or industrial development.

Figure 8: Population Change in Pembroke, Pembroke Annual Report 2015

Population Change in Pembroke

From the earliest census count in Pembroke (1765) until the 1945 census count, Pembroke's population remained under 2000, with the exception of one count in 1810. The population of Pembroke began to dramatically increase starting in 1945. Pembroke experienced its most dramatic population increase between 1965 and 1970 when the population increased 58 percent from 7,708 to 11,193 residents. The town census of 2016 recorded the population at 19,352 residents.

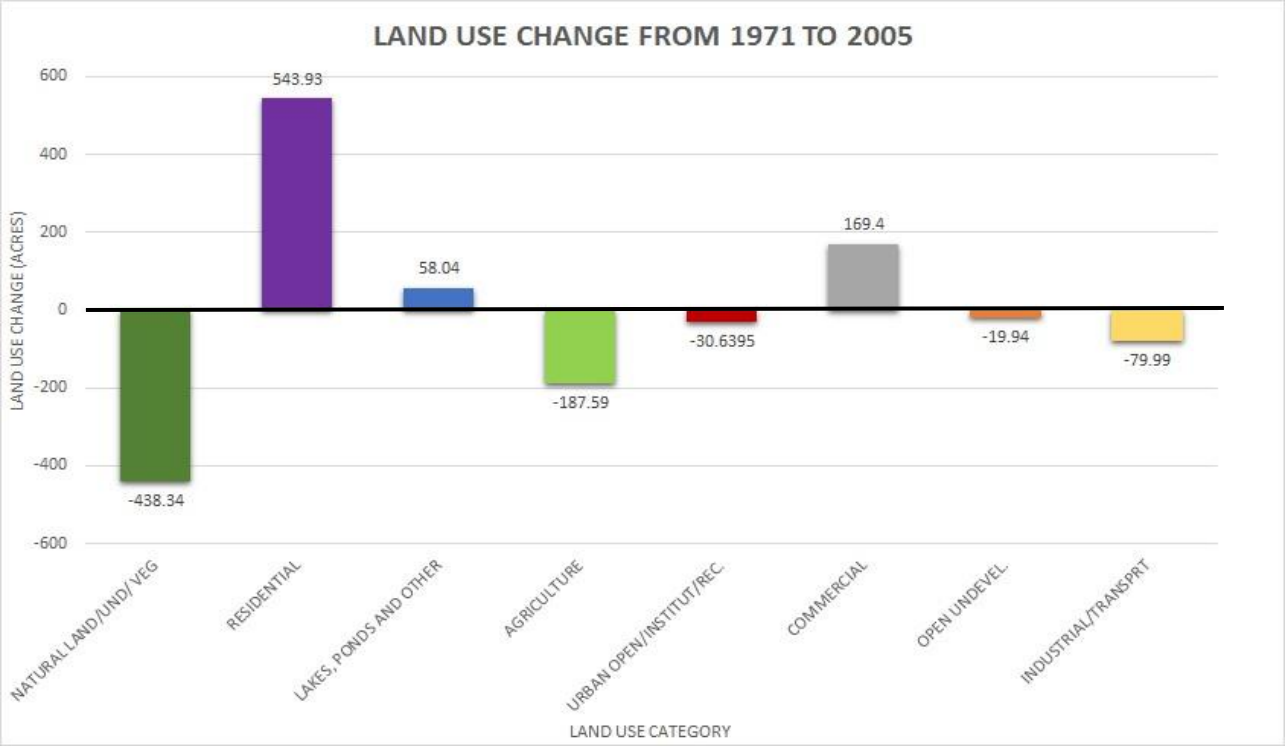


Today, the shorelines continue to be some of the most densely developed areas of town, and residential development continues to be the dominant form of developed land use. From 1971 to 2005, Pembroke saw a 3.14 percent increase in residential land use, which equates to an increase in nearly 550 acres. This change accompanied a corresponding 2.94 percent decrease in the amount of natural, undeveloped lands (MassGIS 2005) (See **Map 3.5a,b** Land Use and **Figure 9**). According to the MassGIS 2005 Land Use data layer, commercial establishments made up about 2.05 percent of the total area of the town, and are concentrated within the historic center district along Route 14 as well as in the northeastern portions of town, along Routes 3 and 53.

This area is also home to the greatest concentration of industrial development within town, including a concrete block factory. The amount of active agricultural lands diminished by 1.25 percent, or 186 acres between 1971 and 2005, with a sharp decline in the number of active cranberry bogs in town. According to a study conducted by the Mass Audubon, from 2005 to 2013 there were 4.6 -8.0 acres of new development per square in Pembroke. This puts the total percent of developed land in Pembroke at a range of 1,226 percent for 2013, with 66-83 percent of land remaining natural under forest, wetland, or water cover (Mass Audubon 2014).

The current zoning bylaws (see **Map 3.6** Zoning), which were adopted in 2005, accommodate a focus on residential development. Pembroke has five different zoning areas, but nearly 90 percent of the town's area is classified for residential zoning. Much smaller areas are given to commercial, mixed, and industrial activities. Some of the commercial, industrial, and mixed districts also allow for some residential uses specific to their zones. One of the important changes to occur to the zoning structure with the 2005 version was the creation of a wellhead protection district in the southern end of town that restricts activities and structures that pose a threat to water quality near aquifer-fed wellheads.

Figure 9: Land Use Change from 1971 to 2005



Although these 2005 regulations limit new constructions or renovations, they have little power over the many densely sited converted summer homes which make up the bulk of structures within these sensitive areas. This threat should be considered as a priority for further protection measures which will be discussed in the Seven-Year Action-Plan (See chap. 9).

INFRASTRUCTURE

Population growth in a community can often require a town to increase infrastructure needs to accommodate for the needs of residents. Infrastructure development, such as maintenance to and construction of roads, municipal water mains, and storm water and sewer systems must meet the needs of a growing community to ensure a safe and orderly delivery of public services.

TRANSPORTATION

Growth in a region generally means more cars and more impact on roads, leading to increased road maintenance. Residents who responded to the 2017 OSRP survey voiced concerns about the increase in traffic. The Old Colony Planning Council's (OCPC) Traffic Volume Report for 1985 to 2015 showed that the annual daily traffic (ADT) in Pembroke has generally decreased. The areas of increased traffic were along major roads close to the borders of neighboring towns. Increased ADT was found on Routes 3, 14, and 139 where these roads connect with bordering towns. Although traffic has not substantially increased in the last thirty years, OCPC's Traffic Volume Report shows an increase in the percentage of heavy vehicles driving through Pembroke.

Within the town of Pembroke, the major roads leading north-south are Route 3, a principal arterial connecting Boston with Cape Cod, Route 53, and Route 36. Roads running east-west include Route 14, Route 139 and Route 27. Routes 36 and 27 run through Zone I well-protection areas, and Route 14, 27 and 36 run through the Zone II protection area. Routes 3, 53, 139, 14, and 27 all cross over major lakes and streams within Pembroke. As traffic increases and road maintenance needs become more frequent, it is likely that water and air pollution from cars and construction will negatively impact these water resources. (See **Map 4.13** Impermeable Surfaces).

Although Pembroke is part of the 78-member Massachusetts Bay Transportation Authority (MBTA) and was assessed $149,114 in 2005, the town received no direct transportation service. The neighboring towns of Halifax, Hanson and Kingston all have passenger rail services which connect people in the region to the Boston metropolitan area. The MBTA services in these towns provide Pembroke residents that work in or around Boston with an alternative transportation opportunity.

The Bay Circuit Trail extends across thirty-seven towns in eastern Massachusetts, connecting many parks and open spaces in fifty-seven communities. In Pembroke, this trail crosses the southern portion of the town, connecting many protected open spaces within the town. It crosses town boundaries shared with Hanson to the west, Kingston to the south, and Duxbury to the east.

As Pembroke's population has grown it has transitioned from rural to suburban, yet the town lacks some amenities for alternate forms of transportation like walking and biking. Cul-de-sacs, subdivisions, and neighborhoods are filled with active families and residents who desire safe and walkable places to take a morning jog, an evening dog-walk, or an afternoon bike ride. According to the February 2017 Pembroke OSRP survey, the highest ranking responses in regards to what people liked least about the town pertained to a lack of sidewalks and safe road conditions (37.9%). Many survey respondents voiced concerns over dangerously narrow roads and speeding motorists, and vied for safer conditions for walking and biking. Sidewalks and bike lanes provide many opportunities to improve quality of life for Pembroke's residents, and future plans for both have been confirmed along Routes 14, 36, and 53 as these roads are widened and resurfaced.

WATER SUPPLY

Six gravel packed wells draw from the aquifer in and around the western portion of Pembroke. There are 3 water tanks in town that store treated water from the aquifer. The water department recently acquired land around Pudding Brook near an abandoned cranberry bog to install a

seventh well which would pump from a high contribution aquifer in the northern part of town. Although the town has underground infrastructure to supply municipal water to residents, some residents still pump from private wells. According to Pembroke's Board of Health, there are an estimated 250 private wells operating in the town.

SEWER AND STORM WATER

Pembroke lacks a central sewer service, so all households and businesses are on septic systems. This in conjunction with high water tables and well drained soils poses a continued threat to both surface and groundwater resources, especially as development encroaches on wetland and water bodies.

High desirability and increasing market value has led to many of the lakeside homes being sold and retrofitted, which requires septic system inspection, and often upgrades, to comply with Title 5 septic requirements. However, septic systems still require regular maintenance and periodic replacement. When septic systems are not well maintained, they pose a risk of failure causing leakage of effluent and excessive nutrients. In Pembroke, where the groundwater level is high, septic failure has the potential to pollute water resources.

The previous 2005 OSRP stated a Comprehensive Wastewater Treatment Plan was in the approval stage with the DEP. Although the plan was close to completion in 2005, it has not been made available to the team developing this OSRP.

Pembroke has a stormwater management infrastructure which includes hundreds of catch basins across town. Many of these lead to outfalls, a few of which are monitored, most are not. Of particular concern are those outlets within the water supply protection zones. All the outfalls pose a threat to surface and groundwater quality, and the town could likely benefit from adapting stormwater gray infrastructure to green infrastructure practices which focus on removal of pollutants and infiltration of stormwater back into the ground close to where it falls.

LONG TERM DEVELOPMENT PATTERNS

Current population trends in combination with recent development practices and current zoning bylaws show that Pembroke will likely see increases in population as well as residential and commercial development. According to the UMASS Donahue Institute's population change estimates, Plymouth County will experience slight population increases within the next twenty-five years. The population estimates from 2010 to 2015 showed a 0.01-0.5 percent increase in Pembroke's population and this trend may continue, potentially raising the town's population beyond 20,000 by 2020. Population increases in Pembroke and Plymouth County will increase development and the pressures associated with development, like road maintenance and water distribution. Regionally, withdrawal from Pembroke's aquifer, which supplies water to other towns in Plymouth County, may increase which could threaten both the quality and quantity of water resources.

Most of the town of Pembroke is zoned Residential A, requiring about one-acre of land to have ample room for a septic system that will not affect neighboring properties. Because most of the land is zoned residential (about 90%) and those residences have large lot size requirements, Pembroke has conditions that allow for residential sprawl. Sprawl has already begun to occur and dwellings continue to be built each year. From 2010 to 2015, 133 dwellings were constructed with an average of 22 per year. As residential development continues, the town risks continued infringement upon the numerous wetlands throughout the town.

Massachusetts General Law Chapter 40B development projects have allowed for cluster development to become more common in Pembroke. As of 2014, 9.6 percent of Pembroke's dwellings were listed as affordable dwellings. To meet the 10 percent goal of the state, 40B development, which bypasses local zoning requirements, has taken place allowing for the construction of cluster houses in areas that usually require over an acre of land. Simultaneously, lakeside properties, which were once affordable housing units, have started to become renovated to increase their property values, diminishing the number of affordable housing units. These two trends combined create an environment suitable for negative ecological consequences. Renovations to lake houses may ensure better septic installations, but cluster housing may concentrate septic systems which could potentially pollute groundwater.

As these trends continue, the town's residential development projects infringe upon wetlands, threatening the natural resources associated with wetlands, such as water and habitat. If these wetlands are lost, the town will lose ecosystem services like flood mitigation, stormwater infiltration, and pollution filtration. Through increased and more intensely concentrated construction as well as increased non-point source pollution from increased growth (e.g. brake dust, fertilizers, pesticides, pet waste, and road salt), wetlands may become more stressed and unable to properly handle contaminants. The danger of polluting water resources may be exacerbated by the construction of cluster housing near water resources due to the combined septic needs of the many residents. These effects all potentially threaten the quality of the aquifer.

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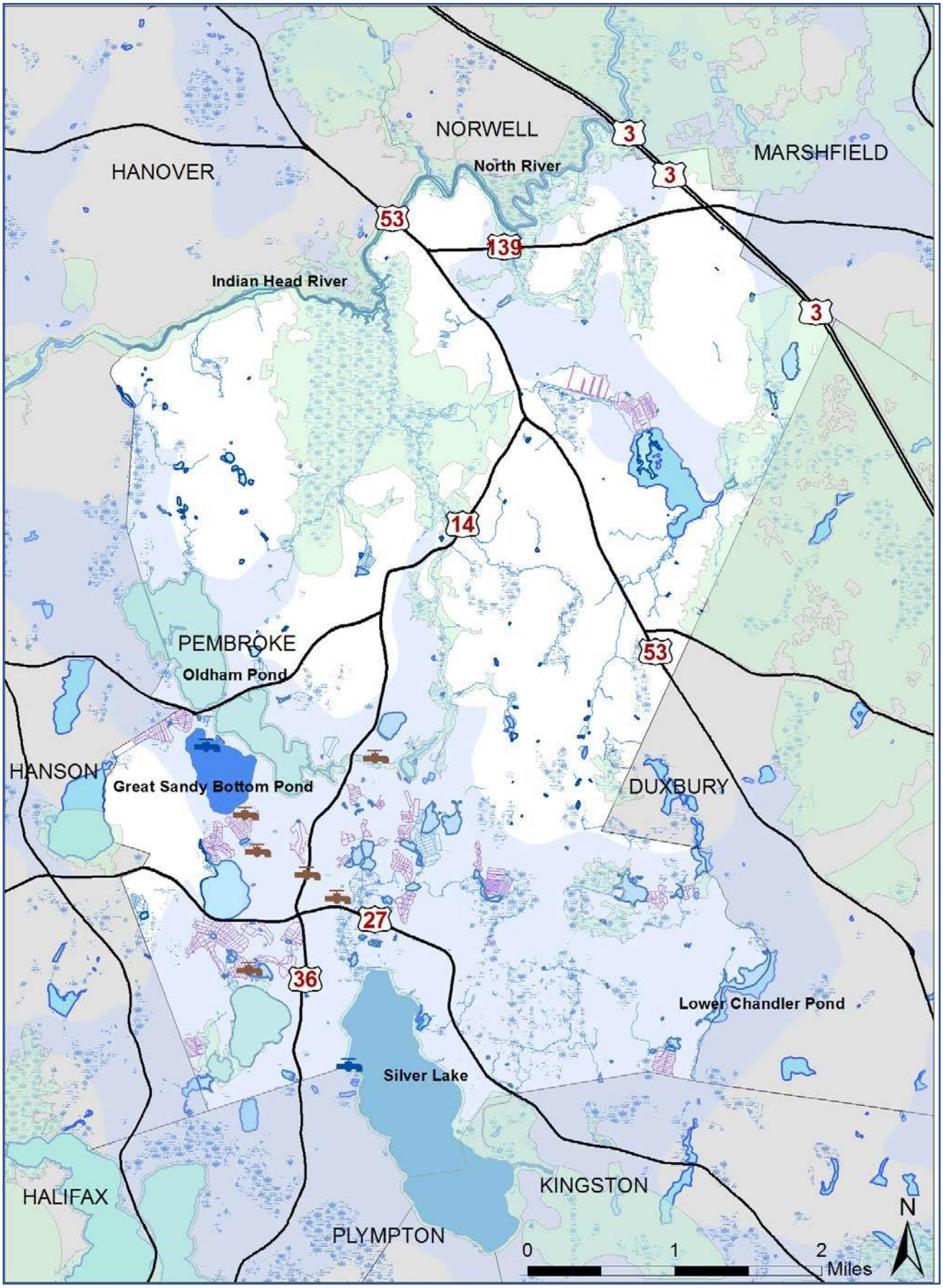
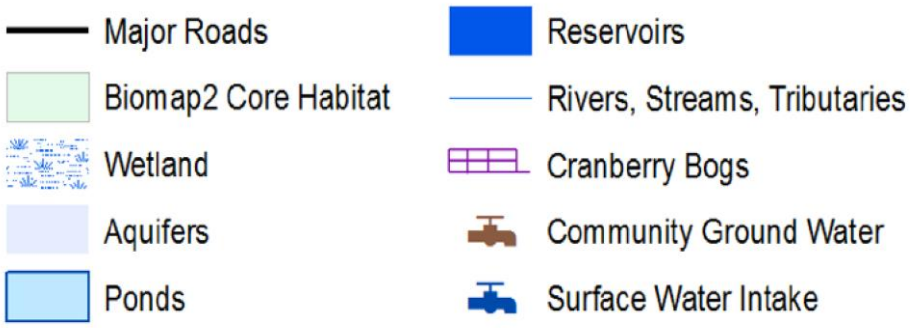

NORWELL
HANOVER
North River
MARSHFIELD
3
3
53
139
Indian Head River
3
14
PEMBROKE
Oldham Pond
53
HANSON
Great Sandy Bottom Pond
DUXBURY
27
36
Lower Chandler Pond
Silver Lake
KINGSTON
HALIFAX
PLYMPTON
N
0
1
2
Miles

Map 3.4
Regional Resources

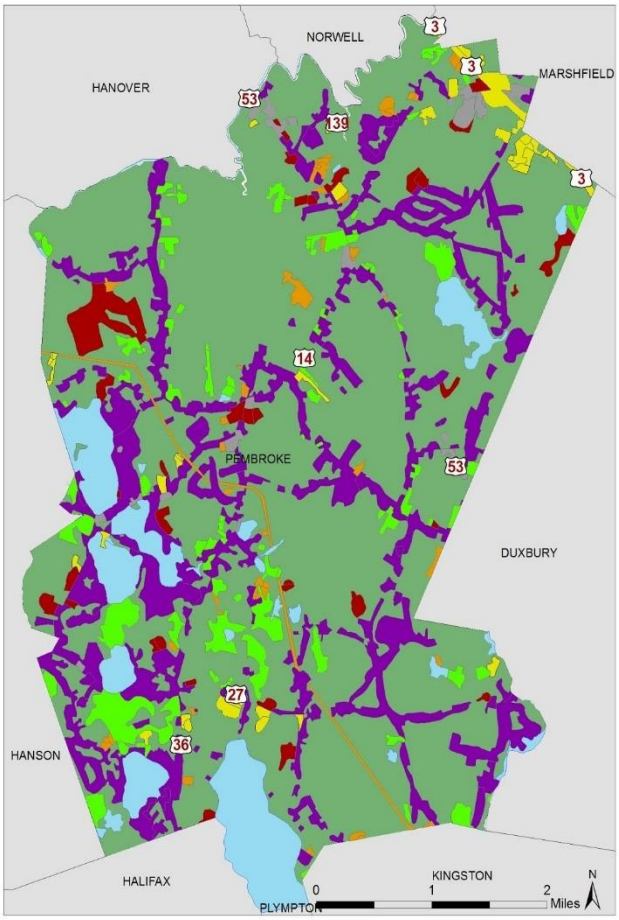


Regional Resources

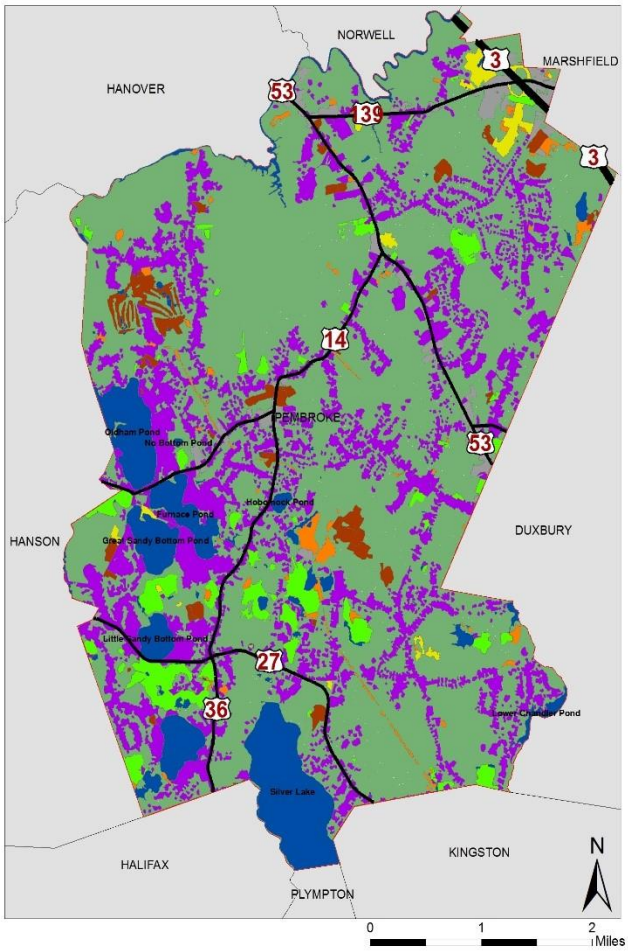
Water is the defining feature in Pembroke's landscape and is present in many forms. The Indian Head and North River form the northern border of the town and are shared with Hanover and Norwell. Numerous ponds straddle town boundaries, as well as aquifers and core habitat areas. Reservoirs provide water to towns that don't share borders with Pembroke.

Because these resources are shared across town boundaries, they require more complex protection and management efforts to ensure that they remain healthy and able to meet the community's needs. In the case of the reservoirs, these ponds are connected to the town's hydrologic system and should be protected from being overdrawn. The critical habitat should be protected as best as is possible and efforts should extend beyond town boundaries to create contiguous areas of protected land.

Map 3.5a – 1971 Land Use



Map 3.5b – 2005 Land Use



Land Use 1971

- Natural Land/Undeveloped 63.06%
- Residential 17.91%
- Lakes, Ponds and Other 8.31%
- Agriculture 4.98%
- Urban Open/Rec 2.38%
- Open/Undeveloped 1.36%
- Industrial 1.08%
- Commercial 0.93%

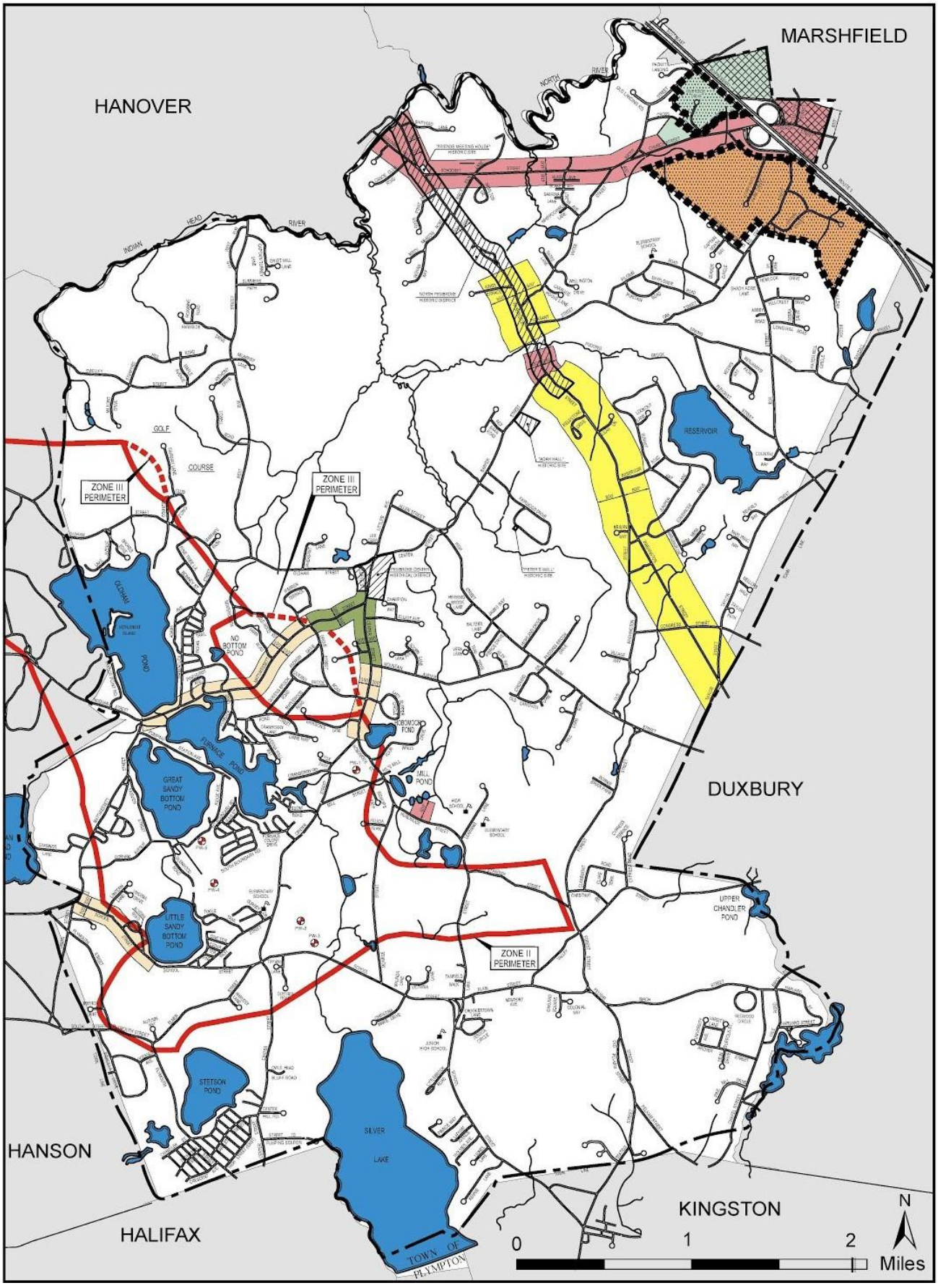
Land Use 2005

- Natural Land/Undeveloped 60.12%
- Residential 21.05%
- Lakes, Ponds and Other 8.12%
- Agriculture 3.73%
- Urban Open/ Rec 2.18%
- Commercial 2.05%
- Open/Undeveloped 1.22%
- Industrial/Transit 1.08%

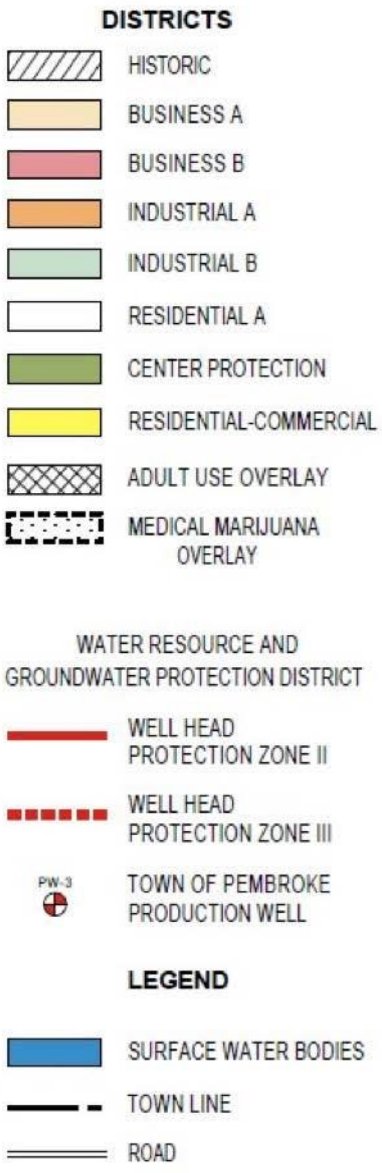
Maps 3.5a & 3.5b Land Use History

Land Use Change

Since 1971, the most pronounced trend has been an increase in residential land use, and a decrease in agriculture and natural undeveloped lands. Residential development is thereby seen to correlate to a loss of natural resources. As development continues to expand, it is expected that there will be a corresponding decrease in undeveloped open spaces.


MARSHFIELD
HANOVER
NORTH RIVER
INDIAN HEAD RIVER
GOLF COURSE
ZONE III PERIMETER
ZONE III PERIMETER
RESERVOIR
OLDHAM POND
NO BOTTOM POND
FURNACE POND
GREAT SANDY BOTTOM POND
LITTLE SANDY BOTTOM POND
OBONSCO POND
MILL POND
DUXBURY
UPPER CHANDLER POND
ZONE II PERIMETER
STETSON POND
SILVER LAKE
HANSON
HALIFAX
TOWN OF PLYMPTON
KINGSTON
0
1
2
Miles
N

Map 3.6 Zoning



Zoning

Current zoning bylaws were adopted in 2005. Zoning helps direct development by directing it to where certain uses are best supported. Examples of this in Pembroke are the Industrial and Business Districts in the northeast of town along Route 3. Although the wellhead protection zones restrict new development in those areas, existing residential units still potentially threaten water quality.

Table 5: Population by Race, Pembroke, Plymouth County

Pembroke 2010		
Race	**Number**	**%**
Total Population	17,837	100
One Race	17,664	99
Two or more	173	1
White	17,274	96.8
Black or African American	109	0.6
American Indian and Alaskan Native	29	0.2
Asian	170	1
Native Hawaiian and Other Pacific Islander	3	< 0.1
Hispanic or Latino	193	1.1
Other	79	0.4

Pembroke 2013-2017		
Race	**Number**	**%**
Total Population	18,230	100
One Race	17,761	97.4
Two or more	469	2.6
White	17,322	95
Black or African American	85	0.5
American Indian and Alaskan Native	0	0
Asian	272	1.5
Native Hawaiian and Other Pacific Islander	0	0
Hispanic or Latino	337	1.8
Other	82	0.4

Plymouth County 2010		
Race	**Number**	**%**
Total Population	494,919	100
One Race	482,128	97.4
Two or more	12,791	2.6
White	423,133	85.5
Black or African American	35,608	7.2
American Indian and Alaskan Native	1,213	0.2
Asian	5,974	1.2
Native Hawaiian and Other Pacific Islander	136	< 0.1
Hispanic or Latino	15,619	3.2
Other	16,064	3.2

Source: US Census 2010, 2013-2017 American Community Survey, DP05

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3. A: Regional Context Works Cited:

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USDA NRCS *Web Soil Survey* United States Department of Agriculture Natural Resources Conservation Service. Web. 2016. 26 Feb. 2017 http://websoilsurvey.sc.egov.usda.gov

Map 3.1.1 Regional Context Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: New England Boundaries, Community Boundaries (Cities and Towns)

Map 3.1.2 Regional Watershed Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Community Boundaries (Cities and Towns), Major Basins

Map 3.1.3 Regional Resources Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Public Water Supplies, MassDOT Major Roads, 1:25,000 USGS/MassDEP Hydography; Water Bodies, Aquifers, Eotroads231

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Map 3.2 EJ Populations Data Sources

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Town of Pembroke "Annual Report of the Building Department" 2014 Annual Report p. 97.

Town of Pembroke "Annual Report of the Building Department" 2015 Annual Report p. 95.

Map 3.3 1971 Land Use Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division: DOT Roads 231, Towns Poly, Land Use 2005

OCPC, Town of Pembroke: Pembroke Lakes, Pembroke Streams

Map 3.4 2005 Land Use Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division: DOT Roads 231, Towns Poly, Land Use 2005

OCPC, Town of Pembroke: Pembroke Lakes, Pembroke Streams

Map 3.5 Zoning Data Sources
Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division: Towns Poly

OCPC, Town of Pembroke: Pembroke Lakes, Pembroke Streams, Zoning Map

Section 4: ENVIRONMENTAL ANALYSIS

4. A GEOLOGY, SOILS, AND TOPOGRAPHY

GEOLOGY AND SOILS

Pembroke's surficial landscape (See **Map** 4.1 Soil Characteristics) was formed over 18,500 years ago by the Laurentide ice sheet, a large glacier which covered the northeastern portion of the continent. As this mile-high glacier expanded southwards from eastern Canada it scoured its way across the landscape, picking up bedrock and surficial materials and depositing these as it advanced. After extending southward to southern New England, the climate warmed and the glacier began to melt, depositing the remaining materials as it receded northward.

These materials were deposited onto the region's geological bedrock base. In Pembroke, the eastern quarter of the town is seated on Avalon granite bedrock, while the western three-quarters are sedimentary bedrock of the Narragansett basin.

Mixed till materials that were deposited in the northern portion of Pembroke likely built upon existing bedrock topography to create the upland hills of this part of the town. Deposits of sand and gravel washed down off the glaciers as they melted, thinly covered the upland till deposits, and created the predominantly sandy loam soils found there now. These soils are of the Birchwood-Poquonock-Mattapoisett series, and are generally poorly suited for development with septic systems due to their slow permeability and perched, seasonally high water tables (nesoil.com). This soil series extends from the north-central upland areas of Pembroke, down to the southeast corner of the town, and includes an isolated area in the northwest corner.

Melting ice carrying finer sands and gravels also created the glacial outwash plains of the southern portion of Pembroke. Here, the glacial ice melted and deposited various materials at its edges and left depressions in the ground. In many cases today, these depressions occur below ground-water level and are now the ponds, bogs and wetlands that characterize Pembroke's southern landscape. Soil types found in these areas include the Hinkley-Windsor-Deerfield series, which are generally well suited to development where the water table is not shallow and the ground water too high.

Lastly, alluvial deposits were developed in low-lying areas along rivers as slower water released these finer materials. These areas make up many of Pembroke's wetlands, bogs and marshes to the north, where soils are characterized by deposits of organic peat and muck. A high water table and low soil strength make them unsuitable for development, but prime areas for wetland and

marshland ecosystems. These soils types tend to be Freetown-Swansea-Scarboro series, with a variety of minor soils within these map units. (Turenne 2016).

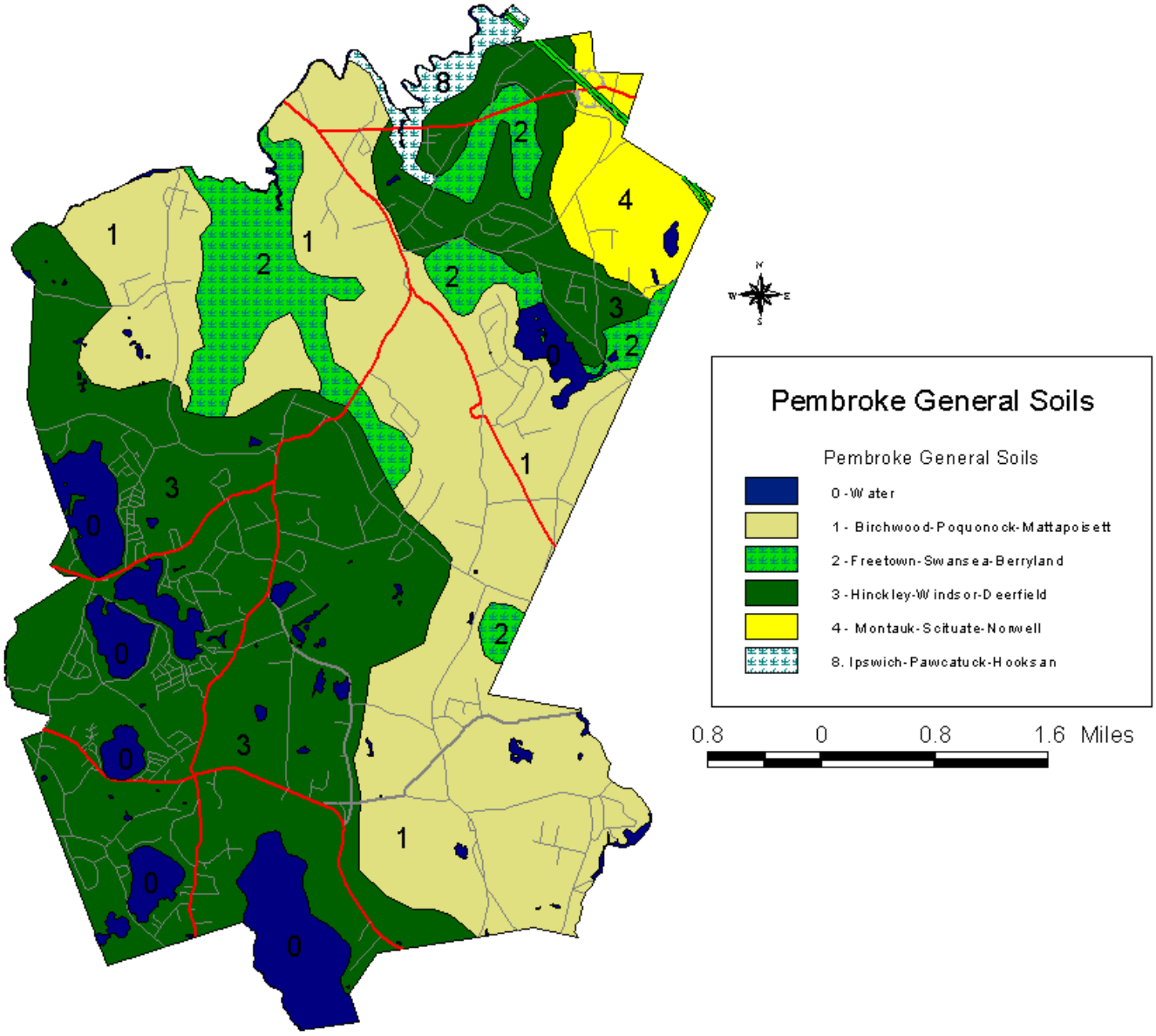


Figure 10: Pembroke General Soils

A small area in the North River basin consists of the Ipswich-Pawcatuck-Hooksan series, soils formed in organic and sandy marine deposits; in sheltered areas along coastal shorelines and bordering brackish water bodies (Turenne 2016).

The northeast corner of Pembroke has soils of the Scituate-Montauk-Norwell series, sandy loams underlain by a dense glacial till. Considered well suited for woodland and croplands, these soil types are not well suited for septic systems as the dense substratum prevents proper absorption and drainage. This layer also causes a perched seasonal high water table (Turenne 2016).

SUITABILITY FOR DEVELOPMENT

Analysis of Pembroke's soils via the USDA Natural Resource Conservation Service Web Soil Survey, indicate that much of Pembroke is limited in its suitability for development. In cases where suitability is considered somewhat or very limited, this indicates that additional measures must be taken to ensure the intended development will be done in a safe and dependable manner. In some cases, it makes the case that specific sites are clearly unsuitable for development.

The Table Below Lays Out Percentages Of Soil In Pembroke With Varying Degrees Of Limitation For Intended Uses Associated With Development.

Table 6: Soil Limitations

Use	Very Limited	Somewhat Limited	Not Limited	Not Rated
Septic tank absorption fields	89.0%	2.2%	0%	8.8
Dwellings with Basements	52.7%	24.5%	14.0%	8.8
Dwellings without Basements	33.8%	30.2%	27.2%	8.8

Pembroke has very little soil that is considered suitable for septic tank absorption fields. According to the Web Soil Survey, soils are evaluated for their ability to absorb effluent, for properties which may affect construction and maintenance, and for public health implications. The majority of Pembroke (89 percent) is considered very limited for septic suitability, with no soils in Pembroke falling within the "Not Limited" category. Despite these limitations, there is no public sewer in Pembroke, and all houses have septic systems.

This suggests that very little of the town's soil can support functioning septic systems; however, with improved septic technology, such as mound systems, towns and developers have found ways to address native soil impediments. These systems still require maintenance and could have negative influence on surface and ground-water quality if not properly maintained. Relatedly, houses with septic systems built within these less-than suitable areas previous to the establishment of current state and federal standards could be contributing to ground and surface water contamination.

A similar, though less severe, situation is found for the suitability of construction of dwellings in Pembroke. Web soil survey defines a dwelling as a single-family unit of three stories or less. Dwelling suitability is determined based on "soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs." These factors can include depth to water table, ponding and flooding, compressibility, and depth to and type of bedrock. Depending on whether the dwelling will have a basement or not affects the depth to which the soil is evaluated. Dwellings with basements are significantly more restricted.

In general, soils with poor drainage, perched water tables and poor supportive structure pose the highest challenges to both septic function and sound construction of dwellings. (See **Map 4.2a,b,c** Soil Suitability)

PRIME AGRICULTURAL SOILS

Although there is not currently an active agricultural industry in Pembroke and only a handful of working farms, there are significant concentrations of NRCS-classified prime agricultural soils, soils of statewide importance, and soils of unique importance (See **Map 4.3** Prime Agricultural Soils). These soils are classified on their agricultural merits, with specific attention paid to their chemical makeup and structural characteristics (MassGIS 2012).

The largest tracts of prime soils are in the southeast of town between Silver Lake and Chandler Pond. There are also moderate concentrations along Route 14 in the northern central areas. Soils of Statewide importance are more common throughout Pembroke, but the largest contiguous tract is in the northwest corner along the Hanover border. Soils of unique agricultural importance, largely composed of mucks, peats and heavy sands are mostly found in the southern ponds with the largest area between Great Sandy Bottom and Stetson Ponds.

TOPOGRAPHY

Changes in elevation are generally subtle throughout the town. Most of the town is relatively flat or gently sloping. The elevations in Pembroke range from 135 feet near the Hobomock Elementary school to 60 feet around the ponds, to just 10 feet above sea level in the North River and the Herring Brook Valley. However, there are some hills such as Long Hill off Pleasant Street, the slopes up from Robinson Creek, the slopes to the west of Herring Brook Valley, and the area between the Hobomock Elementary school and the Mill Ponds.

Pembroke's topographic character is not found in its elevational relief, but rather in the diversity of its low-lying wet areas. These areas include the North River Tidal Basin, the Herring Brook Valley which includes the Atlantic Cedar Swamp, Pembroke's numerous ponds and lakes, and its various rivers, streams, bogs, and wetlands.

4. B LANDSCAPE CHARACTER

The character of a town, how it feels to the residents and visitors, is extremely important in how a community defines itself. Landscape character includes offers many unique habitats and recreation destinations. The many waters of Pembroke have influenced the history of the community and shape the community. Rivers and streams flow into the many ponds, wetlands, and marshes, creating an interconnected network of corridors, habitats, and resource areas that make up an even larger patchwork of forests.

The North River, a designated scenic river, forms the northern boundary of Pembroke and is its major tributary, connecting the town with the Atlantic Ocean. Along Pembroke's northern boundary Herring Brook joins with the North River. Herring Brook offers passage to migrating alewife, who return to spawn. The annual return of the alewife to the town's ponds is recognized by the residents of Pembroke as a celebratory occasion.

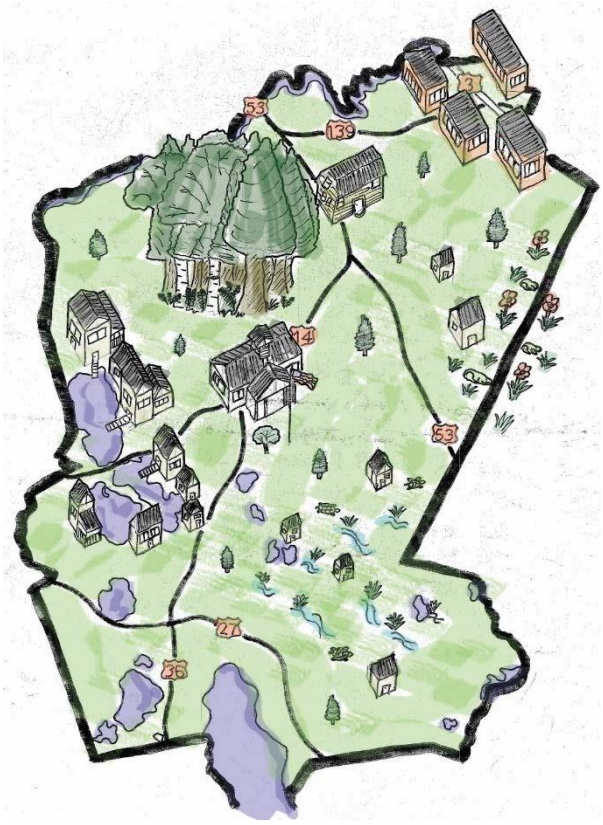


Figure 11: An Illustration of Pembroke's Character Zones

Many smaller streams, perennial and ephemeral, flow into

Herring Brook, forming a sinuous matrix that spreads through the northern part of town, helping form many interesting habitats like the Atlantic Cedar Swamp and tidal marshes. The streams flow from the multiple stream and aquifer fed water bodies along the western and southwestern areas of Pembroke. These include, Oldham Pond, Furnace Pond, Great Sandy Bottom, Little Sandy Bottom, Stetson Pond, and Silver Lake. These water bodies offer ample opportunities for recreation and some provide drinking water for the communities of Abington, Rockland, and Brockton.

Active cranberry bogs used to dot the landscape of Pembroke, like many other southeastern Massachusetts towns, yet only one actively continues production today. Cranberry bogging was the most prevalent form of agricultural cultivation in Pembroke during the last two-hundred years and they offered economic opportunities for seasonal workers and they acted as ice skating rinks in the winter. Today, the characteristic canals cut into sandy soil still mark the landscape, creating unique habitat areas for such wildlife as deer and blue jays. These distinct areas connect the natural and cultural landscape of Pembroke.

Wooded areas spread through most of the town on private and public land. The woods have many distinct configurations and components, creating unique ecosystems, such as wooded swamps and mixed coniferous and hardwood stands. Many people's properties sit nestled in these wooded pockets, offering many a feeling of seclusion and privacy. The sinuous and narrow back roads

throughout the town also contribute to this feeling of seclusion, making the forests seem large and unbroken.

Pembroke has many historical structures throughout the town, which provide a defining description of the town's development. The historical features in Pembroke range from stone walls, churches, and cemeteries to homes, a factory, and a fire station. These historical building range in age from 357 to 70 years of age. Most of these historical features are located along Route 53 (the Historic District) and on Route 14, in the historical Town Center.

4. C WATER RESOURCES

WATERSHED AND LOCAL WATER PROTECTION EFFORTS

Roughly 95 percent of Pembroke is in the South Coastal watershed, which drains east into the Massachusetts Bay. The remaining 5 percent, located in the southwest corner of Pembroke, sits within the Taunton River watershed, which drains to Rhode Island's Narragansett Bay. This area includes Stetson Pons and multiple smaller water bodies just south of Little Sandy Bottom Pond.

Figure 12: A beautiful view of one of Pembroke's many water bodies

Like other communities in the area, Pembroke has extensive surface water resources. Rivers, streams, ponds and wetlands provide a myriad of human benefits and ecosystem functions, including drinking water, recreation, wildlife habitat and migration routes, flood mitigation and aquifer recharge. A number of organizations and governmental bodies have formed over the years to manage and protect these resources, a task increasingly important as various land uses encroach on these sensitive areas.

The Pembroke Watershed Association was formed in 2004 as a volunteer-run non-profit organization whose mission is "to educate the public and to restore the ponds of Pembroke for clean and safe recreational use." The PWA oversees Furnace, Hobomock, Little Sandy Bottom, Oldham, and Stetson Ponds. It monitors water quality in the ponds, conducts annual cleanup days, and runs a Weed Watchers program to address invasive aquatic species. The PWA also conducts educational outreach to the general public and the youth of Pembroke. They do this through informational pamphlets and through the Junior Watershed Rangers program, which engages school children in learning about the importance of watersheds and their protection.

Another entity involved in on-going efforts to protect Pembroke's water resources is the Herring Fisheries Commission, whose mission is "to keep the rivers, streams, brooks and ponds clear of debris for the safe passage of the alewife herring fishery." Additionally, it works to educate the public about water quality and the migration of the herring.

The North and South Rivers Watershed Association, Inc. (NSRWA) is a non-profit grassroots environmental organization with 1,150 members whose mission is "to preserve, restore, maintain and conserve in their natural state, the waters and related natural resources within the watershed." Its goals are to:

- Protect the watershed and promote responsible growth by working in partnerships to preserve open space, scenic vistas and sensitive natural resources;
- Educate and encourage stewardship of the watershed through public education, outreach and recreation programs; and
- Restore the water quality of the rivers by identifying and correcting adverse impacts.

The NSRWA works with Pembroke and the eleven other towns within the watershed: Norwell, Hingham, Scituate, Marshfield, Hanover, Whitman, Hanson, Duxbury, Weymouth, Rockland and Abington.

The North River Commission was formed by the state legislature to administer the Massachusetts Scenic Rivers Act for the North River. It serves to review and regulate activities within 300 feet of the river in Pembroke and five other towns along the North River (Hanson, Hanover, Scituate, Marshfield and Norwell).

CLASSIFICATIONS OF WATERS AND ASSESSMENT OF QUALITY

Under Section 305(b) of the Federal Clean Water Act (CWA), every two years MassDEP must submit to the EPA a statewide report that describes the status of water quality in the Commonwealth. The CWA Section 305(b) water quality reporting process is an essential aspect of the nation's water pollution control effort. It is the principal means by which the EPA, Congress, and the public evaluate existing water quality, assess progress made in maintaining and restoring water quality, and determine the extent of remaining problems. In so doing the state reports on waterbodies according to their designated uses (described below in each class). Each class is identified by the most sensitive and, therefore, governing water uses to be achieved and protected: Aquatic Life, Fish Consumption, Drinking Water, Primary Contact Recreation, Secondary Contact Recreation, Shellfish Harvesting and Aesthetics. Each designated use within a given water body or river segment is individually assessed as support or impaired. When too little current data exist or no reliable data are available, the use is not assessed.

Classification of water bodies determines their assessed use, while the category rating reflects to what degree the water quality of a given water body meets the standards for its intended use. The Integrated List of Waters report lists each waterbody or segment in one of the following five categories:

- Category 1) Unimpaired and not threatened for all designated uses;
- Category 2) Unimpaired for some uses and not assessed for others;

- Category 3) Insufficient information to make assessments for any uses;
- Category 4) Impaired for one or more uses, but not requiring the calculation of a Total Maximum Daily Load (TMDL). (Impairment is due to influences such as low flow, habitat alterations or non-native species infestations).
- Category 5) Impaired for one or more uses and requiring the calculations of a TMDL. (Impairment is due to pollutant(s) such as nutrients, metals, pesticides, solids, or pathogens).

Waters listed in Category 5 constitute the 303(d) List. The formulation of the 303(d) List includes a more rigorous public review and comment process than does reporting under Section 305(b), and the final version of the list must be formally approved by the EPA. (MassGIS Data - MassDEP 2014 Integrated List of Waters (305(b)/303(d))

It is important to note that not all waters are assessed. Many of the small and/or unnamed ponds, rivers, and estuaries in Pembroke are currently unassessed; the status of their designated uses has never been reported to EPA in the Commonwealth's 305(b) Report of the Integrated List of Waters nor is information on these waters maintained in the Waterbody System database (WBS) or the new assessment database (ADB). According to MassDEP policy, water bodies that have not been classified are assumed to be class B if freshwater or SA if salt water.

The water classifications as defined in the South Shore Coastal Watersheds 2001 Water Quality Assessment Report are as follows:

Table 7: Inland Water Classes

Class A	**Waters considered suitable for use as a public water supply, excellent habitat for fish, other aquatic life and wildlife, and suitable for primary and secondary contact recreation, excellent aesthetic value, designated for protection as Outstanding Resource Waters.**
Class B	Waters suitable for aquatic life and wildlife, and for primary and secondary contact recreation.
Class C	Waters suitable for aquatic life and wildlife, and for secondary contact recreation only.

Table 8: Coastal Salt Water Classes

Class SA	**These waters are designated as an excellent habitat for fish, other aquatic life and wildlife and for primary and secondary recreation. In approved areas they shall be suitable for shellfish harvesting. These waters shall have excellent aesthetic value.**
Class SB	These waters are designated as a habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. In approved areas they shall be suitable for shellfish harvesting. These waters shall have consistently good aesthetic value.
Class SC	These waters are designated as a habitat for fish, other aquatic life, and wildlife and for secondary contact recreation. They shall also be suitable for certain industrial cooling and process uses. These waters shall have good aesthetic value.

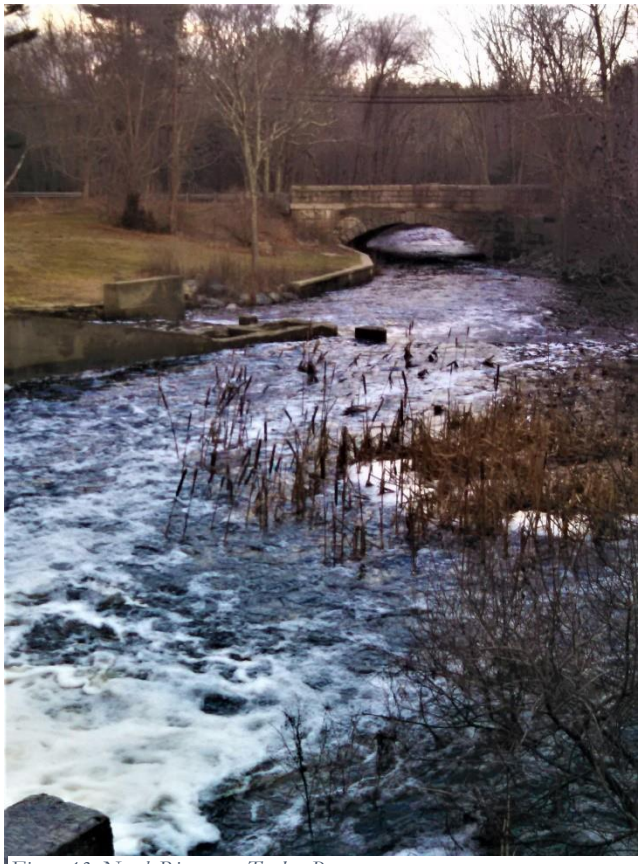


Figure 13: North River near Tucker Preserve

RIVERS

North River, Classification SA, Category 5

The North River, which drains to the Massachusetts Bay, is a tidal river. It plays a critical role in the annual herring migration, providing a route from the Atlantic Ocean to the smaller tributary streams and ponds which are the herrings' spawning grounds. Its tidal influence also creates freshwater tidal marsh conditions, providing habitat for numerous plant and animal species which are discussed in detail in the vegetation and wildlife sections of this chapter.

The North River is also appreciated by residents of the region as a recreational resource for canoeing and kayaking. Limited public access to the North River exists in Pembroke. Currently these include a little known access point at the end of Brick Kiln Road, and from the Nature Preserve, Inc. property on Washington Street. Residents have expressed the need for improved access and adequate parking.

The North River was recognized by the federal government in 1977 as a national natural landmark. In 1978, the North River received protection status under the Massachusetts Scenic River Act, and the North River Commission was formed. Today the North River is considered an Outstanding Water Resource (Pembroke's 2005 OSRP, 4-8).

According to the MassDEP 2014 Integrated List of Waters, the North River doesn't meet its assessed use for fish consumption due to mercury contamination. Other impaired uses are primary contact recreation and shellfish harvesting due to fecal coliform bacteria counts exceeding recommended limits.

Indian Head River, Classification B Category 5

A tributary to the North River, the Indian Head River forms the border between Pembroke and Hanover to the north. The presence of a closed fireworks factory upstream of Pembroke has contributed persistent pollutants to this river, affecting water quality and making fish caught here inedible (MassDEP. 2006).

Additionally, municipal point source discharges contribute phosphorus and cause decreased dissolved oxygen levels in the river, impairing its aquatic life and wildlife assessed use classification. (MassGIS. 2014)

Public access to the Indian Head River can be found at the Tucker Preserve off West Elm Street. This preserve is owned by Pembroke's Conservation Commission and it abuts Hanover conservation and Wildlands Trust lands. Within this area hiking, picnicking, and bird watching are common.

BROOKS AND STREAMS

Herring Brook, unclassified

A primary tributary to the North River, the Herring Brook is a primary migration route for herring, and has protected park known locally as "Herring Run" located on Barker Street (Route 14) where an annual fish fry and herring monitoring events take place each spring.

Pudding Brook, unclassified

Pudding Brook makes up part of the herring migration corridor as it flows into the Herring Brook. Pudding Brook can be seen from Washington Street (Route 53).

Robinson Creek, unclassified

Robinson Creek is located in the northeast corner of Pembroke and has an expansive panorama of tidal marshes. This habitat supports vegetation and wildlife adapted to the tide's influences. For this reason, Pembroke's school teachers have used this area as an outdoor classroom.

Tubb's Meadow Brook, unclassified

Tubb's Meadow Brook once ran from Silver Lake and connected to Herring Brook. In the early 1900s at the same time that Silver Lake became a reservoir, its ties to Herring Brook were severed due to the transition of nearby wetlands to cranberry bogs. However, it now carries diverted waters from Furnace Pond to Silver Lake.

PONDS AND RESERVOIRS

The surface waters of the town include scores of small ponds. The larger, named ponds that have scenic and recreational significance to the town at large include the following:

Oldham Pond, Classification A, Category 4C

Oldham Pond is a 235-acre pond shared between the towns of Pembroke and Hanson. It is also the headwaters of Herring Brook. Oldham Pond has several small tributaries and drains directly into Furnace Pond through a culvert under Mattakeesett Street. Oldham Pond has a public beach with adjacent boat ramp off Wampatuck Street on the eastern side of the pond. Most of the shoreline is occupied by private residences.

In recent years, blue green algal blooms have occurred during summer months, indicating excess nutrients are finding their way into the pond and causing eutrophication. Various chemical treatments have been used to address the algae (Mann, 2010). Additionally, MassDEP cites the

presence of non-native plant species as impairing the aquatic and wildlife assessed use of the pond. It is unclear which species is of concern.

Figure 14: Herring Brook at Herring Run Park

Image source: Bing Maps 2017

Figure 15: Development is clustered around Oldham Ponds southeastern shore.

Furnace Pond, Classification A, Category 5

Furnace Pond, located to the southeast of Oldham Pond, is a 107-acre great pond. It is a man-made water body, created in the early 1700s in order to facilitate the construction of a blast furnace on its shores. Out-flow from Oldham Pond as well as water from several small tributaries and storm drains flow into Furnace Pond, primarily along the eastern side of the pond. On occasion, overflow from Great Sandy Bottom Pond enters Furnace Pond from the southwest. Furnace Pond's outlet to the southeast marks the beginning of Herring Brook.

Furnace Pond is also largely ringed by residential property but has a semi-public beach at its southern end, which is maintained by the Furnace Pond Neighborhood Association. Boats can be launched at the northern edge of the pond along Mattakeesett Street.

Furnace Pond's water is seasonally diverted to Silver Lake to supplement Brockton's reservoir. Serving as an "on demand" tributary to Silver Lake has an influence on the ecology of both Furnace and Oldham Ponds. When water levels drop, water temperatures increase, and outflow to tributaries such as Herring Brook can be slowed or stopped altogether, which could have a disastrous effect on the springtime herring migration. Although state legislation put in place in 1964 provides some protection to Furnace Pond by setting limits on when withdrawals can happen, the use of Furnace Pond as a source of Brockton's water supply continues to be an unresolved and contentious issue in the town of Pembroke.

Great Sandy Bottom Pond, Classification A

Great Sandy Bottom Pond is a source of drinking water for the Abington-Rockland Joint Water Works. It is a 109-acre pond surrounded by residential homes and the Abington-Rockland treatment plant.

Little Sandy Bottom Pond, unclassified

This 54-acre pond sits just north of the Taunton watershed basin divide. Discharge from a cranberry farm operation to the north of the pond occasionally puts water removed from Little Sandy Bottom Pond into Great Sandy Bottom (Pembroke 2005 OSRP, 4-9). The east and west shorelines of Little Sandy Bottom Pond are densely residential.

Stetson Pond, unclassified

Stetson Pond is in the Taunton River basin and flows to East Monponsett Pond in Halifax via Stetson Brook and a direct outlet. It receives water mainly from ground-water inflow and a cranberry farm to the north and passes water into the Monponsett Pond system through its outlet (Pembroke 2005 OSRP, 4-9).

There is a public beach and boat launch area off Plymouth Street along the southwest edge of the pond. Most of the shoreline is residentially developed. Stetson Pond experienced a severe infestation of blue-green algae in 2010 (Mann, 2010).

Hobomock Pond, unclassified

Hobomock Pond is a kettle hole that is used for swimming and fishing. Public access can be found on the southern edge of Hobomock Street. Its shoreline is both residential and wooded.

Silver Lake, Classification A

At 640 acres, Silver Lake is the twelfth-largest natural lake in Massachusetts. It straddles the towns of Pembroke, Kingston and Plympton, and is the primary water supply serving the City of Brockton. The Central Plymouth County Water District was established by the Acts of 1964, Chapter 371 as an emergency law authorizing the City of Brockton to extend its source of water supply. Beyond acquiring a desalinization plant which is rarely used, Silver Lake and its tributary ponds remain the primary source for the city. In addition to Brockton's water treatment and pumping facility, Silver Lake's shoreline is residential, wooded and swampland (Pembroke 2005 OSRP, 4-10).

As of January 2017, Silver Lake's water level was at a 30-year low, creating flow alterations in many connected waterways and causing significant water quality degradation. The city is pumping an average of ten million gallons from the lake daily (Carini, 2017).

AQUIFER RECHARGE AREAS

An aquifer in the western part of town supplies Pembroke with all of its municipal water. Pembroke draws water from six wellheads and distributes it throughout the town. This aquifer also lies beneath the towns of Hanover to the west and Halifax to the south. Both towns have wells that draw from this aquifer. Brockton, Abington, and Rockland draw water from Great Sandy Bottom Pond and Silver Lake both of which sit in the aquifer contribution zone and are hydrologically connected to this aquifer. In combination with a high water table, sandy soils, and minor tributaries, ponds like Oldham Pond are spring-fed by the aquifer. Since the aquifer feeds all the water bodies in the western portion of town, drawing water from wells or from the reservoirs has an impact on the entire hydrological system (Carlson and Lyford).

The contribution zone of this aquifer encompasses the south and western portions of Pembroke and expands to the towns of Hanson, Halifax, Plympton, Kingston, and Duxbury of which are found in Pembroke. In 1989, Pembroke adopted the Groundwater Protection District to protect its municipal water resources. The Groundwater Protection District encompasses most of this aquifer's zone of contribution but also includes areas in eastern Hanson (see **Map 3.6** Zoning Map).

Another aquifer lies in the northern part of town, between Routes 139 and 53. Although the town does not currently draw water from this aquifer, according to Pembroke's water department the town plans to construct another wellhead in this area. The wellhead will be located close to Pudding Brook, on the site of a decommissioned cranberry bog. The land that overlays this aquifer's zone of contribution (748 acres), is much smaller than that of the south (MassGIS MassDEP Wellhead Protection Areas). As in the south, residential development has covered much of the land overlaying the aquifer. It is important for residents located over this aquifer to understand the existence of this water source and what impacts residential properties might have on the quality of water that contributes to the aquifer.

A third aquifer lies on the northern border of town, extending into Marshfield. There are at least eight wellheads within this aquifer that Marshfield uses for municipal needs. Busy Route 3 crosses over this aquifer. Part of Pembroke's industrially zoned districts overlay this aquifer. High volumes of traffic and swaths of impermeable surfaces reduce infiltration capabilities of stormwater, due to their lack of vegetation (see **Map 4.13** Impermeable Surfaces). Impermeable surfaces might

contribute to concentrated amounts automobile and industrial pollution entering into this aquifer's zone of contribution.

The southern aquifer, which provides drinking water for Pembroke residents and many other towns, must be protected. In light of recent drought conditions and future climate change projections it will be important for Pembroke to monitor the quantity and quality of the water in the aquifer as well as the water sources in the aquifer's zone of contribution. It will be imperative to reduce non-essential draws from ground and surface water sources and ensure that all communities that draw from these water resources do so in a fashion that does not impair hydrological function. Nonpoint source pollution from residents within the zone of contribution should also be monitored to reduce the risk of contamination to the aquifer. Reducing the use of fertilizers and pesticides, repairing leaking septic systems, and implementing stormwater infiltration in and around the zone of contribution will reduce the likelihood of contaminating the aquifer and keeping the drinking-water supply of Pembroke safe for the use of Pembroke's citizens.

(Refer **to Map 4.4** Aquifer and Wellhead Protection Area)

FLOOD HAZARD AREAS

Many rivers, streams, and brooks traverse the town. Periodically, these interconnected water bodies become inundated, which can be hazardous to the residents.

The Federal Emergency Agency (FEMA) has determined which areas in Pembroke have a one percent chance of being flooded in the course of a year. These areas are referred to as the 100-year flood zones. FEMA divides the 100-year flood zone into two categories: A (the 100-year flood zone without a determined Base Flood Elevation) and AE (the 100-year flood zone with a determined Base Flood Elevation). The 100-year flood zones encompass land adjacent to four open water bodies (Silver Lake, Furnace Pond, Oldham Pond, and Hobomock Pond), along the North River and Indian Head River, and along the two main tributaries in town (Herring Brook and Pudding Brook). However, the largest 100-year flood zone is located within the northern wetlands, in the Atlantic Cedar Swamp area. The 500-year flood zone (X) is an area predicted to have 0.2% chance of being flooded in the course of a year. Some areas surrounding Great Sandy Bottom Pond and Little Sandy Bottom Pond and the land between these two ponds, FEMA considers to be within a 500-year flood zone. Climate change predictions forecast that areas in eastern Massachusetts the 100-year flood zones could overflow every three to five years by 2050 (Climate Change Adaptation Report).

Figure 16: A saturated area in the woods behind Herring Run Park

Routes 139, 53, 14, and 27 all cross 100-year flood zones. In these cases, Pembroke might find it useful to prioritize these areas for the implementation of flood mitigation infrastructure. Protecting and enhancing green infrastructure, such as increased riparian plantings along the flood zones may reduce negative deluge effects through the capture and storage of water. In light of climate change and sea-level rise, these flood zones may become more inundated more frequently. It is important to continue protecting the wetlands and river areas which reduce the frequency and intensity of floods by soaking up and storing water (See **Map 4.6**).

WETLANDS

Wetlands cover about a quarter of the total surface area of Pembroke, roughly 3,625 acres (See **Map 4.7**). They take many different forms due to the varying substrates, water levels, and histories. These areas provide habitat for an array of flora and fauna, both common and rare. Wetlands also offer ecosystem services, including flood mitigation, storm damage suppression, and pollution filtration.

Swamps have highly saturated soils with high levels of nutrient-rich organic matter, defined by predominantly woody species such as red maple and Atlantic white cedar. The majority of Pembroke's wetlands are classified as wooded swamps, but there are some shrub swamps (See Section 4D for further details).

Marshes are frequently inundated wetlands which are predominantly inhabited by emergent soft-stemmed vegetation, such as cattails. Surface water sources usually feed marshes, but some are saturated by groundwater. Marshes have a relatively neutral pH and can support a large diversity of wildlife. Marshes are divided into two categories: tidal and non-tidal. The marshes of Pembroke are mostly non-tidal which includes poorly drained depressions and seasonally inundated depressions, including vernal pools. (See Section 4D for further details).

Bogs are wetlands characterized by the prevalence of sphagnum which captures and stores moisture mainly from precipitation. This vegetation can spread over lakes and ponds or form in dry lands as the thick carpets of moss absorb water. Bogs also have high contents of peat moss (dead sphagnum moss which falls to bottom of the bog) which add to the low nutrient and acidic environments. Most of Pembroke's bogs are located in the southeastern areas of town. (See Section 4D for further details).

In addition to wetlands, the Wetlands Protection Act regulates lands within a 200-foot Riverfront protection area, certified vernal pools, flood zones, and a 100-foot wetland buffer. These areas are protected under the Act because they provide ecosystem services like habitat, flood mitigation, stormwater infiltration, and pollution infiltration. Any development or alteration within these areas must be reviewed and approved by the local conservation commission.

4. D VEGETATION

GENERAL INVENTORY

Much of Pembroke's scenic beauty is derived from the variety of forests, agricultural fields, swamps and marshes, and the many different plant communities found in these areas.

Sprawling development and the resulting fragmentation of habitat as well as pollution from human activity threaten the size, health, and functioning of these plant communities. These stressors combined with the threat of rising temperatures and increase of drought frequency associated with climate change place Pembroke's plant and wildlife communities at further risk. By protecting these areas and directing development and human activity away from them, these resources will continue to provide essential ecosystem services, as well as recreational use where appropriate.

Forest Land

The coastal lowland oak-pine forests typical in this region contain white pine (*Pinus strobus)*; jack pine *(P. banksiana)*; hemlock (*Tsuga canadensis)*; black, white and chestnut oaks (*Quercus velutina, Q. alba* and *Q. montana)*; shagbark hickory (*Carya ovata)*; and black gum (*Nyssa sylvatica).* The town-owned J.J. Shepard Memorial Forest and Veteran's Memorial Forest are examples of this forest type.

Willowbrook Farm contains a stand of black cherry *(Prunus* (*Prunus serotina)* and a dense grove of ironwood (*Carpinus caroliniana).* It is uncommon to find such a large stand of mature ironwoods in the region. Willowbrook Farm, and the abutting properties make one of the largest tracts of undeveloped land and uninterrupted woodlands in southeastern Massachusetts (OSRP 2005).

Forests can provide many ecological and social benefits, including ground water infiltration, carbon sequestering, wildlife habitat, air and water filtration, timber products, and recreational opportunities.

Cranberry Bog Restoration in Plymouth County

Within the region and in other states where cranberry harvesting has taken place, some efforts have begun to restore the bogs to their natural states. The Eel River restoration project in Plymouth restored an abandoned cranberry bog closer to its natural state, restoring the hydrologic flow to sections of the Eel River and restoring wetlands. The Eel River restoration project had many partners, including: USDA, the Nature Conservancy, MA DEP, the Corporate Wetland Restoration Partnership, and many more. In Halifax and Hanson, land around Burrage Pond, formerly known Bog 18, was acquired by the Massachusetts Division of Fisheries and Wildlife in 2002 to help restore natural communities. Today it is wildlife management area, which is habitat to many bird species. Pembroke might try to restore some of their abandoned cranberry bogs to provide habitat and potential corridors for species.

Cranberry Bog Canal at Tubb's Meadow

Agricultural Land

Cranberry bogs were once a part of Pembroke's working landscape. Today many decommissioned bogs contribute to the town's semi-rural character as they make their slow return to forested wetlands. Allowing these wetlands to return to a more biologically diverse plant community would allow for improved ecosystem functions and wildlife habitat. Tubb's Meadow located off Route 36 is a large area of protected open space highly valued by town residents as a recreation space for walking. It has multiple bogs and irrigation ponds, intersected by trails.

Lawns and the Human Landscape

Because residential development is the largest growing land use type in Pembroke, it stands to reason that it is also the largest threat to natural plant communities. This is largely through the loss of habitat area to new construction and environmental degradation associated with runoff and other environmental impacts. Lawns and conventional landscapes are generally resource-intensive landscapes which are maintained with regular fertilizing and watering regimes, and are not as biologically diverse as the natural plant communities they replace. This leads to fragmentation and

loss of existing habitat, which can have detrimental effects on the population levels of many plant species.

WETLAND VEGETATION

Pembroke is home to an unusually high quantity of wetland areas. In total, these important and sensitive habitat resources make up 24 percent of the town, totaling approximately 3,625 acres. These areas provide a wide variety of important ecological resources on top of supporting a rich variety of plant and animal species, many of which are now rare and/or threatened within the Commonwealth.

A great variety of wetland habitats and plant communities have been identified in Pembroke by the Natural Heritage and Endangered Species Program (NHESP), including brackish and freshwater marshes, tidal shrub lands, wooded swamps, shallow and deep marshes, bogs, and alluvial Atlantic white cedar swamps. The differences between these types of wetlands is highlighted in the previous section (**4.C**) in the discussion of water resources. (See **Map 4.9** Habitat Areas for locations of different wetland types.)

TIDAL WETLANDS

Tidal Swamps

Though not a coastal community, the ocean still has an influence on Pembroke's wetlands. An important and regionally uncommon type of wetland found in Pembroke is the tidal swamp. It is found in both freshwater and brackish forms in town. Although flooded twice a day with high tides, and unlike other tidal wetland types, tidal swamps still maintain a three-tiered structure of trees, shrubs, and herbaceous plant species. These special habitat types are found in the northern end of Pembroke, with the freshwater tidal swamps found along the confluence of the North River and Herring Brook, and the brackish tidal swamps located farther to the east just north of Water Street, and to the south of the North River. The tree or upper canopy layer contains a greater diversity of tree species than the Atlantic white cedar swamp, with a less pronounced dominance by the white cedar. Other species within this layer include red maple, white swamp oak (*Quercus bicolor*), and occasionally green ash (*Fraxinus pennsylvanica)* and American elm (*Ulmus americana).* Because of the saturated soil conditions that come with the tidal flooding, all of these tree species are typically found on elevated mounds called hummocks, which help prevent the roots of these trees from becoming waterlogged and suffocating (NHESP a 2016).

Figure 17: Abandoned cranberry bog with tell-tale irrigation ditches at Tubb;s Meadow

The woody shrub layer in the tidal swamp is noticeably denser than the tree canopy and contains a multitude of species. Some of the shrubs found within this habitat include Northern arrow wood (*Viburnum*

recognitum), winterberry holly (*Illex verticillata)*, swamp rose (*Rosa pulustris)*, and silky dogwood. There are also several woody vining species that cling and climb over the other tree and shrub species to reach the sunny patches in the upper layers of the canopy. The vining species include common greenbrier (*Smilax rotundifolia)*, poison ivy (*Toxicodendron radicans)*, and wild grapes (*Vitis* spp.).

Below the shrub layer, growing within the mucky hollows that form as a result of regular water inundation, are a variety of herbaceous plant species that are typical of saturated and sometimes totally inundated soil conditions. Some of the more common elements of the herbaceous layer within this type of wetland are sensitive fern, arrow arum (*Peltondra virginica)*, assorted members of the Polygonaceae family (also known the smartweed or knotweed family), water purslane (*Ludwigia palustris)*, water cress (*Cardimine hirsuta),* and both estuary and Eaton's beggar ticks (*Bidens hyperborea* and *B. eatronii).*

Additionally, wild rice (*Ziziana* spp.) is also a common component of the freshwater but not the brackish versions of the tidal swamps (NHESP a 2016).

Tidal Shrub lands

In Pembroke, there are also wetland areas that are influenced by the daily rising and falling of the tides but which lack the over story canopy characteristic of the tidal swamp. These areas are a transitional habitat between the swamps and the marshes, and are referred to as tidal shrub lands. Like the other tidally influenced wetlands, there are freshwater and brackish forms and all experience flooding on a twice-daily basis. The freshwater tidal shrub lands are concentrated around the confluence of the Herring Brook and the North River near the tidal swamp but on the east side of Herring Brook and just north of the Indian Head River, as well as to the west of Robinson Creek. The brackish tidal shrub land habitat is less extensive than the freshwater, and is largely confined to a small area on the east side of Robinson Creek (NHESP b 2016).

This habitat type is devoid of over-story tree cover and is dominated by several wet-loving shrub species, with the most prevalent being sweet gale (*Myrica gale)* and both the smooth and speckled alders (*Alnus serrulata* and *A. incana* ssp. *rugosa)*. Other, less prevalent shrub species in this habitat include silky dogwood, swamp rose, winterberry holly, common elderberry (*Sambucus nigra* ssp. *canadensis)*, buttonbush (*Cephalanthus occidentalis)* and poison ivy.

On the ground level there are a variety of herbaceous plant species specially adapted to live in the wet and soggy conditions that characterize the tidal shrubland habitat. Some of these species include royal and marsh ferns, arrow arum, assorted bedstraw species (*Galium* spp.), and common cattail (*Typha latifolia)*. There are also a number of more showy and colorful species such as false nettle (*Boehmeria cylindrica)*, jewelweed (*Impatiens capensis*), swamp milkweed (*Asclepias incarnata)*, and New York aster (*Symphytotrichum novi-belgii)* (NHESP b 2016).

Tidal Marshes

Marshes are characterized by their lack of significant tree or shrub presence, and the clear dominance of herbaceous plant species, the majority of which can be classified as either grasses or reeds. In Pembroke there are both freshwater and brackish tidal marshes, with the brackish tidal marshes found along the portion of the North River where Pembroke borders Norwell and the

freshwater tidal marshes farther to the west across Route 53, and in the area where Herring Brook meets the North River. The most common grass or grass-like plants (graminoid) found in the tidal marshes are a combination of the narrow leaved cattail (*Typha angustifolia)* and the aggressive exotic common reed (*Phragmites australis)*. Other commonly encountered but less prevalent species are freshwater cordgrass (*Spartina pectinata*) in the freshwater areas, and the salt marsh bulrush (*Bolboschoenus robustus)* in the more brackish environments. Other species typical of this particular wetland habitat, especially along the banks of the river or stream, are switchgrass (*Panicum virginicum)*, seaside goldenrod (Solidago sempervirens), rose mallow (*Hibiscus moscheutos*), saltmarsh sedge (*Carex paleacea*) and bentgrass (*Agrostis stolinefera)* (NHESP c 2016).

In the lowest lying areas of the tidal marshes,which experience the greatest level of inundation and sedimentation, are the mudflat species which include salt marsh cordgrass (*Spartina alternifolia*), common three-square (*Schoenoplectus pugens)*, salt marsh fleabane (*Pluchea odorata*), water pimpernel (*Samolus reptans*), mud lily (*Lilaeeopsis chinensis)*, and creeping spearwort (*Ranunculus reptans*). Less commonly found are Atlantic mudwort (*Limosella australis*), Parker's piperwort (*Eriocaulon parkeri)*, and Eaton's beggar-ticks (NHESP c 2016).

Non-Tidal Wetlands

Pembroke also has a number of wetland areas that are not affected by the movements of the tide, and therefore are not exposed to the twice daily flooding that occurs in the tidal habitats. Although there are many familiar species from the tidal habitat types, the non-tidal wetlands can also be home to a slightly different array of botanic characters than those which have adapted to the flooding regimes of the tidal habitats. The non-tidal wetland environments, similarly to their tidal variants, include tree-dominated swamps, intermediary wet shrub lands, herbaceous predominantly graminoid marshes, and the nutrient-poor and sphagnum-dominated bogs, as well as the richer and more diverse fens.

Atlantic White Cedar Swamp

The largest tract of wetland habitat is the Great Cedar Swamp, in the northern portion of town (though there are several much smaller Atlantic white cedar swamps in the southwest area of town). This swamp floods one or more times per year, and the sediments deposited during those events create a nutrient- and mineral-rich soil that supports a three-tiered structure of canopy trees, shrubs and understory trees, and a ground layer of herbaceous vegetation. The over-story for the Atlantic white cedar swamp is dominated, as the name would imply, by Atlantic white cedar (*Chamaecyparis thyoides)*, with a strong representation of red maple (*Acer rubrum)*. Additionally there is a strong representation of yellow birch (*Betula allegheniensis)* which is characteristic of alluvial (as opposed to coastal) Atlantic white cedar swamps (NHESP d 2016).

In the understory grows a number of water-loving shrub species, which are adapted to survive and thrive in somewhat to fully saturated soil conditions. These species include highbush blueberry (*Vaccinium corymbosum)*, summer sweet (*Clethra alnifolia)*, and silky dogwood (*Swida amomum* formerly part of the *Cornus* genus). In the ground cover below these shrubs grows various herbaceous species, including sensitive fern (*Onoclea sensibilis),* royal fern (*Osmunda regalis*), and marsh fern (*Thelypteris palustris)*. There are also forb species such as bugleweed (*Lycopus* spp.), and marsh St. John's wort (*Triadenum virginicum)*, and the heart leaved twayblade (*Neottia cordata),*

all of which intermingle with a somewhat sparse patchwork of sphagnum moss (*Sphagnum* spp.) (NHESP d 2016).

Wooded Swamps

The wooded swamps, wetlands that are dominated by an over-story of tree species, are more widely distributed through Pembroke than their tidal variations. The largest wooded swamp can be found along Herring Brook around the eastern edge of the Great Cedar Swamp, with smaller patches scattered throughout the town. These wooded swamp areas contain many of the same over-story tree species found in Atlantic white cedar swamps and tidal swamps, including red maples, yellow birch, ash, American elm, white pine and swamp white oak. The main difference is the size and distribution of the trees. In the wooded swamps the tree species tend to be less confined to raised hummocks because the flooding of these areas is less frequent, resulting in soil conditions that are more favorable for supporting more and larger trees (NHESP e2015).

Figure 18: Skunk cabbage emerging in early February

Below the over-story is a shrub layer of smaller woody species, including highbush blueberry, winterberry holly, swamp azalea, wild raisin (*Viburnum cassinoides*), summer sweet, and red-osier dogwood (*Swida sericea)*. Typically in this type of habitat, greenbriers can also be found winding their way through the shrub layer.

On the rich and moist ground level a variety of herbaceous species take advantage of the abundant moisture and shade to grow in lush carpets. The dominant plant form in this layer are ferns such as sensitive, cinnamon, and royal ferns. Mixed in with these are also skunk cabbage, jewelweed, and an assortment of different sedge species (NHESP e 2016).

Shrub Swamps

Shrub swamps are characterized by a small percentage of stunted tree species, and a dense and diverse shrub layer that makes up as much as 75 percent of the total species composition. The trees found in the shrub swamps are typically small red maples, gray birches, and white pines. These trees often range in size from less than three feet to no more than fifteen feet in height (NHESP f 2016).

Figure 19: Boardwalk going through wooded swamp habitat at Willowbrook Preserve

Dominating this habitat type are a diverse cast of shrubs and bushes including species such as the speckled and smooth alders, winterberry holly, sweet gale, buttonbush and both meadowsweet and steeple bush (*Spirea alba* ssp. *latifolia* and *S. tomentosa*). There is also swamp azalea, arrow wood, low growing willows (*Salix* spp.) poison sumac (*Toxicodendron vernix*) dewberry (*Rubus hispidus)* and water willow (*Decodon verticillatus*).

Some of the herbaceous species typically associated with the wet and shady environment of the shrub swamp include many of the species of ferns and sedges listed in the previous sections, but the shrub swamps are also home to clearweed (*Pilea pumila*), turtle head (*Chelone glabra*) and the vining and climbing devil's darning needles (*Clematis virginiana)* (NHESP f 2016).

Marshes

As the trees become less prominent, the shrubs cover less than 25 percent of the landscape, and the graminoid species come to dominate, the habitat becomes classified as a marsh. These largely herbaceous areas have mucky, saturated soils that are seasonally inundated, with large areas year-round of standing water ranging in depth from three inches to three feet. In Pembroke the largest area of this habitat type is located along the Herring Brook northwest of Barker Street, with smaller patches distributed along Pudding Brook to the east (NHESP g and h 2016).

Figure 20: Shallow marsh off of the Willowbrook Preserve Trail

The sparse shrub layer in this community is made up of such species as smooth and speckled alders, and often sweet gale, steeple bush and meadow sweet. Most of this habitat (75% or more) is made up of herbaceous species, with a significant proportion of grass or grasslike plants, including common and narrow leaf cattails (*Typha angustifolia*), common reed, woolgrass (*Scirpus cyperinus)*, common three-square, blue joint grass, reed canary grass, rice cut-grass (*Leersia oryzoides*), and assorted sedge species (NHESP h 2016).

There are also a slew of non-graminoid plant species that although they appear in lesser density and number than the grass-like plants, still are valuable contributors to the overall functioning and health of the marsh environment. These include tear thumb, bulb let water hemlock (*Cicuta bulbifera)*, swamp candles, beggar's-ticks, bedstraws, arrow leaf, and the slender leaved goldenrod (*Euthamia caroliniana*). The only fern species typically found in the marsh environment is the marsh fern (NHESP g and h 2016).

Bogs

The defining characteristic of a bog is the substantial presence of sphagnum ground cover and acidic, still, oxygen-poor water, which prevents the decomposition of organic material below its surface, thereby forming deposits of peat. Although there are a number of old and abandoned cranberry bogs located in town, the NHESP natural communities' data has listed only a single occurrence of naturally formed and unmanaged bog.

There are typically few and very stunted tree species found within this habitat type, the most common of which is red maple, and in particular instances, Atlantic white cedar. Other woody vegetation common to this community include several shrub species, most of which are members of the heath family and are specially adapted to thrive in very acidic and nutrient-poor conditions, including highbush blueberry, cranberry species (*Vaccinium* spp.), sheep and bog laurels (*Kalmia angustifolia* and *K. polifolia)*, bog rosemary (*Andromeda polifolia)*, Labrador tea (*Ledum* spp.), and rhodora (*Rhododendron canadense*) (NHESP i and j 2016).

Along with the sphagnum moss, the herbaceous understory of the bog environment is made up of a variety of specialized plant species that have developed adaptations allowing them to live in the harsh conditions, including carnivorous plants such as the pitcher plants (Sarracenia spp.) and sundews (Drosera spp.), as well as three-leaved solomon's seal (*Maianthemum trifolium*), bog orchids (*Platenthera spp.),* and as assortment of sedges (NHESP i and j 2016).

Fens

Similar to bogs but of a less acidic and nutrient-poor character are fens. These habitat types are still quite water-logged and experience long periods of saturation and seasonal fluxes of inundation, but are home to a greater diversity of species than bogs, and additionally are less dominated by sphagnum formations and peat deposits. In Pembroke, fens are found east of Hobomock Street, and a small patch has been identified off Valley Street between Upper and West Chandler Ponds (NHESP k and l 2016).

Fens typically include a light to moderate peat and sphagnum base with moderately dense layer of small, mostly deciduous shrubs. These include groupings of sweet gale and water-willow, with less sporadic appearances of summer sweet, spireas, and leatherleaf (*chamaedaphne calyculata*). Additionally saplings or very stunted forms of red maple, white pine, or Atlantic white cedar typically reside in these habitats.

The herbaceous layer is highly variable, sometimes being dense and diverse, while in other instances being thinly distributed and made of only a small handful of species. Some of the more common species are St. John's worts (*Hypericum* spp.), arrowheads, arrow-arrum, rose pogonia (*Pogonia ophioglossoides),* and Virginia chain fern (*Woodwardia virginica).* Typical of fens in New England are an assortment of graminoid species including cotton-grass (*Eriophrum* Spp.), pond shore rush (*Juncus pelocarpus*), beak-rushes (*Rhynchospora* Spp.), beaked sedge (*Carex utriculata*), wooly-fruited sedge (*C. lasiocarpa* ssp. *americana*), white-beaked sedge (*Rhynchospora alba*), and twig sedge (*Dulichium arundinaceum*) (NHESP k and l 2016).

RARE AND ENDANGERED SPECIES

As the preceding sections have demonstrated, there are many diverse habitat types found in Pembroke. These habitats are home to many familiar species as well as rare species that have been officially recognized as being endangered, threatened, or rare to the point of being a listed species of special concern within the Commonwealth of Massachusetts. There are no species found in Pembroke that are on the federal list of endangered or threatened plant species (NHESP 2017).

According to the Massachusetts Division of Fisheries and Wildlife, there are six plant species categorized as endangered, threatened or of special concern in Massachusetts. Among these are seabeach needlegrass (*Aristida tuberculosa)*, which is considered to be a threatened species that is an annual grass that is typically found in coastal sand dunes, but is less commonly found along sandy roadways and other loose substrates that have been disturbed. The most recent recorded observation of this species in Pembroke was from 2004 according to the Division of Fisheries and Wildlife data (NHESP a 2015).

Another critical species that is currently listed as endangered is the estuary beggar-ticks (*Bidens hyperborea*), which was observed in Pembroke as recently as 2015. This annual species from the aster family is often found in the tidal wetland habitats in Pembroke and is more commonly found in regions farther north, it being at its southern range limit within Massachusetts. This means that there is increased threat of habitat loss as the climate changes and we experience an increase in global heating (NHESP b 2015).

Long's bittercress (*Cardamine longii*) is also an endangered species in Massachusetts. The last recorded observation of it in Pembroke was 2012. This particular bittercress is a small, perennial member of the mustard family that is dependent of the tidal wetland habitats for its survival. Like the estuary beggar-ticks it is currently at the southern end of its range in Pembroke, and as such is facing increasing pressure and threat as climate change progresses and the planet warms (NHESP c 2015).

One of the species listed as being of special concern is the New England blazing star (*Liatris scariosa* var. *novae-angliae)*. It was last seen in Pembroke in 1997. This endemic species of the Aster family is found in disturbed and open habitats that are characterized by poor soil fertility and sandy, coarse substrate. It does not fare well in later successional stages dominated by shrubs and trees (NHESP d 2015).

A threatened plant species of concern in Pembroke is the pale green orchid (*Platanthera flava* var. *herbiola)*, which has had no confirmed observations within the town since 1932, as reported by the Division of Fisheries and Wildlife, but it is still believed to be present within the town's borders in small and discreet populations. Its habitat is characteristically rich and wet environments that experience cyclic flooding and changes in water level. These conditions are most commonly associated with the tidal wetlands found around the northern portions of Pembroke. (NHESP e 2015).

Hemlock parsley (*Conioselinum chinense*), a perennial species in the carrot family is rare to the point of being listed in Massachusetts as a species of special concern. It is found in moist habitats such as swamps, bogs and wet meadows. It is one of the few carrot family species found in wooded swamps, it being one of the more shade tolerant species of that family. It has been notes as being particularly sensitive to disturbances, alterations in moisture regime and pollution. Encroaching development in and around wetlands certainly has negative impacts on the few existing populations in Pembroke (NHESP f 2015).

The final plant species of concern found in Pembroke is the slender marsh pink (*Sabatia campanulata)*, which is listed as endangered in Massachusetts and has had no confirmed observations within Pembroke since 1884. A small-statured perennial of the gentian family, the slender marsh pink is found in a variety of different habitat types from sandy or pebbly pond shores to mucky, rich wetlands to brackish tidal environments. Unlike many of the other listed rare and threatened species in Pembroke, the slender marsh pink is at the northern end of its natural range in Massachusetts, and although it is one of the more seldom-seen plants listed, it could potentially become more common as the climate changes and warms (NHESP g 2015).

The greatest concentration of habitat areas are found in the northern portion of town. The greatest diversity of different habitat types is centered on confluence of the North/Indian Head Rivers and Herring Brook. This area also represents the largest block of core habitat area within Pembroke. This area is of high conservation value for protection of natural resources.

4. E FISHERIES AND WILDLIFE

Wildlife and Habitat Inventory

The great variety of environments found in Pembroke offer great habitat for a number of animal species. The largest, most commonly encountered habitat type found in Pembroke is the coastal lowland oak pine forest, which makes up most of the wooded, undeveloped areas of town. This habitat type is home to many animal species, though none of them are obligate to that habitat, meaning that there are no species which rely solely upon this type of community.

Animals found in the lowland oak pine forest include the catbird (*Dumetella* spp.), an assortment of warblers (*Mniotilta* spp.), the white footed mouse (*Peromyscus leucopus*), gray squirrel (*Sciurus carolinensis)*, and white-tailed deer (*Odocoileus virginianus)*. Additionally this habitat often supports some reptile species such as the Eastern box turtle (*Terrapene carolina)* (NHESP a 2016).

The Atlantic white cedar swamp is important habitat for several species of amphibians and invertebrates including spring peepers (*Pseudacris crucifer*) and fairy shrimp (*Eubranchipus vernalis)* (Mass Audubon 2017). Deciduous wooded swamps can host a great number of animal species similar to those found in the upland forest communities described above (NHESP b 2016). Shrub swamps provide many migratory bird species and small mammals such as cottontail rabbits (*Sylvilagus transitionalis*) with protection and food sources (NHESP c 2016).

Freshwater marshes are a favorite nesting area for many bird species such as grebes (Podicipedidae family) and a variety of duck (Anatidae family) species. These special habitats also support a great variety of frog and other salamander species such as leopard frogs (*Lithobates pipiens*) and red backed salamanders (*Plethodon cinereus*) (NHESP d 2016).

Bogs and fens have conditions that are inhospitable to most reptiles and amphibians, but larger mammal species and birds often pass through and use them as temporary foraging sites or seasonal nesting grounds. Examples of animal species potentially found in this community include white tailed deer *(Odocoileus virginianus)*, red-winged blackbirds (*Agelaius phoeniceus*), and catbirds (NHESP e 2016).

Freshwater and brackish swamps and marshes in Pembroke contain many similar species to those found in the other habitats described above with some variations, notably roosting great blue and green herons (*Ardea herodias* and *Butorides striatus)*, raptor species such as the red-tailed hawk (*Buteo jamaicensis)*, and wood duck (*Aix sponsa*) (NHESP f and g 2016).

The following inventory covers many of the macro-fauna found in Pembroke, but is not a definitive listing of every species present.

Fish and Shellfish

Largemouth bass	*Micropterus salmoides*
Yellow perch	*Preca flavescens*
Pumpkinseed	*Lepomis gibbosus*
American eel	*Anguilla rostrate*
Brown Bullhead	*Ameiurus nebulosus*
White sucker	*Catostomus commersonii*
Freshwater mussel	*Unionoida family*
White perch	*Morone Americana*
Bluegill	*Lepomis macrochirus*
Chain pickerel	*Esox niger*
Golden shiner	*Notemigonus crysoleucas*
White crappie	*Pomoxis annularis*
Herring	*Clupeidae family*

Waterfowl

Common loon	*Gavia immer*
Pied billed grebe	*Podilymbus podiceps*
Double crested cormorant	*Phalacrocorax auritus*
Mute swan	*Cygnus olor*
Canada goose	*Branta canadensis*
American black goose	*Branta hutchinsii*

Wood duck	*Aix sponsa*
Greater scaup	*Aythya marila*
Lesser scaup	*Aythya affinis*
Common goldeneye	*Bucephala clangula*
Bufflehead	*Bucephala albeola*
Ruddy duck	*Oxyura jamaicensis*
Hooded merganser	*Lophodytes cucullatus*
Common merganser	*Mergus merganser*
Red breasted merganser	*Mergus serrator*
American coot	*Fulica americana*
Mallard	*Anas platyrhynchos*

Figure 21: Bird nest in light at Mattakeesett Baseball Complex

Herons, Sandpipers and Gulls

Great blue heron (*Ardea herodias*)
Great egret (*Ardea alba*)
Black crested night heron (*Nycticorax nycticorax*)
Yellow crowned night heron (*Nyctanassa violacea*)
Spotted sandpiper (*Actitis macularius*)
Arctic tern (*Sterna paradisaea*)
Green heron (*Butorides virescens*)
Snowy egret (*Egretta thula*)
Herring gull (*Larus smithsonianus*)
Ring billed gull (*Larus delawarensis*)
Greater black back gull (*Larus marinus*)

Hawks and Eagles

Cooper's hawk (*Accipiter cooperii*)
Osprey (*Pandion haliaetus*)
American kestrel (*Falco sparverius*)
Red tailed hawk (*Buteo jamaicensis*)
Bald eagle (*Haliaeetus leucocephalus*)
Marsh hawk (*Circus cyaneus*)

Other Birds

Mourning dove (*Zenaida macroura*)
Ruby throated hummingbird (*Archilochus colubris*)
Hairy woodpecker (*Leuconotopicus villosus*)
Eastern kingbird (*Tyrannus tyrannus*)
Tree swallow (*Tachycineta bicolor*)
Rough winged swallow (*Stelgidopteryx serripennis*)
Common flicker (*Colaptes auratus*)
Purple martin (*Progne subis*)
Downy woodpecker (*Picoides pubescens*)
Eastern phoebe (*Sayornis phoebe*)
Barn swallow (*Hirundo rustica*)
Blue jay (*Cyanocitta cristata*)

Fish crow (*Corvus ossifragus*)
Tufted titmouse (*Baeolophus bicolor*)
Red breasted nuthatch (*Sitta canadensis*)
Carolina wren (*Thryothorus ludovicianus*)
Northern mockingbird (*Mimus polyglottos*)
Yellow Warbler (*Setophaga petechia*)
Yellow rumped warbler (*Setophaga coronata*)
Red winged blackbird (*Agelaius phoeniceus*)
Common grackle (*Quiscalus quiscula*)
Northern cardinal (*Cardinalis cardinalis*)
American goldfinch (*Spinus tristis*)
White crowned sparrow (*Zonotrichia leucophrys*)
White throated sparrow (Zonotrichia albicollis)
Indigo bunting (*Passerina cyanea*)
Wood thrush (*Hylocichla mustelina*)
Scarlet tanager (*Piranga olivacea*)
Woodcock (*Scolopax minor*)
Black capped chickadee (*Poecile atricapillus*)
White breasted nuthatch (*Sitta carolinensis*)
Brown creeper (*Certhia americana*)
Catbird (*Dumetella carolinensis*)
American Robin (*Turdus migratorius*)
Pine warbler (*Setophaga pinus*)
House sparrow (*Passer domesticus*)
Baltimore oriole (*Icterus galbula*)
Brown headed cowbird (*Molothrus ater*)
Purple finch (*Haemorhous purpureus*)
Junco (*Junco hyemalis*)
Song sparrow (*Melospiza melodia*)
Cedar waxwing (*Bombycilla cedrorum*)
Pine grosbeak (*Pinicola enucleator*)
Great horned owl (*Bubo virginianus*)
Partridge (*Perdix perdix*)

Mammals

Racoon (*Procyon lotor*)
Skunk (*Mephitis mephitis*)
Gray squirrel (*Sciurus carolinensis*)
Mole (*Scalopus aquaticus*)
Chipmunk (Tamias striatus)
Mouse (*Mus* spp.)
Otter (*Lontra canadensis*)
Woodchuck (*Marmota monax*)
Muskrat (*Ondatra zibethicus*)
Cottontail rabbit (*Sylvilagus transitionalis*)
Red squirrel (*Sciurus vulgaris*)
Opossum (*Didelphimorphia* spp.)
Shrew (*Sorex araneus*)
White tailed deer (*Odocoileus virginianus*)
Red fox (*Vulpes vulpes*)
Mink (*Neovison vison*)

Reptiles and Amphibians

Snapping turtle (*Chelydra serpentina*)
Painted turtle (*Chrysemys picta*)
Box turtle (*Terrapene carolina*)
Water snake (*Nerodia sipedon*)
Black racer snake (*Coluber constrictor*)
Green frog (*Rana clamitans melanota*)
Spotted salamander (*Ambystoma maculatum*)
(2005 OSRP)
Spotted turtle (*Clemmys guttata*)
Stinkpot turtle (*Sternotherus odoratus*)
Garter snake (*Thamnophis sirtalis*)
Milk snake (*Lampropeltis triangulum*)
Leopard frog (*Lithobates pipiens*)
Bullfrog (*Lithobates catesbeianus*)
American toad (*Anaxyrus americanus*)

VERNAL POOLS

Vernal pools (sometimes called autumnal pools) are small, localized and isolated areas of temporarily standing shallow water that have no fish for at least two months, and which typically develop in woodlands and low-lying areas. They can form in the fall or spring months, and result from raised groundwater levels associated with precipitation, snowmelt and/or the decreased evapotranspiration of deciduous trees after they drop their leaves. They typically range in size from a few yards to a few acres (NHESP 2009). They often retain their waters into the summer months or in some cases even through to the next year, becoming a year-round water body for several years concurrently. These vanishing pools serve as crucial habitat for a number of amphibian and invertebrate species that rely on the fish-free, shallow water environment to lay their eggs and in which the young amphibians can live out their aquatic life stages (NHESP 2017).

One example of a species which is entirely dependent on vernal pools and is considered to be an indicator species for certifying the presence of vernal pools is fairy shrimp (*Eubranchipus vernalis)*, which are tiny crustaceans that live their entire lives in the pools, even though the dry periods of high summer and frozen periods of winter. Also, dependent on these water bodies are several amphibian species such the spotted salamander (*Ambystoma maculatum*) and the blue spotted salamander (*A. leterale*).

Species that are not dependent on the pools but which make great and frequent use of them include the American toad (*Anaxyrus americanus*), and the small spring peeper frog (*Pseudacris crucifer).* Insects such as the caddish fly (*class Insecta,* order *Tricoptera)* can often be found using the protection and warmth of the temporary pools to hatch and grow their larval forms (Mass Audubon 2017).

Birds, mammals, and reptiles that are not as dependent on vernal pools as some of the amphibians and invertebrates benefit from their presence. Vernal pools provide valuable water resources and prey opportunities for many species in the surrounding woodland ecosystem. Their influence ripples out from their immediate locations to help sustain the rest of the forest (NHESP 2009). (See **Map. 4.8 and 4.9** for certified vernal pools in Pembroke.)

In Massachusetts there are at least five regulations which protect certified vernal pools. Vernal pools are eligible for protection under the Massachusetts Wetland Protection Act (WPA) as a function which provides habitat. The area of protection includes the vernal pool and up to 100-feet around the vernal pool borders. To receive protection, the vernal pool must be within a wetland resource area. The Massachusetts Surface Water Quality Standards designate certified vernal pools as Outstanding Water Resources that cannot receive new or increased discharges. This applies even if the certified vernal pool is not in a WPA designated resource area. The Massachusetts Environmental Title 5 protects certified vernal pools by setting a 50-foot minimum away from septic tanks and a 100-foot boundary away from septic leach fields. The Massachusetts Forest Cutting Practices Act Regulations requires that no more than 50 percent of trees are cut within 50-feet of a certified vernal pool. They also require that no trees or tree tops are felled into certified vernal pools and restrict the pools as staging areas or skidder trails. Communities can create zoning bylaws which further protect vernal pool. Pembroke has not written any zoning bylaws which further

protect vernal pools, but they may be able to protect both certified and uncertified vernal pools through bylaw amendments.

CORRIDORS

Wildlife corridors provide migration routes for many species and connect large patches of habitat. Corridors allow wildlife to travel unimpeded with access to food and shelter and relative protection from predators and the dangers of development (e.g., cars and pollution). By connecting habitats, these corridors provide access to resources that help populations thrive. Development, including homes and roads, has altered the landscape, blocking access to resources for many species. This fragmentation of travel routes has negatively impacted many migratory species, and created the need to prioritize protecting of still intact corridors, as well as trying to mend some of those already altered by development.

Different species have different corridor needs. Power lines, for example, offer travel routes for larger animals like coyote and fox. Contiguous tracts of woodlands also serve as important corridors for species such as the white-tailed deer. Currently the largest contiguously protected parcels are in the wetlands of the Great Cedar Swamp, which is included on the maps created by University of Massachusetts' Conservation Assessment and Prioritization System (CAPS) project. This project processes its results in an Index of Ecological Integrity (IEI). The corresponding map showed that the largest uninterrupted habitat areas in Pembroke, which could also be used as corridors, were found in the Great Cedar Swamp and in the wetland areas in the southeast corner of town.

At a broader regional scale, many of Pembroke's ponds and flowing water bodies are connected to the Atlantic Ocean and provide important corridors for anadromous species that live most of their adult lives in the sea but return to freshwater to spawn, such as the herring and American eel. Streams and their corresponding riparian areas in Pembroke, such as Pudding Brook and Herring Brook, are crossed by major roads including Routes 53 and 14. It is important to assess whether these areas can provide sufficient migration access to species that use these aquatic and semi-aquatic corridors. Additionally some efforts are in the works to monitor and ensure passage of fish species within the region. The North and South Rivers Watershed Association has worked to ensure that access is available for herring migration through the installation of fish ladders. One such ladder was built in Pembroke in Herring Brook.

RARE SPECIES

The Massachusetts Department of Fisheries and Wildlife's Natural Heritage and Endangered Species Program (NHESP) has collected information on rare species and landscapes of concern. Many species have been sighted and recorded in Pembroke, mostly along waterways and wetlands. Habitat areas are dispersed throughout Pembroke and cross into the surrounding towns. The largest concentration of the many rare species in Pembroke is in the wetlands in the north of town, which encompasses the Atlantic Cedar Swamp. BioMap2 built off of the work produced by NHESP to guide the conservation of species of concern as well as natural communities and core habitats.

The NHESP list of species and natural communities includes:

Amphibians

- Four-toed Salamander (*Hemidactylium scutatum*) – Non-listed SWAP

Birds

- Sharp Shinned Hawk (*Accipiter striatus*) – SC

Insects

- Damselflies
  - New England Bluet (*Engallagma laterale*) – Non-listed SWAP species
- Dragonflies
  - Spine-crowned Clubtail (*Gomphus abbreviatus*) – SC
  - Umber Shadowdragon (*Neurocordulia obsoleta*) – SC

Mussels

- Tidewater Mucket (*Leptodea ochracea*) – SC
- Eastern Pondmussel *(Ligumia nasuta*) – SC

Reptiles

- Eastern Box Turtle (*Terrapene carolina*) - SC
- Eastern Ribbon Snake (*Thamnophis sauritus*) – Non-listed SWAP
- Northern Black Racer (*Coluber constrictor*) – Non-listed SWAP
- Spotted Turtle (*Clemmys guttate*) – Non-listed SWAP

Priority Natural Communities

- Estuarine Intertidal: Freshwater Tidal Marsh - S1
- Estuarine Intertidal: Fresh/Brackish Tidal Swamp - S1

Critical Natural Landscapes (CNL)

Aquatic Core
Wetland Core
Landscape Block
Aquatic Core Buffer
Wetland Core Buffer
Coastal Adaptation Area

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.

According to the BioMap2 data, the most expansive tract of land that contains the largest diversity of rare species extends beyond the boundaries of Pembroke (see **Map 4.9** Wetland Habitat). The area shown contains species that are not listed as observed in Pembroke, including the Mocha Emerald (*Somatochlora linearis*), Least Tern (*Sternula hirundo*), and Parker's Pipewart (*Eriocaulon parkeri*). This core habitat area is important to species diversity within Pembroke but also the adjacent towns of Hanover and Norwell. Other habitat and critical natural landscapes ignore town boundaries to the north and east, linking land in Pembroke and with that in Duxbury and Marshfield. Conservation efforts looking to protect species habitat must look beyond town boundaries and work to protect open space between communities.

In addition to the data collecting through the BioMap2 project, NHESP maintains a list of all MESA (Massachusetts Endangered Species Act) documented observations by town. This list includes species not found in BioMap2, such as:

Birds

- Bald Eagle (*Haliaeetus leucocephalus*) – T

Reptiles

- Northern Red-bellied Cooter (*Pseudemys rubriventris*) – E

Additionally, NHESP has listed various natural communities of conservation importance within Pembroke. However, some natural communities are not found within their database, but explored in other research. The Atlantic White Cedar Swamp that is in the northern wetlands of Pembroke is not listed. Because of this, some species of concern, such as Hessel's Hairstreak (*Callophrys hesseli*), might be found in Pembroke but not recognized. Further study to delineate this habitat would be important for more accurate conservation efforts focused on specific species and their habitats.

4. F SCENIC RESOURCES AND UNIQUE ENVIRONMENTS

Pembroke's many water resources (previously described) offer rich ecological diversity, cultural and historic relevance, and a source of recreation. As such, they figure prominently in the town's scenic and unique features:

Figure 22: The Bay Path at Luddam's Ford across the Indian Head River

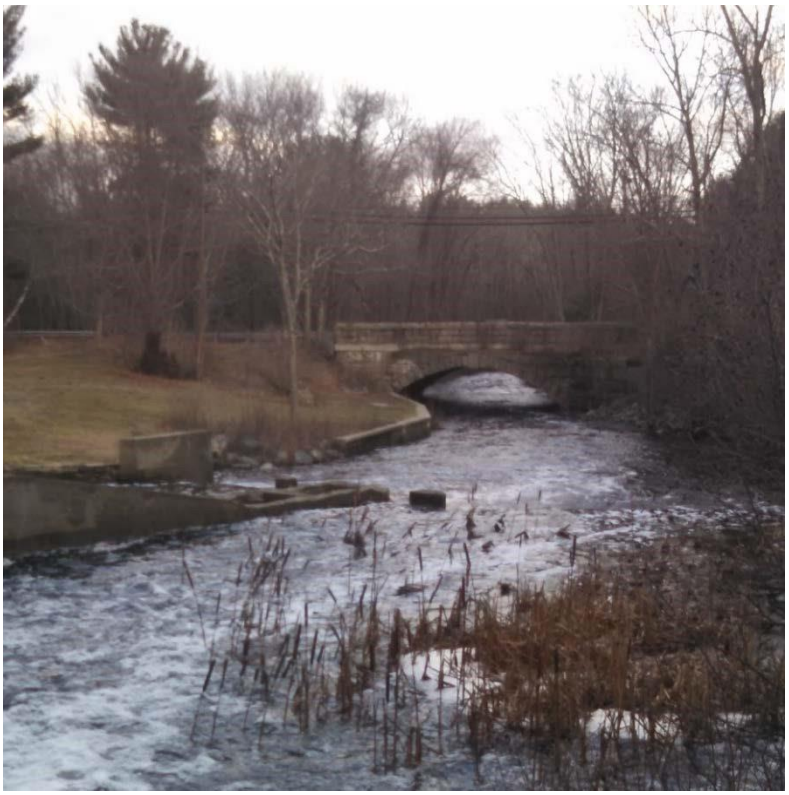


Figure 23: A bridge crosses the North River near Tucker's Preserve

Rivers and Streams

Indian Head River
North River
Herring Brook
Pudding Brook

Lakes and Ponds

Oldham Pond
Furnace Pond
Great Sandy Bottom Pond
Little Sandy Bottom Pond
Hobomock Pond
Stetson Pond
Silver Lake

Although the DCR has not officially categorized any areas in Pembroke as scenic landscapes, the town abounds with beauty. Its combination of historical sites such as the Adah Hall farmhouse, many water features such as Herring Brook, and recreational opportunities like the Tucker Preserve nature trail provide habitat, scenic interest, and contribute to the character of Pembroke. According to the results of the 2017 OSRP survey, the place most widely considered to strongly contribute to the town's scenic character is the Herring Run. This historic park highlights water, history, habitat and recreation in a picturesque manner and is the site of the town's annual Fish Fry. Other notable landscape features in town include:

Cranberry bogs
Atlantic Cedar Swamp
Freshwater tidal marshes
Tubb's Meadow
Robinson Creek
Horse farms
Town forest/ Mattakeesett Field

The historic town center along Route 14 acts as a crossroads in the center of Pembroke. The town center includes public buildings like the Town Hall and newly built public library as well as significant public spaces like the town green and Center Cemetery. Although the town center is a significant feature that helps define the community, there are many more historic sites throughout Pembroke, the largest concentration of which sit along Route 53. Some of the most notable historic sites include:

Adah Hall House

The town pound

Pembroke Friends Meeting House

Gilbert H. West Box Factory

North River Bridge

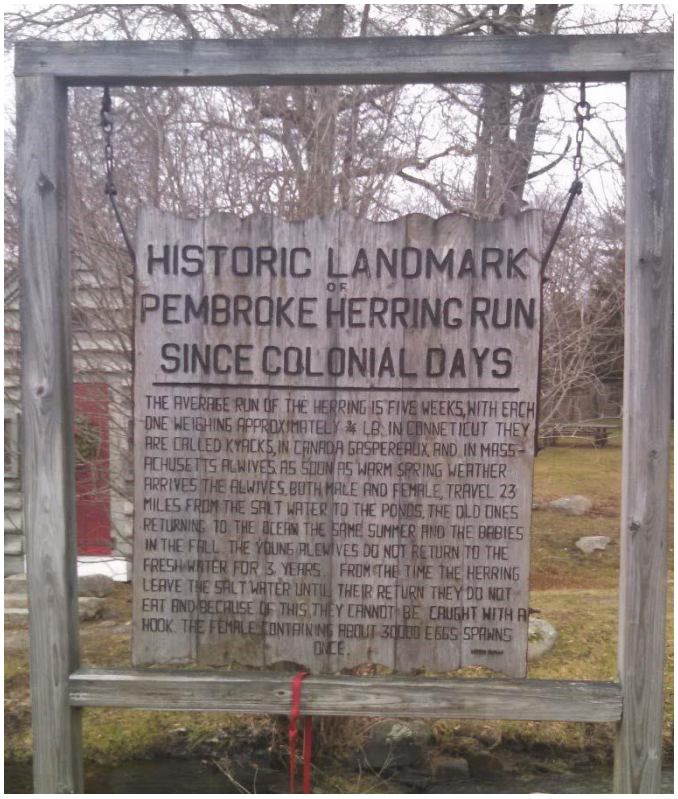


Figure 24: Herring Run is one of Pembroke's most beloved scenic and historic sites

CULTURAL, ARCHEOLOGICAL, AND HISTORIC AREAS

Pembroke's long and rich history has left a number of culturally significant and historic sites throughout the town. One such site which holds significant ties to the early American Revolution is the Friends Meeting House. This 1706 structure, which can still be seen standing today on Washington Street, is the oldest building in Pembroke, and also one of the oldest Quaker Meeting Houses in the United States. It was also the site of one of the very first active public outcries and declarations against British rule in the early American colonies. The people assembled in that small meetinghouse and drafted an official declaration which they sent to the King of England espousing their discontent in reaction to the unjust taxation applied to the colonies (2005 OSRP).

Another culturally significant site pertaining to the founding of the United States is the Brick Kiln Shipyard. Located on the banks of the North River in the northern reaches of Pembroke, the Brick Kiln Shipyard turned out some of the most famous eighteenth-century New England vessels, including the British brig *The Beaver*, which was one of several boats involved in the Boston Tea Party in 1773. Other well-known vessels built here were the *Columbia,* which was the first ship to successfully circumnavigate the globe, and *the Bedford,* which was the first ship to take the American flag into a foreign port.

The old blast furnace site, which was constructed in 1702 on the shores of what is today known as Furnace Pond (the pond is a manmade pond made to support the furnace), was the home of the very first American-made cannon, cast from the iron ore dredged from the sediments of the pond.

Pembroke also is home to one of very few (estimated no more than a half dozen in New England) original town pounds. This small stone enclosure can still be seen today at the Town Common not far from the Town Hall, and was originally constructed in 1824 for the purpose of temporarily housing "strays and other disturbers of the bovine peace" (2005 OSRP). In total there are 50 designated historic sites in Pembroke, which range in age from 357 to 70 years and include a combination of still-standing structures and sites where historic structures once stood. They are concentrated along Routes 53 and 14 in the northern end of town, in the Historic District and the Center District, but also occur in less dense grouping in the northeast and southwest portions of the town (MassGIS 2016). (See **Map 4.11** for locations of historic sites and Figure 24 for inventory of historic sites.)

HISTORIC NAME	COMMON NAME	ADDRESS	CONSTRUCTION
		144 Water St	1820
		151 Washington St	1900
Abington and Rockland Joint Water Works		14 Pumping Station Ave	1886
Barker, Lt. Robert Jr. House - Parris Farm	Fairfield, Elizabeth Nursing Home - Briggs Farm	172 Washington St	1705
Barker, Peleg House		443 Center St	1855
Barker, Thomas - Collamore, Dr. Anthony House		225 Washington St	1713
Bethel Chapel		Washington St	1851
Bishop, Hudson House		101 Oldham St	1704
Bryantville United Methodist Church		540 Mattakeesett St	1825
Central Grammar School Building	Pembroke Center Public Lending Library	Center St	1923
Chamberlain, Capt. Freedom House	Josselyn, Johnathan house	359 West Elm St	1765
Cobb Library		Union St	1900
Columbia Bridge	Columbia Road Bridge over North River	Columbia Rd	1930
Cushing - Whitman, Judge Kilborn House		44 Center St	1765
Cushing, Capt. Josua House	Little, Issac House	84 Little's Ave	1710
East Pembroke Village Post Office		Elm St	1942
First Church of Christ in Pembroke	Old Indian Church	Center St	1837
First Parish Church Sewing Circle	Pembroke Town Center Library	Center St	1858
Foord, William House		4 Taylor St	1660
Hall, Adah - Barker, Robert Jr. House	Pembroke Historical Society Museum	52 Barker St	1765
Hatch, Capt. Seth House		132 Water St	1765
Hatch, George Francis High School	Pembroke School Department Building	36 Center St	1907
Hatch, Seth Jr. House		161 Water St	1725
Hexagonal House - Briggs, Luther Jr. House		206 Washington St	1853
Josselyn, Henry House		319 West Elm St	1701
Keene, Benjamin House		368 Pleasant St	1703
Keene, Josiah House	Squire Keene Mansion	75 Barker St	1749
Kings Highway Inn	Arnold, F. P. Company Shoe Factory	242 Washington St	1660
Magoun, John House		248 Water St	1666
Magoun, Paul House		186 Water St	1830
Mitchell, Jacob - Turner, Barker House		2 Brick Kiln Ln	1738
Morton, Capt. Silas - Torrey, Caleb House		331 Washington St	1770
North Pembroke Schoolhouse and Barn	Turner's Prime Tavern	Washington St	1750
North River Bridge	Old Washington Street Bridge over North River	Old Washington St	1904
Old Bay Path Stone Bridge		West Elm St	1682
Pembroke Fire Department Company #1		37 School St	1947
Pembroke Fire Station	Pembroke American Legion Headquarters	37 School St	1912
Pembroke Friends Meetinghouse	Scituate Upper Meetinghouse	Washington St	1706
Pembroke Grammar Schoolhouse #6	Pembroke Historical Society Museum - Swamp School	Center St	1847
Pembroke Town Pound		Center St	1712
Randall, Job House		300 Water St	1700
Salmond, Peter House		60 Allen St	1750
Simmons, Joseph E. Post 111 G. A. R. Hall	Pembroke Police Association Boy's Club	140 Center St	1896
Standish, David House	Briggs, Luther House	69 Brick Kiln Ln	1750
Turner, Capt. Job House		409 Washington St	1730
Turner, Elmer House		116 Washington St	1890
Turner, Isaiah Alden House		126 Washington St	1850
Turner, John House		147-149 Washington St	1760
Turner, Thomas House	River House, The	2 Old Washington St	1732
West Box Factory Worker Housing	Box House	Washington St	1890
West Box Factory Worker Housing	Box House	Washington St	1890
West Box Factory Worker Housing	Box House	Washington St	1890
West Box Factory Worker Housing	Box House	Washington St	1890
West Elm Street Bridge over Indian Head River		West Elm St	1894
West, Gilbert H. Box Factory		369 Washington St	1939
West, James Horace House		18 Pleasant St	1855
Whitman, Dea. Seth House	Barker, Samual House	137 Barker St	1837

Figure 25: Inventory of Historic Sites

UNIQUE ENVIRONMENTS

The previous sections on plant and animal communities (Section 4 Parts D and E) have outlined how the many wetland environments and copious water resources, in combination with a large amount of undeveloped land (approximately 70%), have contributed to the formation of a great variety of habitat types throughout Pembroke. Most notable of these are the tidal swamps, marshes, and the large Atlantic white cedar swamp. All of these environments are concentrated in the northcentral portion of the town. There are currently no officially recognized Areas of Critical Environmental Concern in Pembroke as defined and delineated by the Massachusetts Bureau of Land Management.

4. G ENVIRONMENTAL CHALLENGES

CLIMATE CHANGE

The Commonwealth of Massachusetts is already experiencing climate change in the form of hotter summers and warmer winters, rising sea levels and sea water temperatures, more frequent flooding, and change in precipitation patterns both in frequency and intensity. These climatic changes are having effects upon natural and human communities across the state (Rao, 2011).

Changes in precipitation, winter snowpack and snowfall, and extreme storm events have increased base and average stream and river flows in many parts of New England. (Climate Action Tool, a) Increased intensity of rain events can increase the delivery of excess nutrients and pollutants to downstream and coastal habitats. Fluctuations in rainfall seasonally have effects upon stream and river flow volume and can affect groundwater and aquifer recharge, and the frequency and severity of flooding events (Rao, 2011).

Temperature changes are leading to a shifting of seasons. Spring is arriving earlier and fall is changing later, resulting in longer summers and milder winters. This has far reaching implications on plant and wildlife as species have adapted to rely on climatic signals for almost every aspect of their survival in Massachusetts including migration, hibernation and emergence, reproduction and development (Climate Action Too, b).

Impacts of climate change on humans include health and safety issues, and disruption to infrastructure and natural systems we all depend upon.

Climate projections point towards these changes continuing to increase for the foreseeable future. Implementing strategies for adapting to and mitigating these changes are integral to the longevity and sustainability of Pembroke. Strategies often can achieve multiple benefits, offering adaptive and mitigative values, such as aggregation and protection of large parcels of core critical habitat or creating open spaces where surface and stormwater can be directed and allowed to infiltrate such as what has been done at the Pembroke High School. Suggested actions in the seven-year action plan (see Section 9) aim to help Pembroke adapt to and mitigate climate change whenever possible.

Creating a town-wide or region-wide Climate Action Plan is strongly recommended to help coordinate efforts across municipalities and town government bodies (Rao, 2011).

EROSION

Although it was reported to be a non-issue in the 2005 OSRP, it is likely that erosion does occur to some extent around the town. Observations of overgrazed horse paddocks, inadequately vegetated slopes and stream banks, and non-paved roads and driveways, in combination with reports of sedimentation issues in some of the town's ponds lead to the conclusion that erosion is occurring. Construction sites or areas of disturbed and exposed soil, of which many have been observed in Pembroke, can also be prone to erosion and practices such as silt fences and retention ponds are now common practices for most developers. It is unclear to what extent these techniques are being practiced in Pembroke.

SEDIMENTATION

Sedimentation is caused by the deposition of particles that have been eroded by wind or water. Sediment that is deposited in a waterbody can cause high turbidity, loss of depth, and cover fish spawning areas. Often this deposition of soil materials adds excess nutrients to the water body, leading to eutrophication and algal blooms (MassDEP, NPS manual).

Sedimentation is a concern around Oldham and Furnace Ponds. In Furnace Pond, the 2005 OSRP cites a state-funded project to install catch basins and trap systems to manage sedimentation into ponds. At the time, the project was 72 percent complete, and sedimentation chambers were installed at Indian Head Park (the head of North River) to control street drainage into Indian head pond and the North River.

A dredging feasibility study was conducted in 2007 to explore the removal of the sediment layer in Furnace Pond. As the pond decreases in depth, its waters warm up increasing undesirable plant growth and algal formations. Subsequently, in 2011 an investigation was conducted to study the hydrological effect dredging may have on the town's aquifer. Initial recommendations prioritize dredging where sediment is deepest and its removal is likely to have the least effect on groundwater. The report also provides rough estimates on the cost of dredging and suggests selling the dredged material "for beneficial uses." As of March 2017, the town has yet to proceed with dredging Furnace Pond. The town's limited resources have gone to control of algae and invasive aquatic species in these water bodies (conversation with town representatives 3/4/17). Pembroke needs to address erosion and resulting sedimentation to maintain the health and recreation opportunities in these water bodies.

FLOODING

According to the Massachusetts Emergency Management Agency (MEMA), as of 2015 there were 39 National Flood Insurance Program (NFIP) policies in force in Pembroke. Only eleven claims were made from 1978 to November 2013, totaling $21,590. Additionally, there are no Repetitive Loss (RL) or Severe Repetitive Loss Properties (SRL) in Pembroke. According to the 2005 OSRP update for Pembroke, the property at Oldham and Pheasant Lane is the lowest point in town and has

experienced flooding problems. It is unclear whether the property owners or the town have made any efforts to address this issue.

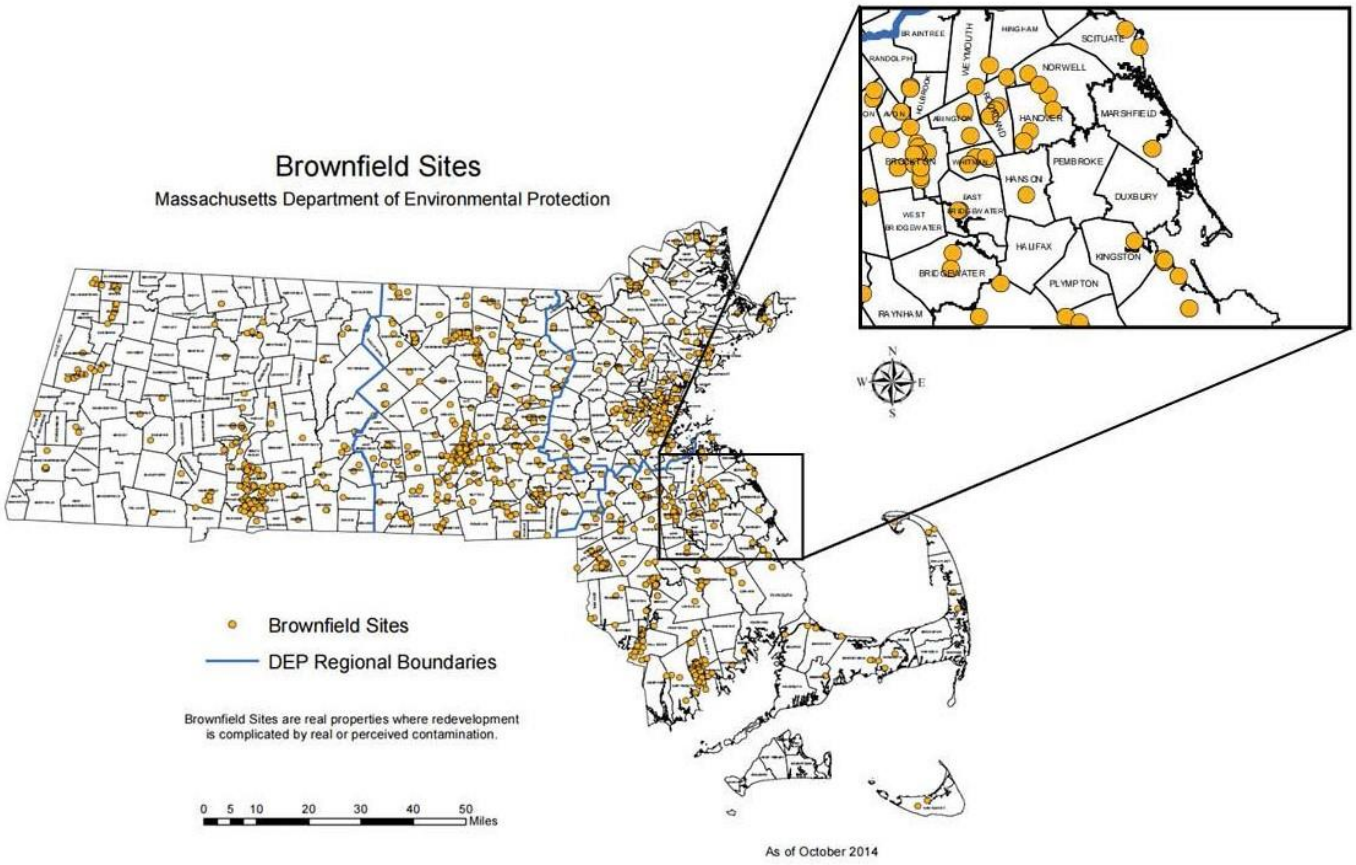
Sea level rise and more intense rainfall events are projected for Massachusetts in the coming years. This suggests that flooding may become a more regular event and that the extent of these events may exceed current trends (Rao, 2011). Protecting areas that can mitigate flooding through absorption and ground infiltration, and minimizing the development of more impermeable surfaces throughout Pembroke, will help reduce the threat of flooding.

HAZARDOUS WASTE AND BROWNFIELDS

At the current writing, there are no recognized brownfield sites in town according to the Massachusetts Department of Environmental Protection (DEP). The closest official brownfield sites are located to the west and northwest in the neighboring communities of Hanson and Hanover, with the nearest site being a little more than a mile over the town boundary. There are designated sites within five of the eight abutting towns (Mass DEP 2014). The proximity to Pembroke and the total number of sites upstream from Pembroke make the risk of contamination a real concern, especially given the likelihood of increased flooding events in the wake of continued climate change.

According to Massachusetts DEP, there are no listed hazardous waste sites in Pembroke. There are, however, several sites that are registered as large quantity toxic users (LQTU), and large quantity toxic generators (LQG) (MassGIS 2016). Several of these sites are located near Pembroke and located upslope of the town.

Figure 26: Brownfield Sites in Massachusetts



Map produced by Massachusetts Department of Environmental Protection 2014 http://www.mass.gov/eea/docs/dep/cleanup/bfmap1014.pdf

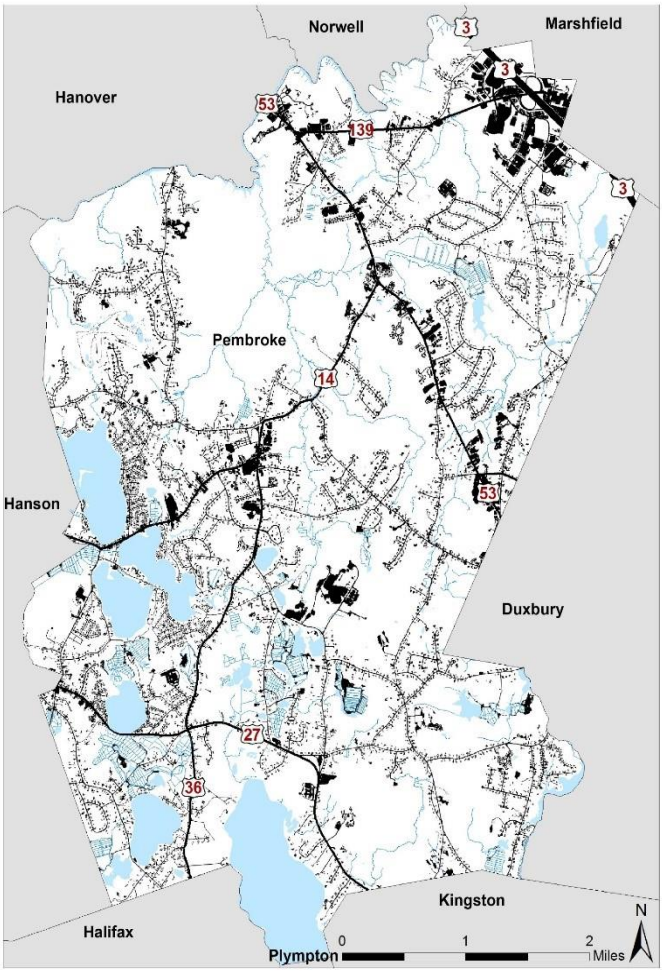


Figure 27: Impervious Surfaces shown in black

There are also several sites that are overtop the aquifer that provides Pembroke with its public water supply. Given the great interconnection of the waterways in the south shore, the position of these sites could potentially pose a contamination threat during a high intensity water event. The two closest LQTUs are a Litecontrol Corp property in Hanson just over a mile over the western border, which formerly manufactured light fixtures and associated products (LiteControl 2017), and a Hapco Inc. property in Hanover just short of two miles northwest of the town line, which manufactures industrial heating components and commercial roofing materials (Hapco Inc 2017).

During 2015 the owner of the current LiteControl property on Hawks Avenue, Hubbell, has begun work on the site to remediate the contamination resulting from historic plant operations. The proposed project includes removal of debris to remediate soils and groundwater contamination within upland and wetland areas, and demolition the majority of the buildings on site.

Several sites in the neighboring towns generate large quantities of waste product that could potentially pose a contamination threat. The two closest sites to Pembroke are an Allied Waste Service center and a Sullivan Tire property that are both less than a mile northeast of the Pembroke town line. In total there are three LQGs of hazardous waste products within a mile radius of Pembroke and thirteen sites within a two-mile radius (MassGIS 2016).

LANDFILLS

There are no active landfill sites in Pembroke; the 19-acre site on Hobomock Street was officially closed and decommissioned in 1991. The former landfill was successfully capped in 2011 with a three-foot-thick site-wide cap that also included a 1-foot-thick hydraulically conductive clay layer, four drainage basins, and approximately 4,000 square feet of replicated wetland (Environmental Partners Group 2014). The Hobomock site is now slated to be developed into the site of a 2-megawatt solar array (Laidler 2016).

New Development

Development has been identified by residents and town officials as one of the most ubiquitous threats to the cultural and natural resources in Pembroke. Residential zoning requires that houses be built on a lot of one acre or more (due to septic setbacks, so that human waste does not become concentrated), which has contributed to the trend of sprawl. The industrial zoning district, located in the northern section of town where Route 3 enters Pembroke, also contributes to increased volumes of traffic, especially heavy vehicles (OCPC), and increased impervious surfaces.

Residential land use is the most common form of development and of new construction in Pembroke. It cuts into forests and abuts wetlands and water resources. With the trend toward growth, sprawl is expected to continue encroaching on the natural landscape, contributing to fragmentation, and increasing demands on water resources and on town infrastructure, including new roads, drainage systems, and municipal water.

From the beginning of the twentieth century, residential development left a legacy of vacation cottages concentrated near and around water bodies like Oldham and Furnace Ponds. Many of these old cottages have been converted into year-round residences and are on much smaller lots than are required by the zoning regulations (some are as small as quarter-acre lots since their construction pre-dates the adoption of zoning regulations). These dense clusters of dwellings along the waterfront can contribute to pollution of water resources through the runoff of fertilizers, pesticides, stormwater, and septic leaks which potentially add excess nutrients to ground and surface waters.

The concentrated industrial and commercial zones in the north part of town create conditions for nonpoint source pollution. Increased traffic and impervious surfaces can increase automobile pollution. The industrial section of town is located near the North River, which is an impaired water body. It is possible that the proximity of the industrial district to the river may be contributing to the pollution of the North River. The section of the North River that is closest to Route 3 has impaired water quality, with elevated mercury and fecal coliform. The sources of these contaminants are currently not known, but it might serve the communities of Pembroke, Marshfield, and Hanover to assess whether the high traffic and large impervious area has contributed to the pollution of the North River.

Ground and Surface Water Pollution, Point and Non-Source Point

On the west side of Pembroke, four of the seven major waterbodies (Oldham Pond, Furnace Pond, Stetson Pond, and Silver Lake), are considered impaired to varying degrees, according to MassDEP. The Indian Head River and North River are also considered impaired. The waters of the Indian Head River, along the western half of Pembroke's northern border, has elevated levels of phosphorus and diminished levels of dissolved oxygen from municipal point source discharges into the river, which threaten habitat quality for aquatic species. There are also elevated levels of mercury in the fish in the Indian Head River, due to contaminated sediments. Fish from the North River are unsafe to eat due to elevated mercury; similarly, shellfish harvesting is prohibited due to the presence of fecal coliform. Primary contact recreation is also not recommended due to fecal coliform. The sources of pollution along the North River are currently unknown.

Fish and aquatic habitat in Oldham Pond is currently impaired due to the presence of non-native invasive species. Furnace Pond has low levels of dissolved oxygen which impairs the quality of aquatic species. Stetson Pond suffers from increased level of phosphorus and diminished levels of dissolved oxygen, as well as the presence of non-native invasive aquatics, all of which impair the habitats of aquatic species. Due to water flow diversions, probably from water withdrawing, Silver Lake does not fully support habitat for fish and other aquatic life.

Indian Pond and Great Sandy Bottom Pond have not been evaluated for safe use. It would be wise for the town to test the quality of these waters, especially as they residents enjoy recreating in them.

INVASIVE SPECIES

Pembroke is home to a great variety and diversity of desirable plant and animal species. However, over the years the number of exotic invasive species has increased, drawing great concern from the Conservation Commission as well as private and nonprofit environmental groups and members of the public. These species threaten the overall and long-term health of many of Pembroke's rich natural habitats because they outcompete native species for precious resources and, in extreme cases, eliminate native species from those habitat areas.

Of greatest concern are those invasive species that reside in some of the town's water bodies. These species degrade the ecological health of these systems and limit recreational use. Hobomock Pond is occasionally closed for recreation due to an abundance of the aquatic plant hydrilla (*Hydrilla ssp).* Efforts to eradicate the persistent weed have lasted for years with varying degrees of success. Other problematic aquatic and riparian species include common reed *(Phragmites australis)*, purple loosestrife (*Lythrum salicaria)* fanwort (*Cabomba spp),* and veriable milifoil. *(Myriophyllum heterophyllum)* (Glover 2012).

In addition to the aggressive exotic plant species, there are also concerns around invasive insects threatening the local landscape in Pembroke. The gypsy moth *(Lymantria dispar dispar)* is a member of the Eurasian species that was introduced in the late 1800s and since that time has been responsible for the mass defoliation of countless acres of woodlands. (Mass Audubon 2016) Though still a common problem in region there have not been large scale gypsy moth infestations in Pembroke for the last seven or eight years according to one of the town's conservation agents (personal communication 03/12/17).

Figure 28: Remains of gypsy moth pupae at Herring Brook

ENVIRONMENTAL EQUITY CHANGE

There are no current Environmental Justice populations located in Pembroke (See **Map 3.2**). However, there are some within a ten-mile radius, in the towns of Whitman, Rockland,

Middleborough, Weymouth, Plymouth, Holbrook, Braintree, and Brockton. According to the 2015 American Community Survey estimates, 4.7 percent of the population of Pembroke is below poverty. Despite the absence of an Environmental Justice population and a low poverty rate, it is important that all residents are able to access open space and recreate without discrimination.

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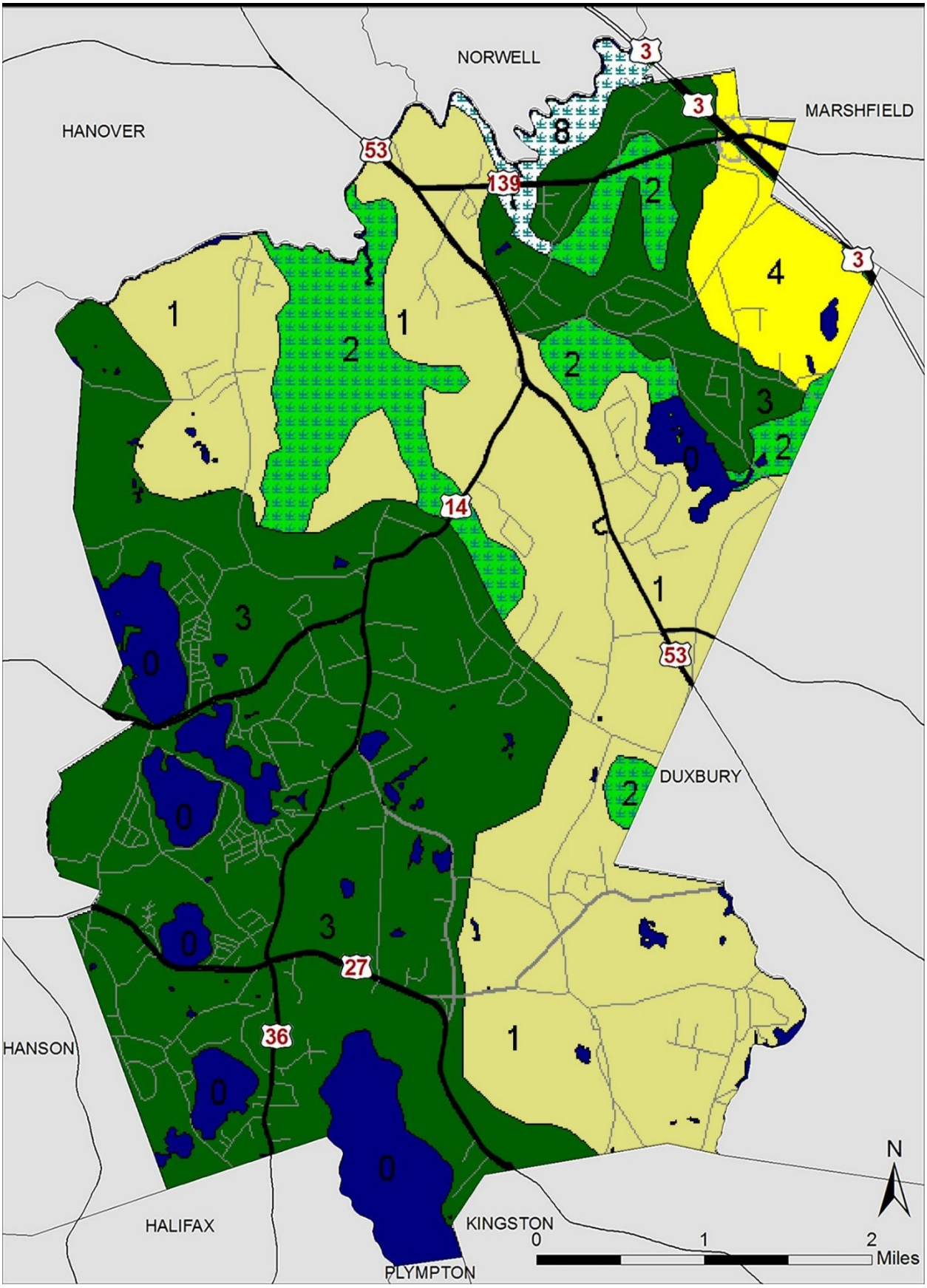
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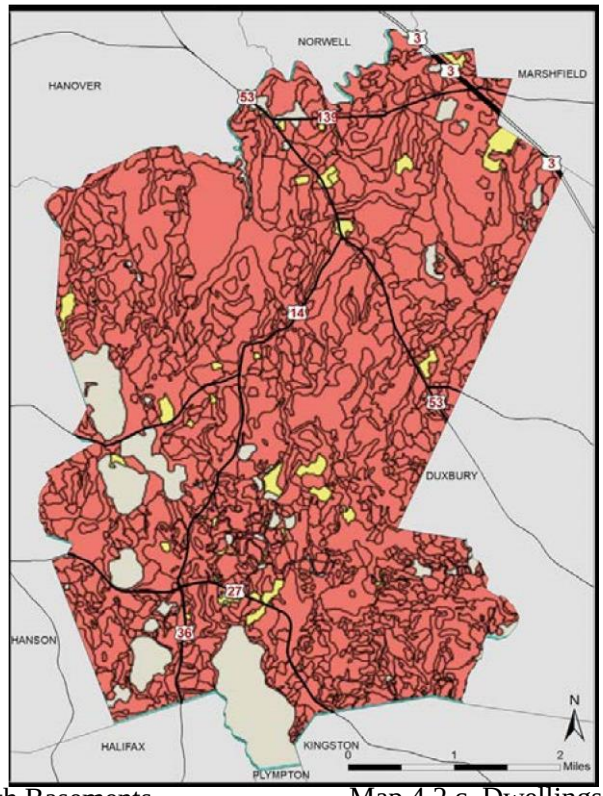
Map 4.1
Soil Characteristics

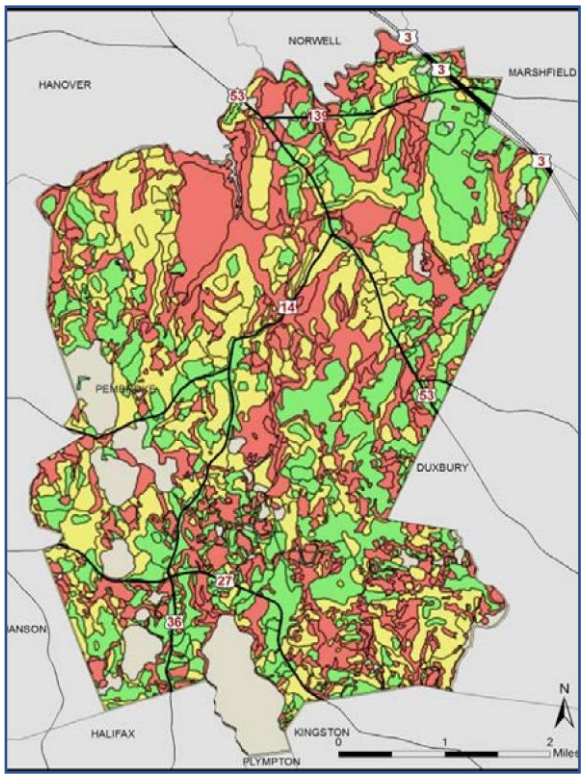
Soil Characteristics

Soils in Pembroke are predominantly sands and sands and gravels of the Hinkley-Windsor-Deerfield and Birchwood-Poquonock-Mattapoisett series. Alluvial and organic muck soils make up the remaining series types located in the northern section of town. Sandy soils and high water tables create challenges to both construction and septic function. These soils also create conditions for plant communities found in Pembroke, such as the Oak-Pine-Woodlands and various wetlands, marshes and fens which provide habitat to rare and common species.

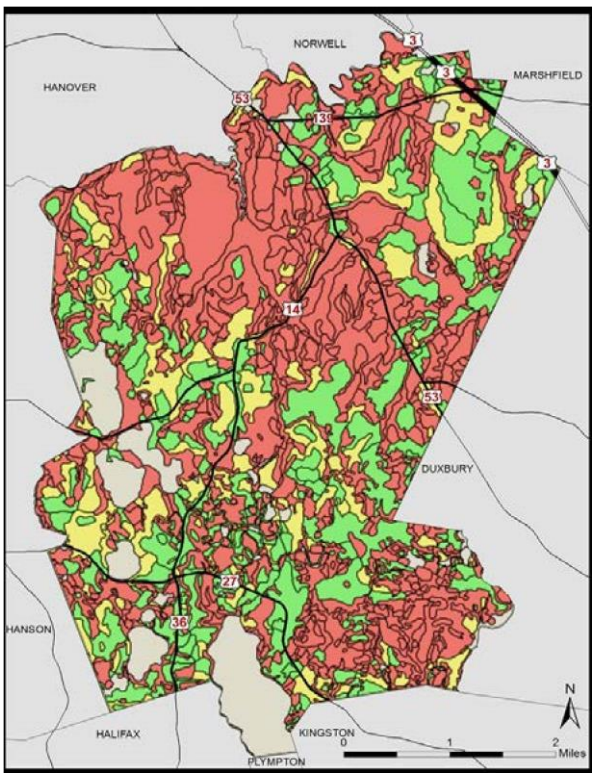
Map 4.2a. Septic Suitability



Map 4.2 b. Dwellings with Basements



Map 4.2 c. Dwellings without Basements



Maps 4.2 A, B & C Soil Suitability

Very Limited

Somewhat Limited

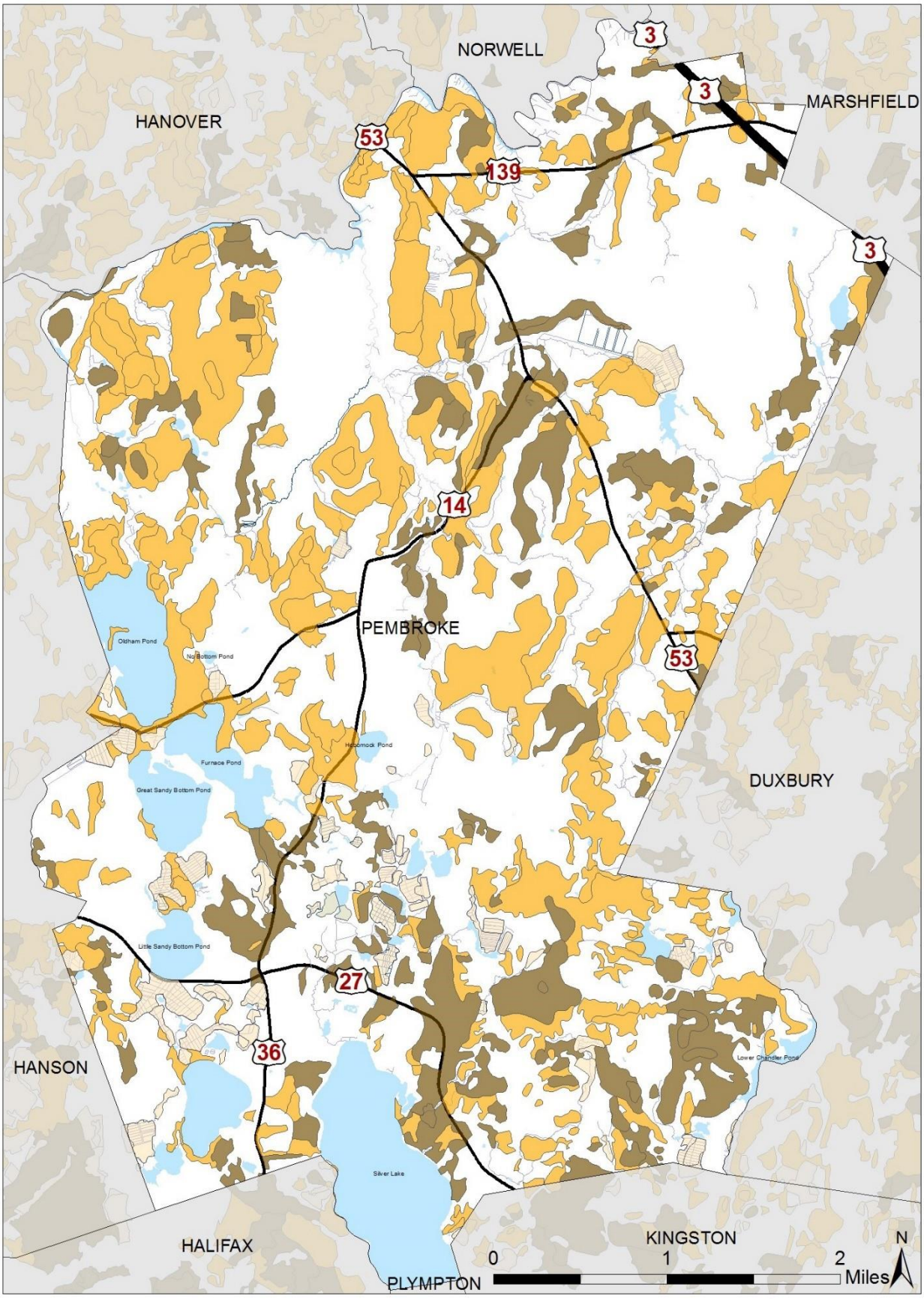
Not Limited

Not rated or not available

Soil Suitability

Pembroke's soils are almost entirely unsuitable for septic systems, according to the NRCS Web Soil Survey. This is likely due to poor drainage of impermeable soil layers due to till, the presence of subsurface deposits, and a high water table. These factors create challenges to proper septic function, requiring additional costs and techniques to ensure safe and adequate effluent treatment. Technologies such as raised mound systems however have allowed housing to be built in areas where septic systems would otherwise not function. Despite these conditions, Pembroke has no centralized sewage treatment facility.

Soils across Pembroke pose challenges to construction of dwellings. Concentrations of soils with the highest limitations are located in the north-central area of the town as well as in the southeastern area. In areas with limitations, construction techniques to overcome these challenges usually drive overall costs higher.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Oldham Pond
No Bottom Pond
Furnace Pond
Great Sandy Bottom Pond
Little Sandy Bottom Pond
Silver Lake
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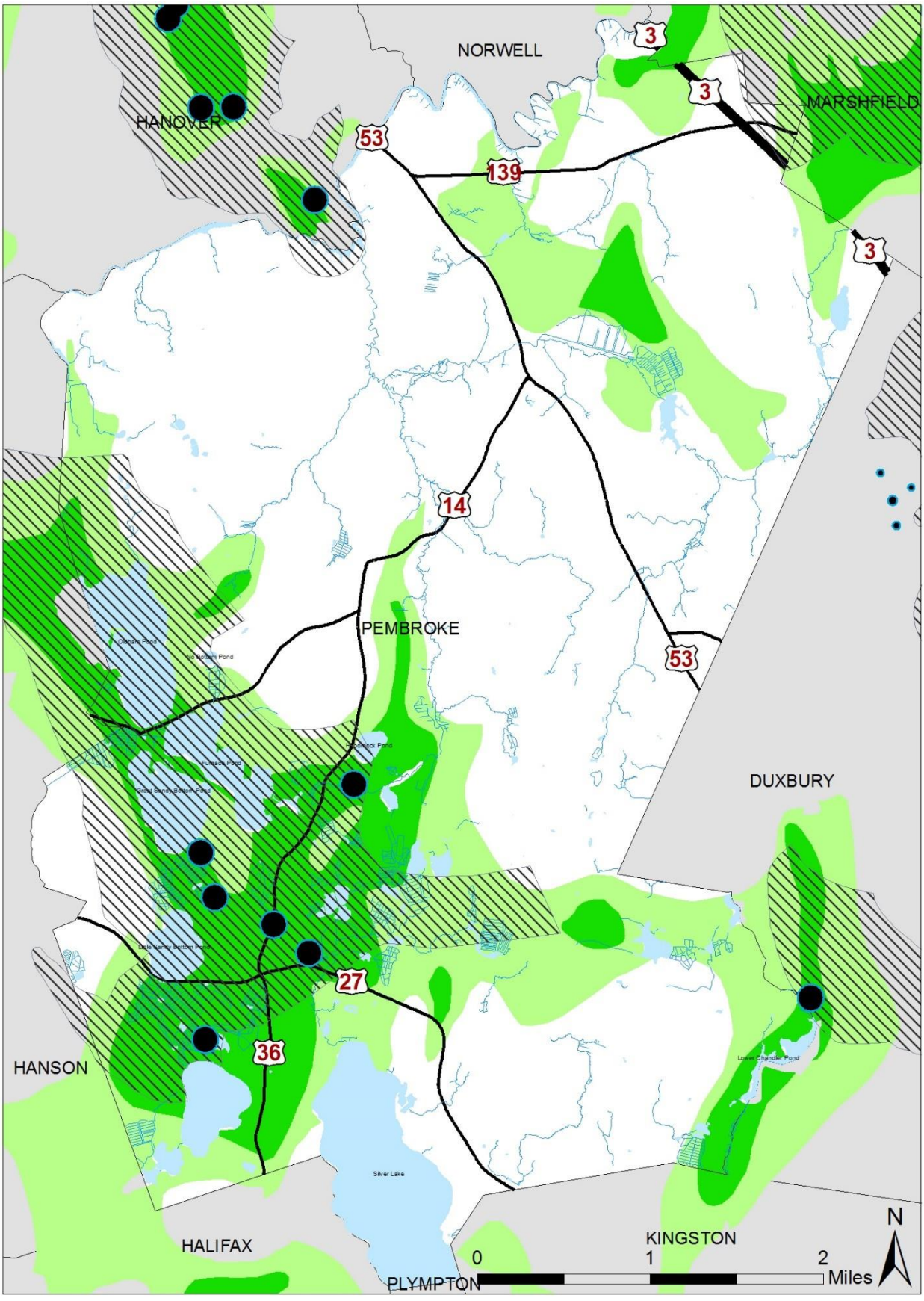
Map 4.3
Prime Agricultural Soils

Prime Agricultural Soils

Although there is not currently an active agricultural industry in Pembroke and only a handful of working farms, there are significant concentrations of NRCS-classified prime agricultural soils, soils of statewide importance, and soils of unique importance.

The largest tracts of prime soils are in the southeast of town between Silver Lake and Chandler Pond. There are also moderate concentrations along Route 14 in the northern central areas. Soils of Statewide importance are more common throughout Pembroke, but the largest contiguous tract is in the northwest corner along the Hanover border.

Soils of unique agricultural importance, largely composed of mucks, peats and heavy sands are mostly found in the southern ponds with the largest area between Great Sandy Bottom and Stetson Ponds.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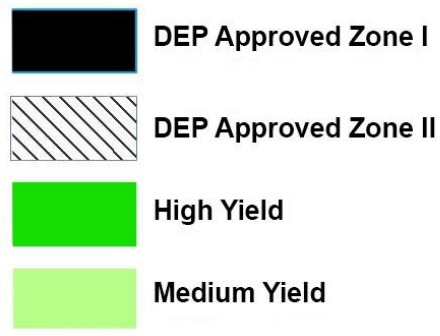
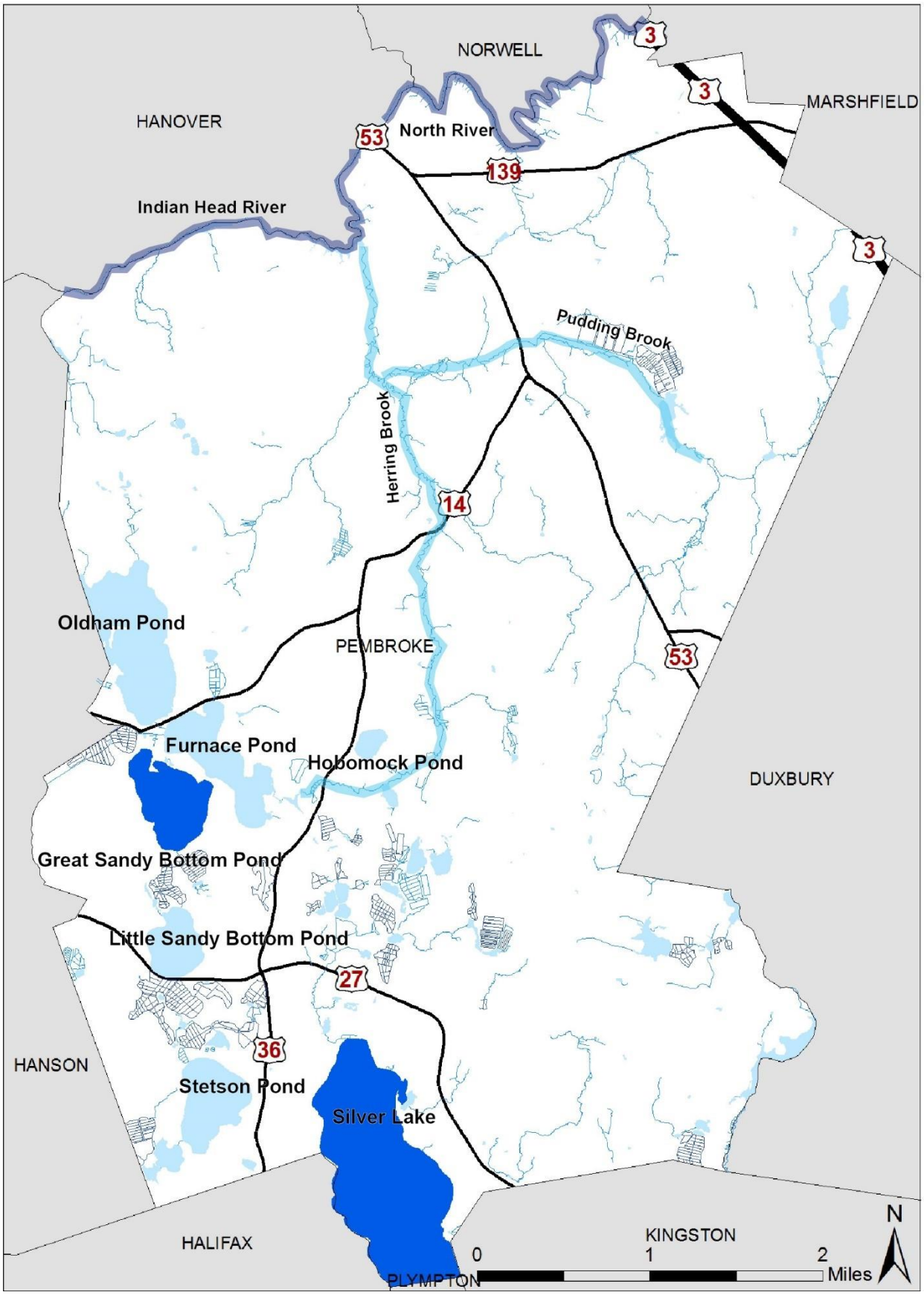
Map 4.4
Aquifers and Wellhead Protection Areas



Aquifers and Wellhead Protection Areas

Pembroke's primary aquifer lies under the southwest side of town and extends into Hanson and Halifax. The town draws from six wells within this area for drinking water needs. This aquifer also encompasses most of the open water sources in town. Another smaller aquifer lies in the north part of town. Another smaller aquifer lies in the north part of town, which is a potential source of drinking water for the town. Other aquifers located mainly under Duxbury and Marshfield are also in Pembroke. Efforts to protect water resources that lay underneath multiple towns would assist those communities that draw from these aquifers.

Protection of these aquifers may also prevent the degradation of the hydrology of aquifer supported systems and the natural communities that rely on these groundwater resources.


NORWELL
HANOVER
MARSHFIELD
North River
Indian Head River
Pudding Brook
Herring Brook
Oldham Pond
PEMBROKE
Furnace Pond
Hobomock Pond
DUXBURY
Great Sandy Bottom Pond
Little Sandy Bottom Pond
HANSON
Stetson Pond
Silver Lake
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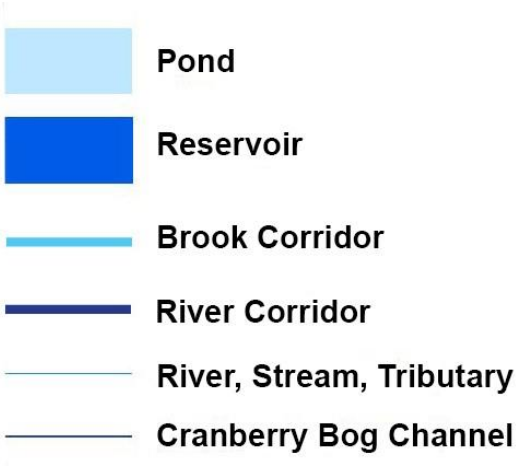
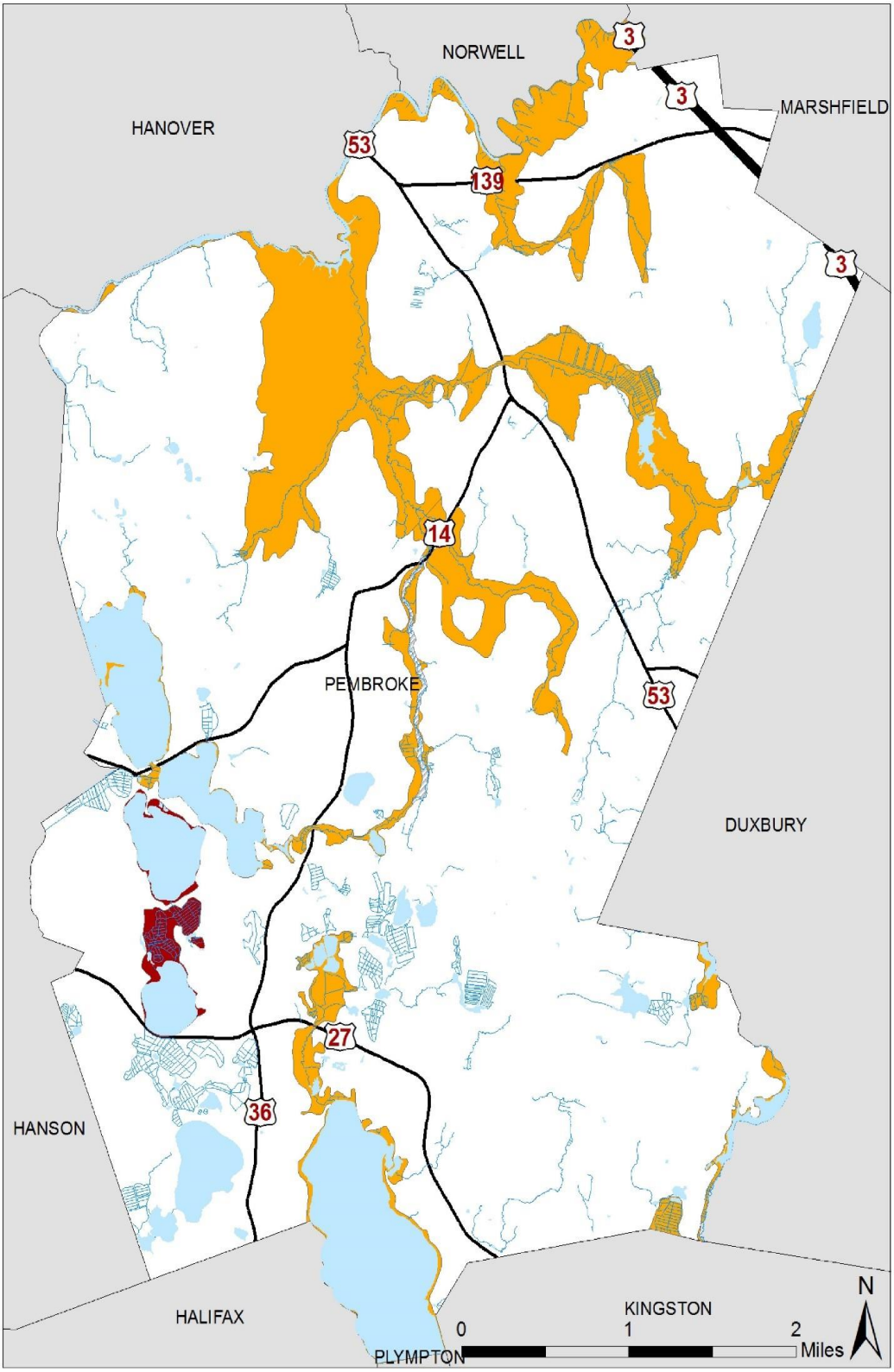
Map 4.5 Surface Water Resources



Surface Water Resources

The surface of Pembroke is dotted with many water bodies, including a pond, lakes, rivers, and streams. Water is present in most every part of Pembroke. These vital water resources give way natural communities and provide sources of recreation and drinking water. The major tributaries in Pembroke are the North River and Indian Head River. Herring Brooks and Pudding Brook both feed into the North River, which connects with the Atlantic Ocean.

Since Pembroke's water resources and the landscapes associated with these water resources, such as wetlands, are found in almost every part of town, existing and increased development threaten the quality of these resources. Non-point source pollution from properties, like fertilizer and automobile runoff can threaten the health of ponds and streams, threatening the quality of these water resources and their capabilities for habitat, recreation, and drinking water.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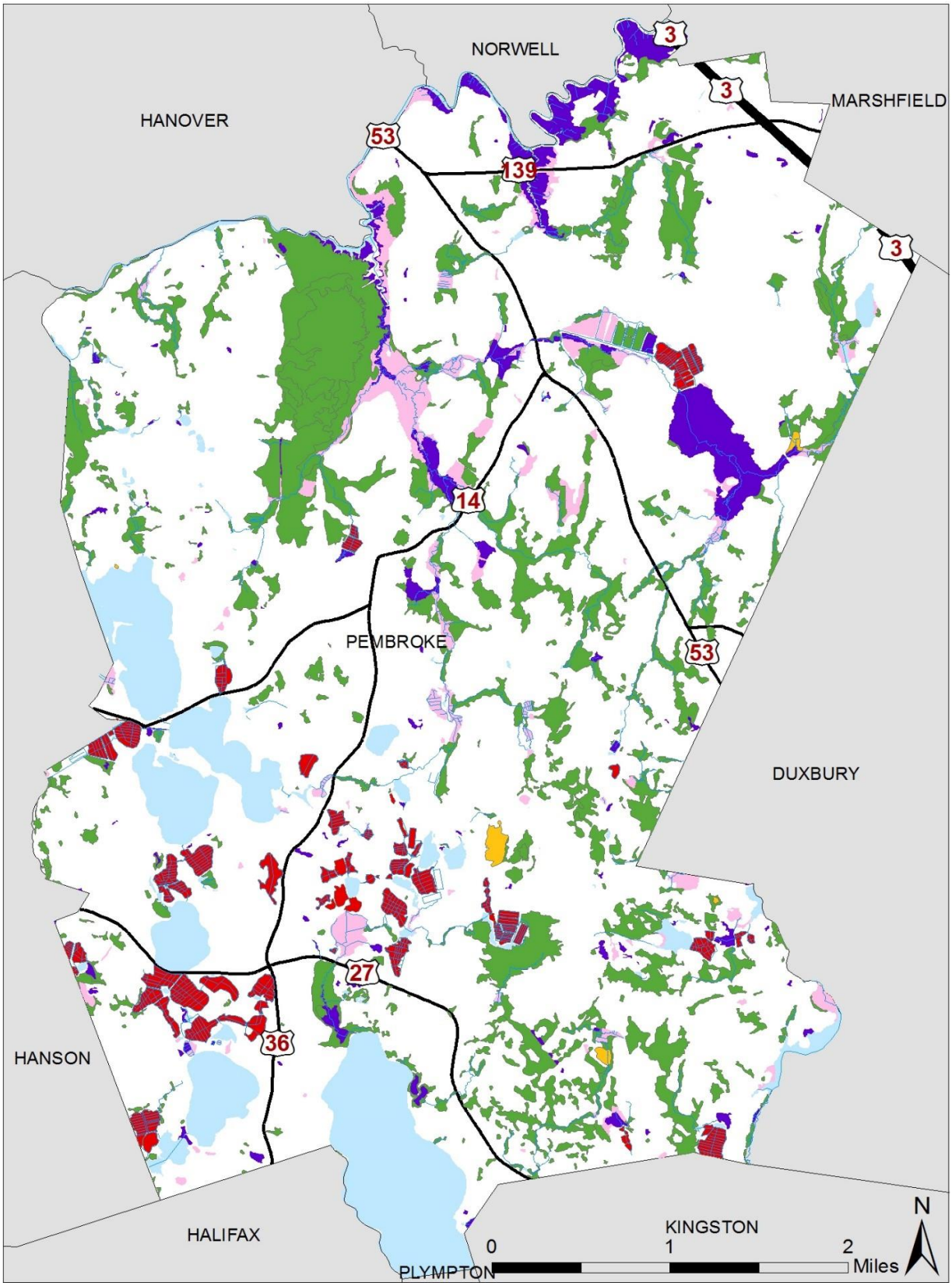
Map 4.6
Flood Hazard Areas

Flood Hazard Areas

100-year flood areas are located primarily in the northern part of town, focused mainly along Herring Brook and west into the Atlantic Cedar swamp. Protecting the wetlands within flood areas could help to mitigate the effects of floods. There are six areas where roads cross over 100-year flood areas. These areas could cause potential flooding over roads, making them in accessible. The 100-year flood zone along Pudding Brook may extend into people's properties, potentially damaging property during deluge events. The intensity and frequency of floods may also increase in light of climate change, making flood zones more dangerous to human health and damaging to properties.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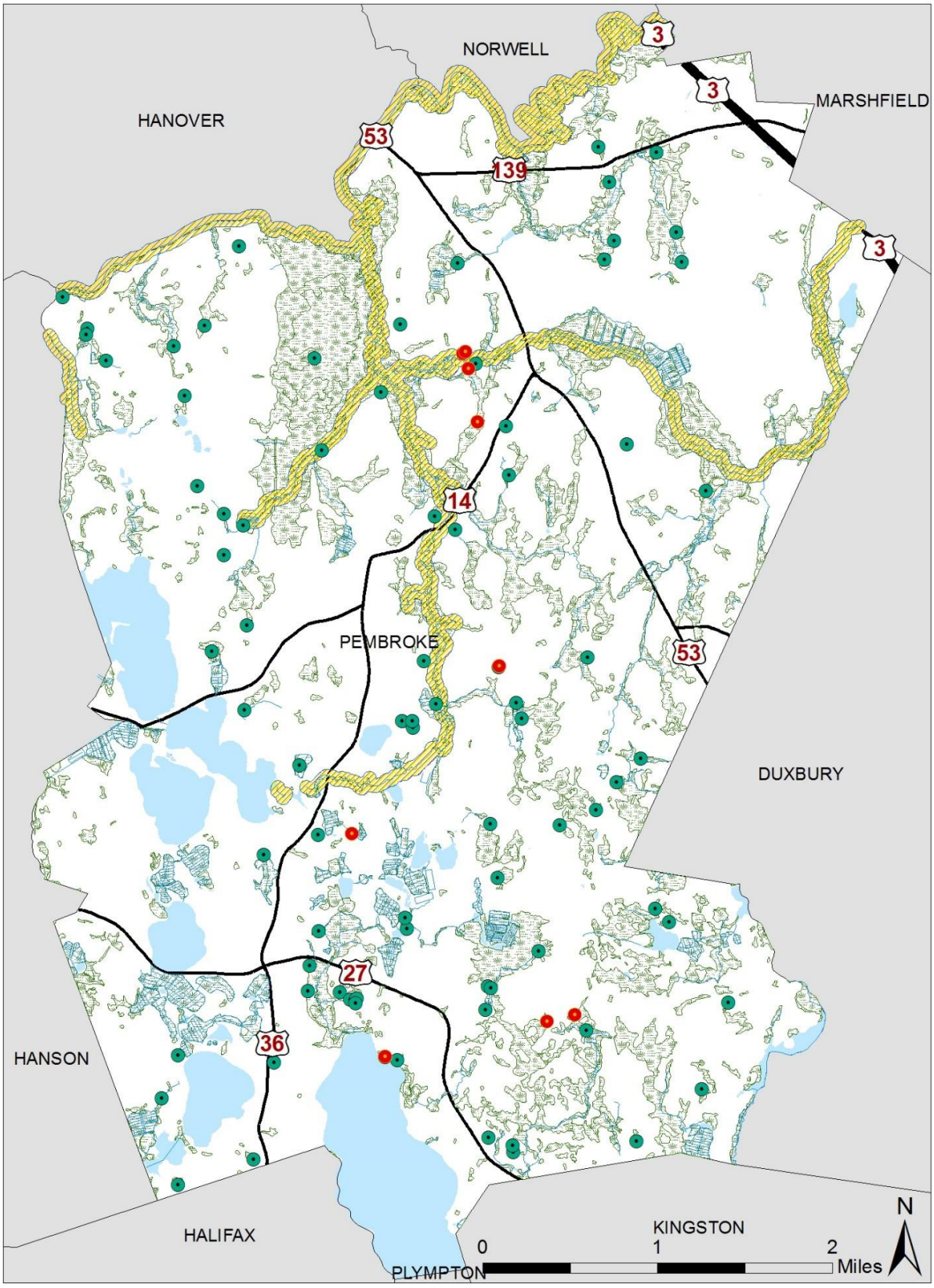
Map 4.7
Wetland Types

Wetland Types

Wetlands are found throughout most of Pembroke. The largest patch is a wooded swamp in the north, where Herring Brook connects with the North River. Cranberry bogs are concentrated in the southwest close to the ponds. Most of the wetlands in Pembroke are wooded swamps.

These wetlands are important for maintaining hydrological functions within the town, filtering some pollution, and providing habitats for many species. Protecting these resources will help support the ecological function of the landscape and will provide ecosystem services.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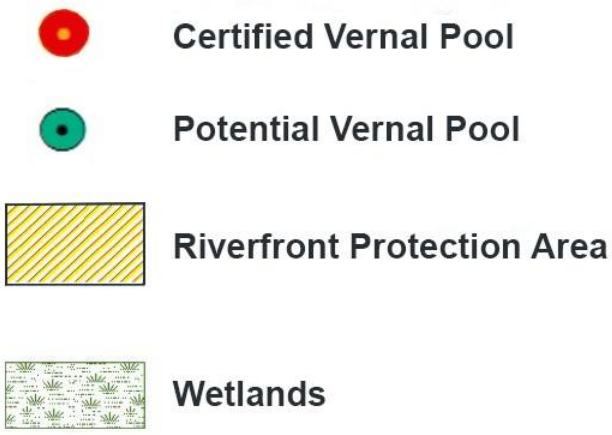
Map 4.8
Wetland Resource Areas



Wetland Resource Areas

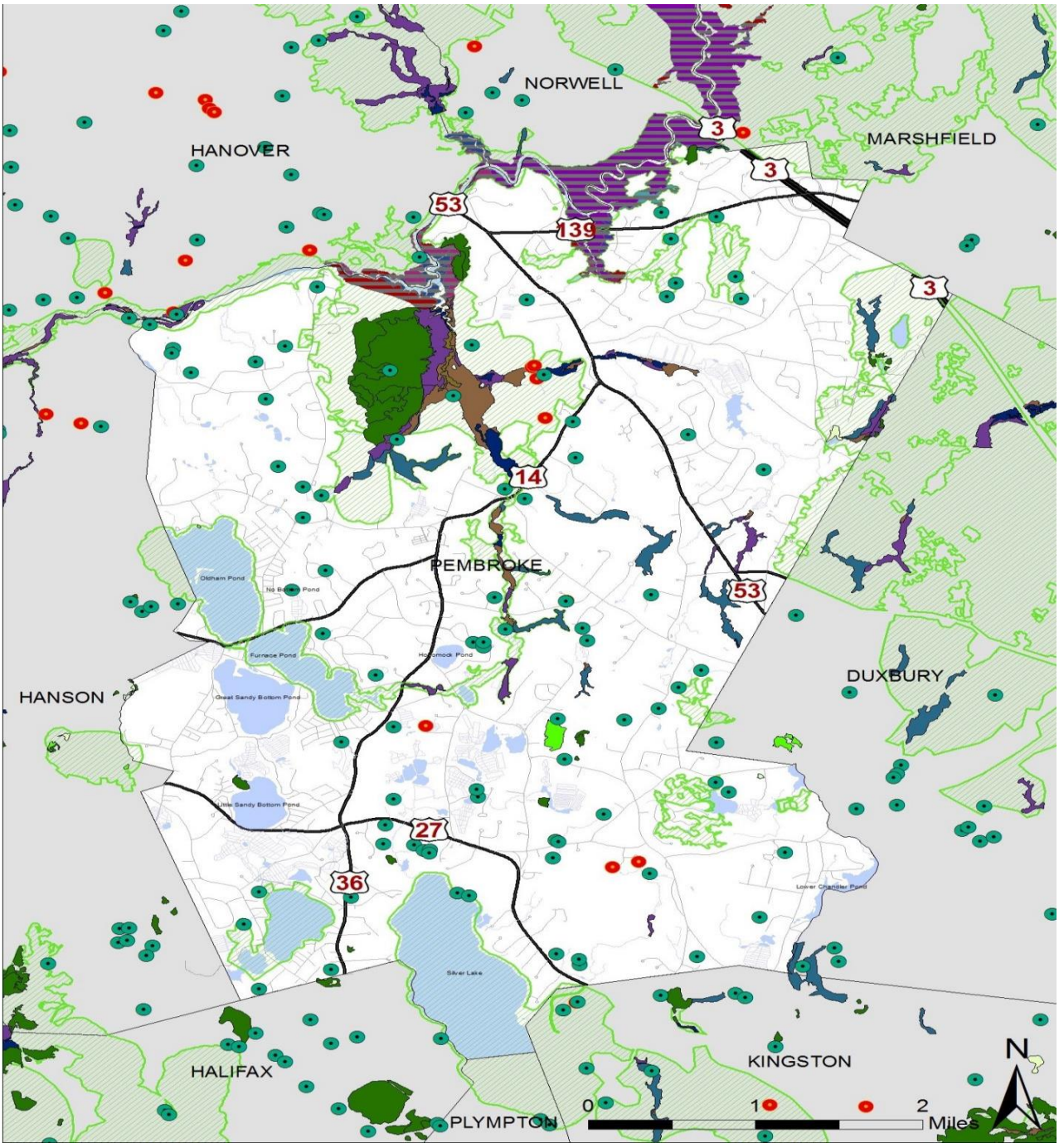
There are eight certified vernal pools and eighty-one potential vernal pools in Pembroke, found mostly in and around wetlands and water resource areas.

The Riverfront Protection Areas are found along the North River, Indian Head River, Pudding Brook, and Herring Brook, connecting many of the wetland areas and vernal pools. Through distributed throughout the town, the largest concentration of wetlands is found in the northern half of Pembroke.

Protecting these areas could help to reduce flood threats, ensure viable habitat areas for wetland species, and protect the quality of surface water resources throughout the town. Major roads like Route 53, 14, 139, and 27 cross over wetlands and riverfront resources, potentially impeding species mitigation and polluting species habitat.

Investigating the quality of road culverts that cross wetland resource areas would document how well species can move through these habitats.

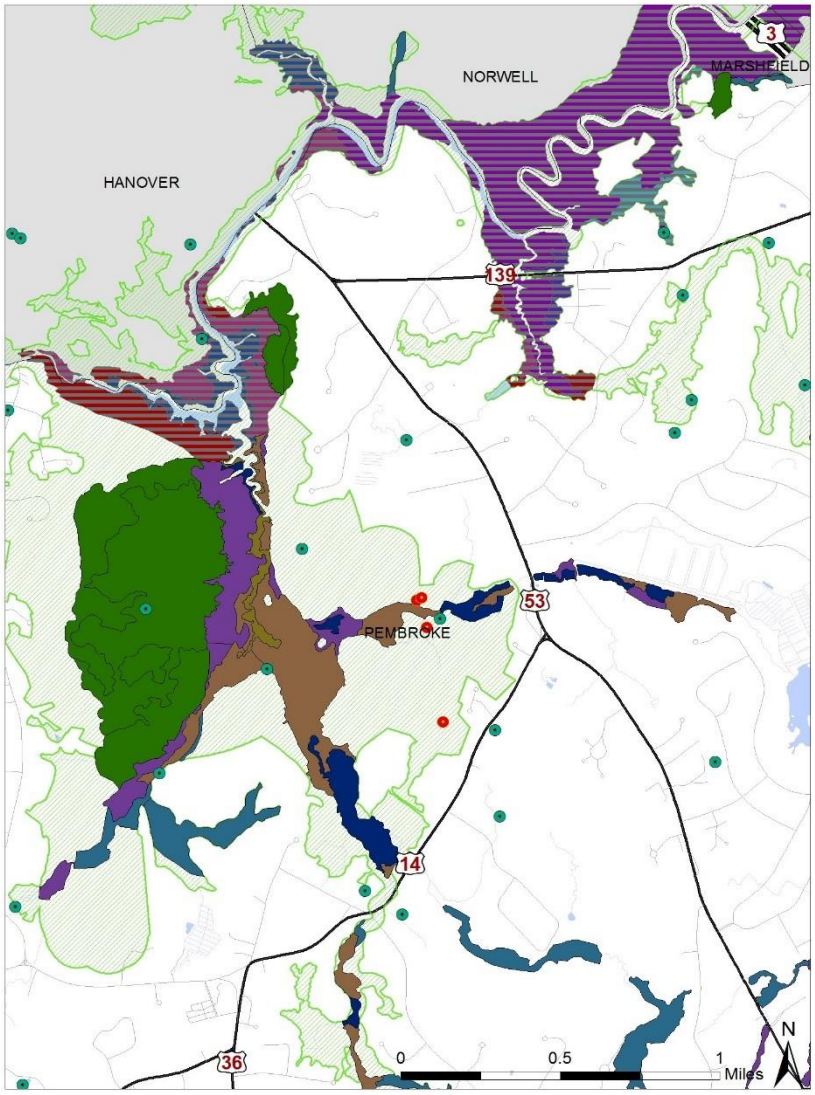
These roads also may be flooded periodically, so protecting wetland areas and updating road infrastructure to manage stormwater might mitigate possible flood intensity and improve filtration of contaminants and road runoff. Increased and enhanced riparian plantings as well as meeting Massachusetts Stream Crossing Standards would help migration and survival of species that use these resource areas.



Wetland Habitat Types

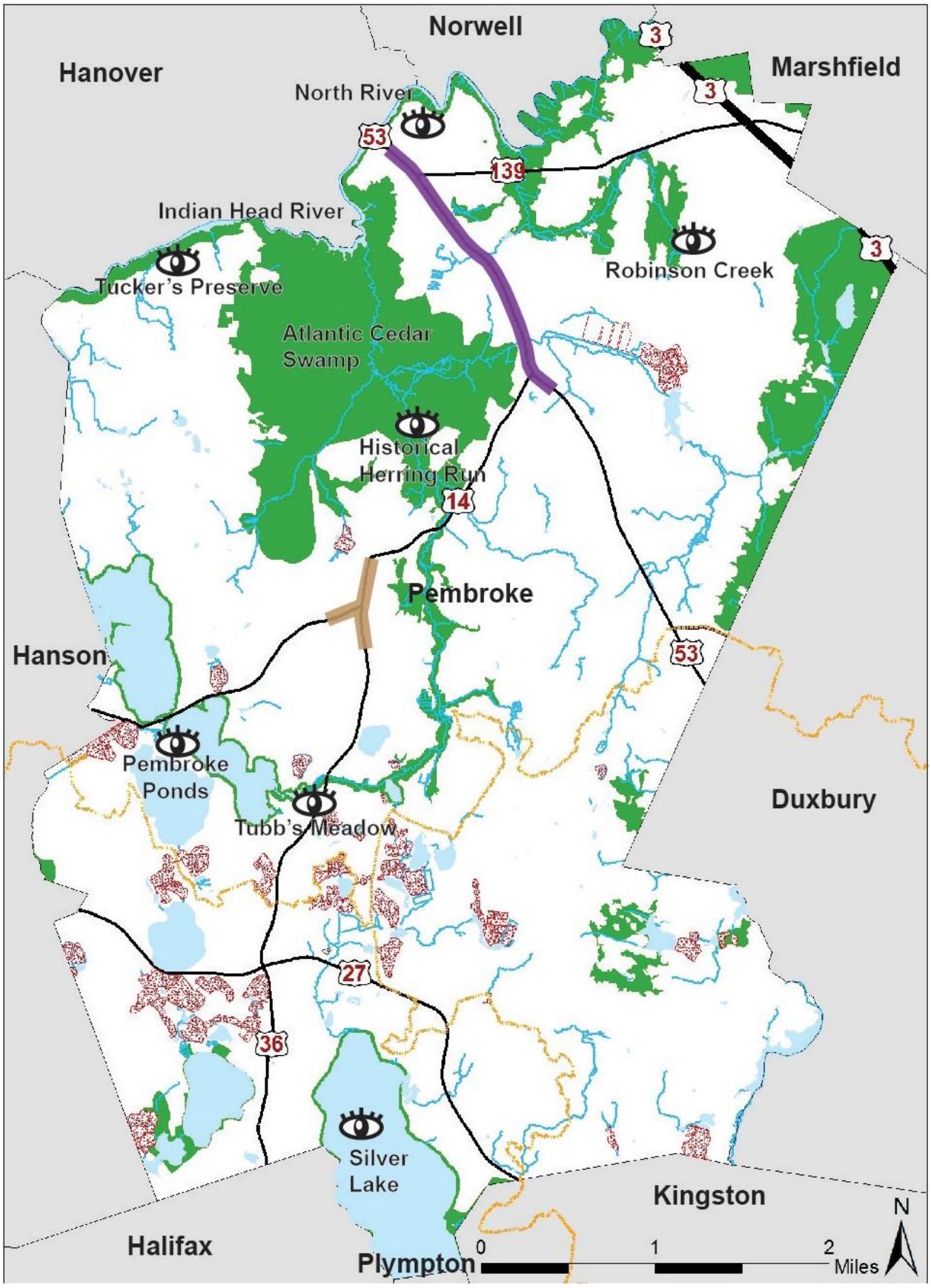
- ACIDIC GRAMINOID FEN
- ACIDIC SHRUB FEN
- ATLANTIC WHITE CEDAR SWAMP
- BOG
- BRACKISH TIDAL WOODED SWAMP
- FRESHWATER TIDAL WOODED SWAMP
- BRACKISH TIDAL SHRUBLAND
- FRESHWATER TIDAL SHRUBLAND
- BRACKISH TIDAL MARSH
- FRESHWATER TIDAL MARSH
- ALLUVIAL ATLANTIC WHITE CEDAR
- WOODED SWAMP MIXED TREES
- WOODED SWAMP DECIDUOUS
- SHRUB SWAMP
- DEEP MARSH
- SHALLOW MARSH MEADOW OR FEN
- Roads
- Streams, Brooks, Rivers
- Lakes and Ponds
- Certified Vernal Pools
- Potential Vernal Pools
- Critical and Core Habitat

Map 4.9
Wetland Habitats



Wetland Habitats

The greatest concentration of habitat areas are found in the northern portion of town. The greatest diversity of different habitat types is centered on confluence of the North/Indian Head Rivers and Herring Brook. This area also represents the largest block of core habitat area within Pembroke. This area of high conservation value for protection of natural resources.


Norwell
Hanover
Marshfield
North River
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53
139
Indian Head River
Tucker's Preserve
Robinson Creek
Atlantic Cedar Swamp
Historical Herring Run
14
Pembroke
Hanson
53
Pembroke Ponds
Tubb's Meadow
Duxbury
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Silver Lake
Kingston
Halifax
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Miles
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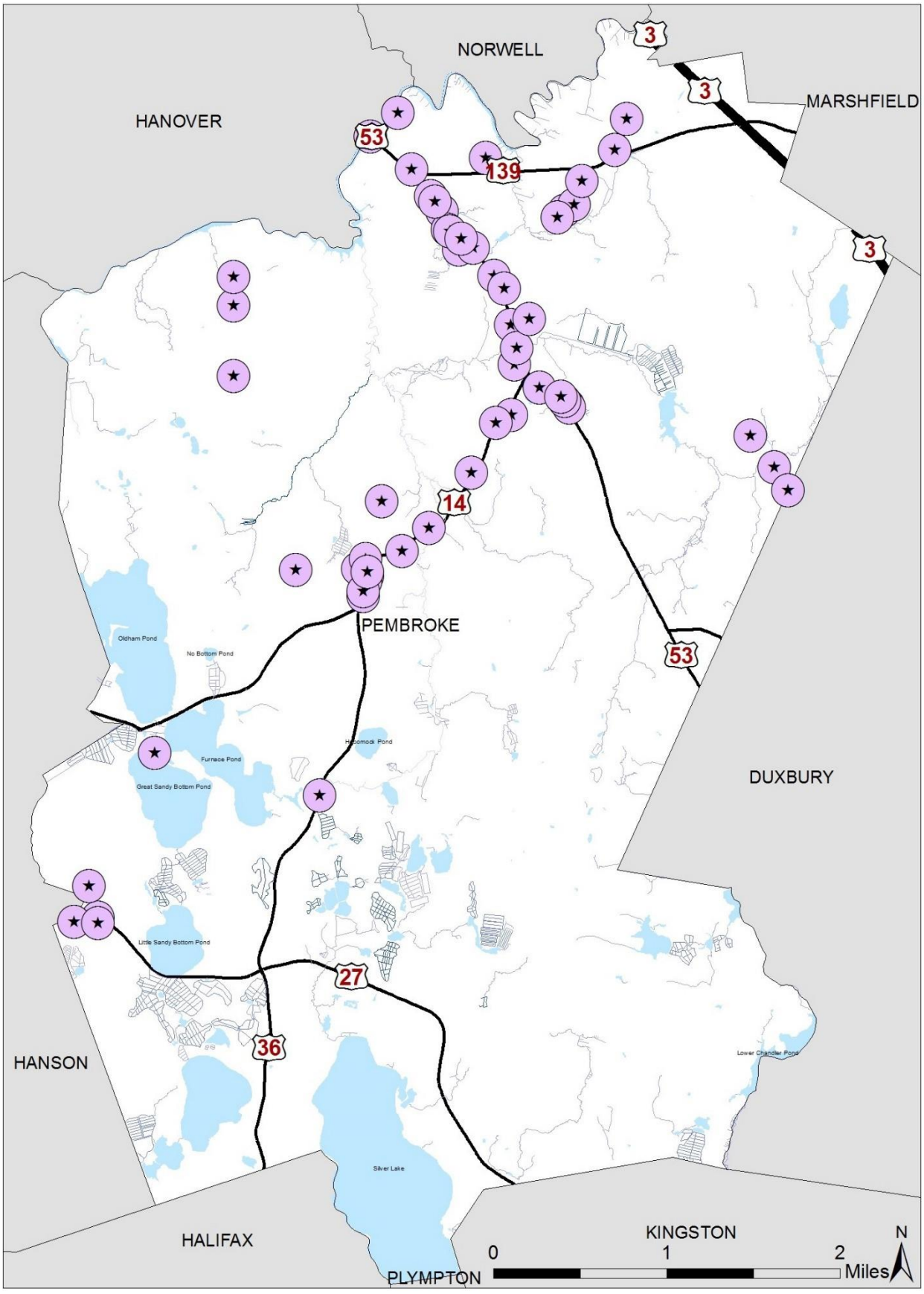
Map 4.10
Scenic Resources

Scenic Resources

Pembroke is a unique town with an abundant diversity of unique and scenic resources. Rivers and streams flow throughout the town and connect to open bodies of water, the largest concentration of which are on the west side of town. Pembroke's habitat areas can be found in about every corner of town with the largest concentration in the north, which encompasses the Atlantic Cedar swamp.

Part of Pembroke's unique character is defined by its history, observable by the cranberry bogs which dot the landscape and seem predominately within historic district and center district. One of the most distinguished historical and cultural sites is the Herring Run, which serves as a place for the community to gather and watch the migrating herring. Pembroke has a series of parks which people hike, some of which are connected by the 200-mile long Bay Circuit Trail.

The diversity of resources combined make Pembroke the unique and beautiful place that it is today.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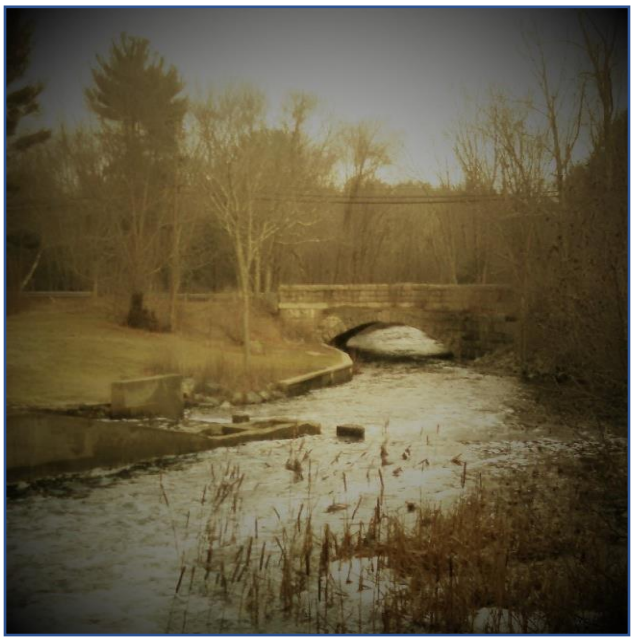
Map 4.11

Historic Sites

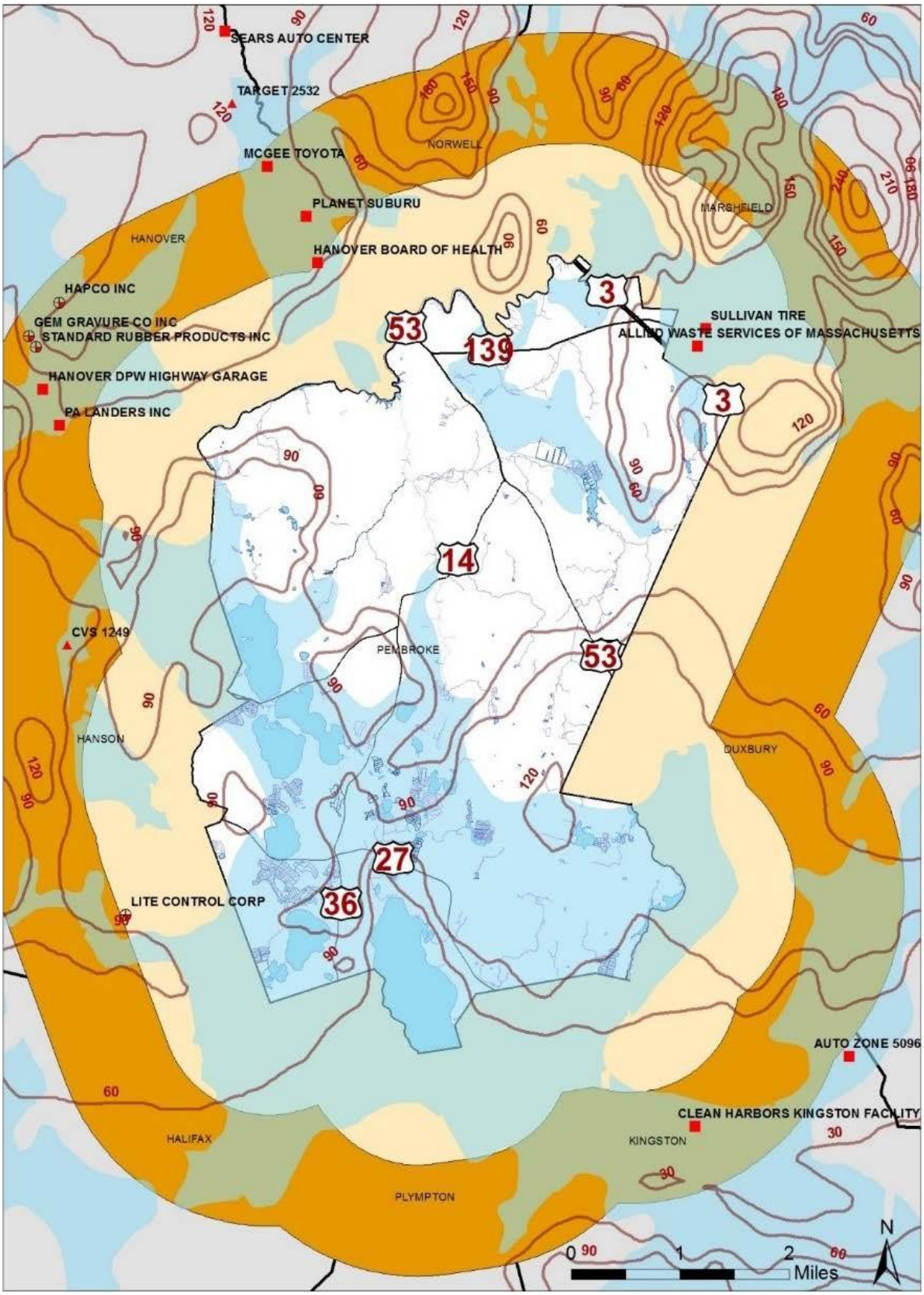


Historic Sites

Pembroke's long and rich history has left a number of culturally significant and historic sites throughout the town. The largest concentrations of historical sites are located in the northeast and in the southwest in the areas known as Bryantville.

The Historical Society of Pembroke works to protect these significant historical resources and have produced books to record town's history. These areas provide historical significance to the town and how it has evolved.

★ **Historic Site**


SEARS AUTO CENTER
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NORWELL
MARSHFIELD
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GEM GRAVURE CO INC
STANDARD RUBBER PRODUCTS INC
HANOVER DPW HIGHWAY GARAGE
PA LANDERS INC
SULLIVAN TIRE
ALLIED WASTE SERVICES OF MASSACHUSETTS
CVS 1249
PEMBROKE
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Hazardous Waste

There are no identified toxic sites within Pembroke. There are thirteen sites within a two-mile radius of Pembroke, many of which are upslope from the town or above the aquifer that provides the town's public water supply. Increased open space and undeveloped lands, especially those around the periphery of the town, could help reduce contamination threat by serving as bio-filtration buffers and supporting functional ecological systems.

Map 4.12 Hazardous Waste Sites

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http://www.mass.gov/eea/docs/dfg/nhesp/natural-communities-facts/fresh-brackish-tidal-shrubland.pdf

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Map 4.2 Soil Suitability Data Source

USDA NRCS Webb Soil Survey-

Map 4.3 Prime Agricultural Soils

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly, NRCS SSURGO-Certified Soils OCPC,

Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.4 Aquifer and Wellhead Protection Areas Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly, MassGIS Aquifers, MassDEP Wellhead Protection Areas (Zone I, Zone II, IWPA)

OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.5 Surface Water Resources Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly,

OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.6 Flood Hazard Areas Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly, FEMA National Flood Hazard Layer OCPC,

Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.7 Wetland Types

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly, Mass DEP Wetlands Poly
OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.8 Wetland Resources Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly, OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.10 Scenic Resources Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly, BioMap2 Core Habitat Components, Mass DEP Wetlands Poly

OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.9 Core Habitat and Wetland Habitat Types Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly, NHESP Certified Vernal Pools, NHESP Potential Vernal Pools, BioMap2

Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.10 Scenic and Unique Features Data Source

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly,

Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.11 Historic Sites

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information

Technology Division: DOT Roads 231, Towns Poly, MHC Historic Inventory Town of

Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.12 Hazardous Waste Sites Data Sources

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly, Contours 250K, DEP BWP Major Facilities LQG, DEP BWP Major Facilities LQTU.

OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Map 4.12 Impervious Surfaces of Pembroke Data Sources

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: DOT Roads 231, Towns Poly, Impervious Surface Images (SE2)

OCPC Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Section 5: INVENTORY OF LANDS OF CONSERVATION AND RECREATION INTEREST

In a broad sense, open space includes any lands that are minimally or wholly undeveloped. They can accommodate a wide range of activities such as sports, nature study, and conservation, and have a variety of different ownership types. Some open space lands are publicly owned by municipal, state or federal government, while others are owned privately or by nonprofits. Similarly, there are different levels of protection afforded to these natural, historic, and cultural resources. The highest level of protection is permanent protection that attaches to the deed of a property. Permanently protected lands in Massachusetts include publicly owned and designated conservation areas, as well as private lands with permanent conservation restrictions. Public lands that are afforded protection in perpetuity may only have that protection lifted if authorized by a two-thirds vote of the town governing body, followed by a two-thirds vote of the Massachusetts legislature. (Although there have been contentious situations in recent years of energy corporations overriding state land protection to develop pipelines through protected lands.)

Figure 29: Herring Run Park is Permanently Protected

Open space that has less protection is at risk for future development. These types of open space lands include town-owned lands such as school athletic fields, which are likely to remain undeveloped due to their use, but are without any legal or binding mechanism to prevent them from being developed. Additionally, any private lands enrolled in the state Chapter 61 program are viewed as having a temporary or limited level of protection that still puts them at risk for future development. Chapter 61 land participants agree to not develop their enrolled lands for a set period, and to maintain them as working lands for forestry, agriculture, or recreation. In return the property owners receive a reduction in their property tax payments. Participants can still sell or remove their lands from the program by paying the accrued back taxes on the property, but the town in which the property is located is given the chance at first refusal to buy lands. It is also within the power of a town to assign that right to nonprofit groups.

There are also open space and recreation lands in public and private ownership which have no level of protection. Nonetheless, some of these properties are within important resource areas where certain activities could either enhance or threaten habitat, water quality, historic sites, or scenic beauty. In Pembroke, a number of these properties are sufficiently large or abut existing protected lands that would make them of great interest for conservation and/or recreation protection. A full inventory of all of the protected lands in Pembroke, as sourced from the town assessor in June, 2019, is given in Tables 10 through 27, and are depicted in **Map 5.1**. This information is subject to change over time, and represents the state of parcels at the time of writing.

5. A PRIVATE PARCELS

One type of privately owned and permanently protected open space is land that has a conservation restriction or easement (these areas in Pembroke are shown in Table 9). In these instances, private property owners have sold off the development rights for their land, in exchange for a cash payment; they may also receive tax benefits through donating the developments (Catanzaro 2017). In Pembroke, conservation restrictions protect a total of 236.83 acres, none of which are open to the public. The term of the restriction is negotiable between the parties involved, but is often employed on a permanent basis. Six Pembroke properties have easements; three are held by the U.S. Natural Resource Conservation Service, two are held by the Wildlands Trust of Southeastern Massachusetts, and one is held by the town of Pembroke. The largest of these conservation areas is 124 acres, and sits between Stetson Pond to the south and Furnace Pond to the north. This method of conservation is a good alternative to town acquisition in fee because the property remains under private ownership but is nevertheless permanently protected against future development without the great expenditure of funds required for acquisition.

In Pembroke, there are many properties enlisted in the Chapter 61 working lands program (Table 9) totaling 1,400 acres, accounting for nearly 10 percent of the town. There are three different designations within this program: Chapter 61, which is applied to properties that are at least ten contiguous acres and are dedicated to forestry production and enrolled for a term of ten years during which they cannot be developed or used for other purposes; Chapter 61A, which applies to lands that are at minimum five acres and are dedicated to agricultural endeavors and have enrollment terms of five years; and Chapter 61B, which also have five year enrollment terms and a minimum size of five acres, and are used for recreational activities and are open to the general public. The intent of this program is to give financial incentives to private landowners to keep their lands in working production or recreational use, and to resist the temptation to sell or develop their lands. The lands enrolled in the program have a temporary level of protection against being developed, and as such are seen as a high priority for permanent protection measures.

According to records from the town assessor in 2019, Pembroke has only two properties enrolled in the Chapter 61 forestry program totaling 196 acres. This is a decrease from the five properties and 216 acres listed in the 2005 OSRP. Both of the currently enrolled properties were listed in the previous plan, but the larger of the two has added seven acres to the amount under protection. None of the three properties formerly enrolled in Chapter 61 were subsequently acquired by the town and are now open to being developed.

As of June, 2019, there are 19 properties (467 acres) enrolled in Chapter 61A for agricultural use, ranging in size from two acres to 112. These numbers are down from 33 properties totaling 903 acres in 2005, but include six new properties (144 acres). Of the properties no longer enrolled in the program, seven (209 acres) have been purchased by the town and are now under permanent protection.

Private properties enrolled in Chapter 61B for recreational use include 27 properties that range in size from one acre to 165 acres, totaling 737 acres. This represents an increase of two properties since 2005, but is a 149-acre decrease. Of the properties no longer enrolled in the program from 2005, one was purchased by the town (48 acres) and is now under permanent protection.

Chapter 61, 61A, and 61B lands, which are afforded temporary protection as long as they are maintained for forestry, agriculture, and recreation respectively, constitute nearly 10 percent of the land in Town.

Table 9: Total Temporarily and Permanently Protected Land

Privately Owned Open Space	**Acres**	**% of Total Land Area in Pembroke (15,040 ac total)**
Chapter Lands		
Temporarily Protected Under Chapter 61 Land Forestry	**195.54**	**1.30%**
Temporarily Protected Under Chapter 61A	**467.11**	**3.11%**
Temporarily Protected Under Chapter 61B	**737.13**	**4.90%**
Total Temporarily Protected Chapter Lands	**1,399.78**	**9.31%**
Additional Land Permanently Protected By Conservation Restriction		
Town Owned Municipal Land under Conservation Commission	**747.83**	**4.97%**
Private Properties with Conservation Restrictions	**236.83**	**1.58%**
Town Owned Water Department Land	**74.64**	**0.5%**
Total Permanently Protected Lands	**1,059.3**	**7.04%**
Total Temporarily and Permanently Protected Land in Pembroke	**2,459.08**	**16.36%**

5. B PUBLIC AND NONPROFIT PARCELS

In 1972, the Massachusetts Legislature and electorate voted to add Article 97 to our state's Constitution. This amendment guarantees that "the people shall have the right to clean air and water, freedom from excessive and unnecessary noise, and the natural, scenic, historic, and esthetic qualities of their environment. Lands and easements taken or acquired for such purposes shall not be used for other purposes or otherwise disposed of except by laws enacted by a two-thirds vote taken by yeas and nays, of each branch of the general court." Both state and municipal-owned land acquired for conservation or recreation purposes are protected by Article 97. In addition to the legislative two-thirds vote, municipal conservation or recreation commissions must approve the conversion, as well as the town meeting. Replacement of land of equal value and utility must be found and dedicated to recreation and conservation purposes. Article 97 is very much like Section 6(f)(3) of the Land and Water Conservation Fund Act.

The Town of Pembroke owns approximately 253 properties totaling 3,352 acres. Nearly half of the land held by Pembroke (185 properties) are not designated to a particular town department in the records provided by the town assessor, and the level of protection for those lands are yet to be determined. Pembroke owned properties are presented in Table 14. Of the total 3,352 acres, at least 747 acres (representing 43 different properties) are managed and owned by the Conservation Commission and have permanent protection. The largest of these properties is 138 acres located on Monroe Street between Silver Lake and Furnace Pond. There are also 75 acres owned by the town's water department that are under permanent protection. Additionally, 431 acres are owned and managed by the Department of Public Works; the precise function of these properties is unclear at this time, and it is unknown what level of protection these properties have.

Figure 30: Tubb's Meadow and J.J. Shepherd Memorial Forest are both Pembroke owned open spaces.

Some of the neighboring municipalities also own and control land within Pembroke's boundaries. These lands total 117 acres, the bulk of which (108 acres) are owned and managed by the City of Brockton, and are directly associated with the water supply areas within

Pembroke that provide drinking water for that city. Abington/Rockland also have ownership of eight acres, again in connection with the drinking water resources in Pembroke which provide water for those two towns. Kingston's Conservation Commission also owns nearly 7.5 acres in Pembroke. All of the lands owned by other towns are under permanent protection as water resource protection areas and are shown in Table 23.

The Commonwealth of Massachusetts owns five small parcels totaling just over one acre within Pembroke, (given the small size, it is unlikely that these are open space or recreation land) and the federal government has ownership of just shy of two acres in a single parcel which contains a post office. These are shown Table 24.

Nonprofit organizations own 603 acres in Pembroke (Table 26). Eight of these properties, totaling 275 acres, are owned by the Wildlands Trust of Southeastern Massachusetts. These lands are all permanently protected and contain important conservation areas as well as recreational trails. These parcels range in size from three acres up to 73, the largest of which is located west of Route 14 and is part of the Great Cedar Swamp. Churches and church organizations own a total of 188 acres, the second largest group of lands held by non-profits. These lands are not formally protected as open space but are nonetheless important within the town, and offer many recreational services for the people of Pembroke. Many of the playgrounds within the town are on church properties and are widely used by the general public. There are 15 properties totaling 134 acres owned and managed by other assorted non-profit organizations, including Boy and Girl Scout headquarters, VFW's, campgrounds, and assisted living communities. These lands are unprotected, and could be lost to development at any point.

Figure 31: Brockton's water filtration plant in Pembroke

Figure 32: Wildlands Trust is the largest non-profit landowner in Pembroke.

Table 10: Private Parcels Conservation Easements

PRIVATE PARCELS CONSERVATION EASEMENTS					
FEE OWNER	**EASEMENT #**	**PARCEL I.D.**	**EASEMENT HOLDER**	**DATE OF ESTABLISHMENT**	**GIS AREA (ACRES)**
ZANBONI, ROBERT L.	968396	D6-22	WILDLANDS TRUST	9/20/2011	58.76
THE NICOLE STRIEBEL IRREVOC GRANTOR TRUST	976896	F9-16	WILDLANDS TRUST	10/13/2009	0.89
BREWSTER, EVELYN I.	966270	B4-146, B4-42, B4-38 B4-141	NRCS	3/28/2008	123.55
HOGGS BOGGS LLC	968451	C5-54 and D5-44	NRCS	12/22/2007	26.09
N/A	992474	Parcel I.D. N/A	TOWN OF PEMBROKE	N/A	8.57
SILVERADO FARM LLC	979748	E12-60	NRCS	3/8/2000	18.97
			TOTAL ACRES:		**236.83**

Table 11: Private Parcels Chapter 61Forest Production Lands

CHAPTER 61 FOREST PRODUCTION LANDS				
PARCEL ID #	**STREET ADDRESS**	**ACREAGE**	**OWNER**	**LAND USE CODE/DESCRIPTION**
A12-40	201 DWELLEY ST.	124.95	RED'S REALTY TRUST/LOCHARD REALTY TRUST	
E10-1	409 WASHINGTON ST.	70.59	KENNETH E. ROBERTS TRUST/ LINDA L. ROBERTS TRUST	
TOTAL CHAPTER 61 FOREST LANDS:		**195.54**		

Table 12: Chapter 61A Agricultural Production Lands

CHAPTER 61A AGRICULTURAL PRODUCTION LANDS				
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**	**LAND USE CODE/DESCRIPTION**
A10-6	323 OLDHAM ST.	6.43	HENNIGAN IRENE B./ HENNIGAN SHAWN	
A4-44	34 LYDIA FORD RD.	6.8	BROOKS STEVEN A. / BROOKS MARILYN C.	
B2-60	PLYMOUTH ST.	45.20	SMJ CRANBERRY ASSOCIATES, LLC /	
B10-3	58 WEST ELM ST.	16.09	PETERSON CARL / PETERSON DOROTHY	
C-10-16	27 PHEASANT LN.	6.04	DELOACH MELISSA	
C4-16	53 FARNUM RD.	8.20	HATTON DANIEL S. / HATTON KIMBERLY D.	
C7-100	27 CRANBERRY RD.	6.24	MAC-N-BERRIES INC. /	
D5-64	27 STANDISH ST.	78.00	ZANIBONI ROBERT L. /	
D10-7	25 CENTER ST.	6.11	KELLEY ANDREA L. / KELLEY CHRISTOPHER S.	
D14-90	BRICK KILN LN.	2.10	NATURE PRESERVE INC.	
D13-46	233 WASHINGTON ST.	10.13	MCGEE MARY BETH	
E15-8	286 WATER ST.	23.09	CROSSLEY CHARLES W. / CROSSLEY CAROLYN M.	
E7-2	315 HIGH ST.	60.87	HOLD FAST FARM REALTY TRUST / LINDA MACLEOD MCCOLLUM TRUSTEE	
F2-28	PELHAM ST.	36.30	HARJU BROTHERS CRANBERRY INC.	
F4-2	VALLEY ST.	112.08	MATHIAS JEFFREY A. / MATHIAS JENNIFER B.	
F7-6	367 TAYLOR ST.	6.56	ANDERSON ANN E. / ANDERSON PHILLIP	
F8-1	170 OLD WASHINGTON ST.	12.42	VAC REALTY TRUST / VINCENT A. COGLIANO TRUSTEE	
F8-55	254 TAYLOR ST.	6.60	TAYLOR STREET REALTY TRUST / c/o COSTANZO DANIEL	
F9-7	177 TAYLOR ST.	17.85	MORASKI DENISE M.	
TOTAL CHAPTER 61A AGRICULTURAL LANDS:		**467.11**		

Table 13: Chapter 61B Recreational Lands

CHAPTER 61B RECREATIONAL LANDS				
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**	**LAND USE CODE/ DESCRIPTION**
A6-238	30 GARDNER LN.	28.44	DAWE STANLEY A., JR.	
A10-5A	OLDHAM STREET	16.56	PETERSON FAMILY TRUST / PETERSON ALAN C. + LINDA A., TRS	
A10-61	21 LAKE AVENUE	6.57	VENKATESAN THANGARAJ 2008 IRREVOCABLE TRUST / THANGARAJ VENKATESAN	
A10-62	13 LAKE AVENUE	1.16	VENKATESAN THANGARAJ 2008 IRREVOCABLE TRUST / THANGARAJ VENKATESAN	
A10-63	7 LAKE AVENUE	3.42	VENKATESAN THANGARAJ 2008 IRREVOCABLE TRUST / THANGARAJ VENKATESAN	
A11-32	84 HAZELWOOD DR.	55.35	DOWD PAUL / DOWD PAMELA A.	
B10-8	OLDHAM STREET	18.32	ARETINO ELLEN B.	
B11-33	94 WEST ELM STREET	164.50	PEMBROKE COUNTRY CLUB, LLC	
B12-56	82 STANDFORD HILL RD.	8.26	LEBLANC FAMILY REALTY TRUST / LEBLANC DIANE E. TRUSTEE	
C10-15A	OLDHAM STREET	6.90	STANHOPE WILLIAM E. / STANHOPE PETERENE	
D6-1	HOBOMOCK STREET	45.79	GOULD GEORGE R., JR. /	
D10-9	44 CENTER ST.	11.87	FORD STANWOOD S. / FORD NANCY S.	
D10-12	210 BARKER STREET	28.59	CARRARA RICHARD / CARRARA MARGARET R.	
D11-26	86 BARKER ST.	10.01	CLOYES PETER S.	
D13-47A	WASHINGTON STREET	71.76	NATURE PRESERVE, INC.	
D15-27	95 BRICK KILN LN.	6.05	PARKS DAVID M. / PARKS JUDITH A.	
D15-9A	2 WASHINGTON ST.	14.20	SULLIVAN ANDREW K.	
D9-89	26 JAMES WAY	34.81	JAMES, REALTY TRUST / C/O GARY JAMES	
E6-43	155 FOREST STREET	44.80	OLD COLONY SPORTSMEN`S ASSO /	
E9-6	45 PUDDING BROOK DR.	20.00	MILTON JEFF W. / MILTON JILL K.	
E10-1	409 WASHINGTON STREET	15.34	KENNETH E. ROBERTS TRUST / LINDA L. ROBERTS TRUST	
E12-60	331 WASHINGTON ST.	20.00	SILVERADO FARM LLC /	

F2-4	183 PELHAM STREET	44.81	DOMASZEWICZ MICHAEL A. / DOMASZEWICZ AGNETA M.	
F2-5	198 PELHAM ST.	13.92	DOMASZEWICZ AGNETA /	
F7-2	374 HIGH ST.	13.33	HALE LYDIA L.	
F12-93	38 SPRING ST.	6.19	TARDANICO DANIEL F / TARDANICO CAROL A	
G11-12	159 SPRING ST.	26.18	SOUTHWORTH RICHARD / SOUTHWORTH KATHY	
TOTAL CHAPTER 61B RECREATION LANDS:		**737.13**		
	TOTAL CHAPTER 61 LANDS:	**1,399.70**		

Table 14: Town Owned Property: Conservation Commission Parcels

TOWN OWNED PROPERTIES – CONSERVATION COMMISSION										
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE/ DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**	**ADA ASSESSIBLE**
A9-39	OLDHAM POND ISLAND	0.07	**Conservation Commission**	**932**						
A11-10	OLDHAM STREET	2.89	**Conservation Commission**	932						
A11-11	OLDHAM STREET	1.12	**Conservation Commission**	932						
B2-2930	BEECH STREET	0.06	**Conservation Commission**	930						
B2-2939	ELMER AVENUE	0.08	**Conservation Commission**	930						
B2-3105	BEECH STREET	0.17	**Conservation Commission**	930						
B2-3117	BEECH STREET	0.06	**Conservation Commission**	930						
B6-385	FURNACE COLONY DRIVE	1.00	**Conservation Commission**	932						
B8-332	INDIAN TRAIL	22.65	**Conservation Commission**	930						

B12-129	SELTSAM WAY	17.20	**Conservation Commission**	932						
B13-17	SUMMER PATH WAY	14.05	**Conservation Commission**	932						
C5-9	MONROE STREET	137.53	**Conservation Commission**	932						
C7-7	LIANE WAY	5.00	**Conservation Commission**	932						
C10-46E	EQUESTRIAN WAY	16.40	**Conservation Commission**	932						
C11-9	CEDAR SWAMP	16.69	**Conservation Commission**	932						
C12-39	CEDAR SWAMP	0.70	**Conservation Commission**	932						
C12-50	CEDAR SWAMP	3.07	**Conservation Commission**	932						
C13-7	CEDAR SWAMP	43.12	**Conservation Commission**	932						
C13-42	CEDAR SWAMP	6.75	**Conservation Commission**	932						
D4-15	PLAIN ST	6.17	**Conservation Commission**	932						
D10-1A	BARKER STREET	13.07	**Conservation Commission**	932						
D10-2	211 BARKER ST	36.50	HERRING RUN	932						
D10-14	190 BARKER ST	29.087	**Conservation Commission**	932						
D12-1	BARKER STREET	70.60	**Conservation Commission**	930						
D13-51	WASHINGTON ST.	73.69	**Conservation Commission**	932						
E2-3	STATION STREET	4.79	**Conservation Commission**	932						
E2-25	760 SCHOOL ST	1.13	**Conservation Commission**	932						
E2-26	SCHOOL STREET	0.46	**Conservation Commission**	932						
E2-29	SCHOOL STREET	75.76	**Conservation Commission**	932						
E3-13	OFF PELHAM ST	10.06	**Conservation Commission**	932						
E8-15	PRATT FARM LANE	19.32	**Conservation Commission**	932						

E8-47A	204 OLD WASHINGTON ST	7.59	**Conservation Commission**	932						
E10-71A	OFF WASHINGTON ST	46.7	**Conservation Commission**	932						
E14-11	SCHOOSETT ST	23.42	**Conservation Commission**	932						
F3-4	PELHAM STREET	24.82	**Conservation Commission**	932						
F4-93	OFF CARDINAL CR	23.73	**Conservation Commission**	932						
F5-44	32 BLACKBIRD DR	2.96	**Conservation Commission**	932						
F8-34	WASHINGTON ST	32.17	**Conservation Commission**	932						
F8-50	OFF TAYLOR ST	0.42	**Conservation Commission**	932						
F9-21E	CONGRESS S	1.82	**Conservation Commission**	932						
F10-65	JUNIPER LANE	0.70	**Conservation Commission**	932						
F10-82	EDGEWATER DR	0.92	**Conservation Commission**	932						
F10-92	JUNIPER LANE	0.92	**Conservation Commission**	932						
F10-93	JUNIPER LANE	0.96	**Conservation Commission**	932						
F14-32	CAPTAIN NORTH WAY	24.00	**Conservation Commission**	932						
F16-6	EXPRESSWAY	3.25	**Conservation Commission**	932						
TOTAL CONSERVATION COMMISSION PROPERTY:		**747.83**								

Table 15: Town Owned Property - Water Department

WATER DEPARTMENT PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
B5-271	35 SANDY LANE	18.95	WATER DEPT	930					
C5-2	CENTER ST	26.89	WATER DEPT	930					
C5-26	316 SCHOOL ST	10.20	WATER SHED	930					
C5-27	570 CENTER ST	16.21	STATION #2 / WATER SHED	930					
E7-18	303 HIGH ST	0.86	WATER DEPARTMENT	931					
G14-9	196 OAK ST	1.52	WATER DEPARTMENT	930					
TOTAL WATER DEPARTMENT PROPERTIES		**74.64**							

Table 16: Town Owned Property - Department of Public Works Properties

DEPARTMENT OF PUBLIC WORKS PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
B4-38	120 ELMER ST	15.98	DPW	930					
B4-43	70 ELMER ST	74.01	DPW	930					
B4-62	465 CENTER ST	0.14	DPW	930					
B4-141	65 ELMER ST	35.93	DPW	930					
B4-146	657 ELMER ST	33.84	DPW	930					
B10-92	64 W. ELM ST	2.58	DPW	931/Pembroke Country Club					
F12-16	PLEASANT ST	268.49	DPW	930					
TOTAL DPW PROPERTIES		**430.97**							

Table 17: Town Owned Property - Board of Selectmen

BOARD OF SELECTMEN PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
A5-5	CYRIL AVENUE	0.67	BOARD OF SELECTMEN	930					
A10-35	SHORE`S EDGE	0.13	BOARD OF SELECTMEN	930					
B5-254	BRAEBURN AVE	0.12	BOARD OF SELECTMEN	930					
B9-352	COVE LANE	0.28	BOARD OF SELECTMEN	930					
B12-74	62 STANDFORD HILL ROAD	7.43	BOARD OF SELECTMEN	930					
C9-35	140 CENTER ST	0.25	BOARD OF SELECTMEN	931	VFW				
D6-4C1	62 STANDISH ST	2.56	BOARD OF SELECTMEN	930					
E9-12A	OLD WASHINGTON ST	1.88	BOARD OF SELECTMEN	930					
F3-160	16 PINE ST	0.37	BOARD OF SELECTMEN	930					
F9-37	85 CONGRESS ST	1.00	BOARD OF SELECTMEN	930					
F12-13	213 PLEASANT ST	0.61	BOARD OF SELECTMEN	930					
G4-4	48 CHAPEL ST	0.73	BOARD OF SELECTMEN	930					
G11-30	ELM STREET	1.70	BOARD OF SELECTMEN	930					
TOTAL BOARD OF SELECTMEN PROPERTIES:		**17.49**							

Table 18: Town Owned Property - Housing Authority Parcels

HOUSING AUTHORITY PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
A5-31A	1 MAYFLOWER CT	7.82	HOUSING AUTHORITY	970					
B2-7	895 CENTER ST	1.33	HOUSING AUTHORITY	970					
B12-62	295 WEST ELM ST	0.92	HOUSING AUTHORITY	970					
C6-18D	490 CENTER ST	0.50	HOUSING AUTHORITY	970					
C7-57	22 CRANBERRY RD	0.96	HOUSING AUTHORITY						
C9-28	1 KILCOMMONS DR	8.30	HOUSING AUTHORITY						
C9-99C-42	34 MATTAKEESETT STREET 42	0.00	HOUSING AUTHORITY						
C9-99C-8	34 MATTAKEESETT STREET 8	0.00	HOUSING AUTHORITY						
D5-6C	42 LAKE STREET	1.32	HOUSING AUTHORITY						
D13-52	MACDONALD WAY	5.96	HOUSING AUTHORITY						
E14-1A	176 SCHOOSETT STREET 1 & 2	0.44	HOUSING AUTHORITY						
G4-85	101 HARVARD ST	0.59	HOUSING AUTHORITY						
TOTAL HOUSING AUTHORITY PROPERTIES:		**28.14**							

Table 19: Public School and Library Properties

PUBLIC SCHOOL/LIBRARY PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
B5-14	29 GURNEY DR	30.51	BRYANTVILLE ELEMENTARY SCH	**934**					
D6-9	95 LEARNING LN	100.02	HOBOMOCK ELEMENTARY	**934**					
D7-7	100 LEARNING LN	46.14	PEMBROKE HIGH SCHOOL	**934**					
D9-1	128 CENTER ST	34.19	CENTER LIBRARY	931					
E7-8	340 HIGH ST	0.56	LYDIA DRAKE LIBRARY						
F13-74	74 PILGRIM RD	2.11	NORTH PEMBROKE ELEMENTARY SCH	934					
TOTAL PUBLIC SCHOOL/LIBRARY PROPERTIES:		**213.53**							

Table 20: Town Owned Cemetery Properties

PUBLIC CEMETERY PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF GRANT ACCEPTED**	**ZONING**
C9-54	40 OLDHAM ST	15.85	CEMETERY	930	YES				
D13-11	WASHINGTON ST	1.73	BRIGGS BURIAL GROUND						
F15-9	WATER STREET	0.22	MAGOUN CEMETERY						
F15-57	WATER STREET	0.01	RANDALL CEMETERY	930					
G11-10	212 ELM STREET	7.20	PINE GROVE CEMETARY	930					
TOTAL PUBLIC CEMETERY PROPERTIES:		**25.02**							

Table 21: Misc. Town Owned Public Properties

MISC. PUBLIC PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**USE/DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
A5-22	32 SCHOOL ST	0.54	BRYANTVILLE FIRE ST	**935**		**N/A**			
A7-26	415 MATTAKEESETT	105.77	TOWN BARN DOG PD						
A8-54	TAYLOR POINT RD	0.60	THE ROAD	930					
A9-40	OLDHAM POND	2.28	MONUMENT ISLAND	930					
B2-4	PLYMOUTH ST.	1.26	TOWN BEACH	931					
B5-58	WOODBINE AVE	0.03	TOWN BEACH	930					
B7-183	29 FURNACE RD	0.13	BEACH AREA						
B8-72	187 WAMPATUCK ST	0.75	TOWN LANDING						
B8-228	WAMPATUCK ST	0.16	TOWN LANDING LOT	930					
C9-5	CURVE ST	2.02	TOWN COMMON						
C9-30	172 CENTER ST	2.01	CENTER FIRE STATION	935					
C9-34	148 CENTER ST.	2.41	COUNCIL OF AGING						
C9-36	120 CENTER ST	0.50	HATCH BUILDING	934					
C9-39	100 CENTER ST.	1.97	TOWN HALL	931					
C10-17	80 CENTER ST	1.81	POLICE STATION						
D6-2	158A HOBOMOCK ST.	209.66	BOARD OF HEALTH	931					
D6-13	HOBOMOCK ST.	0.07	BOARD OF HEALTH	930					
D14-13	SCHOOSETT ST	11.53	MAGOUN PARK	930					
D14-20	155 WASHINGTON ST	0.47	BETHEL CHAPEL	931					
E12-13A	380 WASHINGTON ST	0.50	NORTH PEMBROKE FIRE STATION	935					
TOTAL MISC. PUBLIC PROPERTIES:		**344.47**							

Table 22: Non-Specified Town Properties

NON-SPECIFIED TOWN PROPERTIES									
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER/MANAGEMENT AGENCY**	**LAND USE CODE/ DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
A2-1843	LONG AVENUE	0.03	TOWN PEMBROKE	930					
A2-2070	MAPLE STREET	0.13	TOWN PEMBROKE	930					
A5-93	SCHOOL ST	0.23	TOWN PEMBROKE	930					
A5-112	45 ALVERN RD	0.07	TOWN PEMBROKE	936					
A5-147	ALVERN ROAD	0.04	TOWN PEMBROKE						
A5-191	VERNAL ROAD	0.03	TOWN PEMBROKE	930					
A5-284	SCHOOL ST	0.08	TOWN PEMBROKE	930					
A6-99	16 FAIRVIEW AVE	0.19	TOWN PEMBROKE	937					
A6-170	46 FAIRVIEW AVE	0.08	TOWN PEMBROKE	936					
A6-247	480 MATTAKEESETT	5.43	TOWN PEMBROKE	930					
A7-55	FAIRVIEW AVE	0.06	TOWN PEMBROKE	936					
A7-114	MATTAKEESETT ST	0.49	TOWN PEMBROKE	930					
A7-135	MATTAKEESETT ST	39.29	TOWN PEMBROKE	930					
A7-25	MATTAKEESETT ST	0.44	TOWN PEMBROKE	930					
A8-56	TAYLOR PT. RD	2.84	TOWN PEMBROKE	936					
B10-24	BONNEY ST	0.01	TOWN PEMBROKE	930					
B11-13A	WEST ELM ST	14.78	TOWN PEMBROKE	930					
B13-13	369 WEST ELM ST	2.21	TOWN PEMBROKE	930					
B14-1	WEST ELM ST	33.59	TOWN PEMBROKE	930					
B2-2	PLYMOUTH ST	4.70	TOWN PEMBROKE	930					
B2-1845	LONG AVENUE	0.06	TOWN PEMBROKE	930					
B2-1916	LONG AVENUE	0.01	TOWN PEMBROKE	930					
B2-1976	OAK STREET	0.06	TOWN PEMBROKE	932					
B2-1981	OAK STREET	0.11	TOWN PEMBROKE	932					
B2-2043	OAK STREET	0.00	TOWN PEMBROKE						
B2-2097	MAPLE STREET	0.01	TOWN PEMBROKE						
B2-2147	THOMPSON ST	0.00	TOWN PEMBROKE	930					
B2-2164	WALNUT ST	0.11	TOWN PEMBROKE	930					

B2-2188	WALNUT ST	0.07	TOWN PEMBROKE	930					
B2-2207	CHANDLER ST	0.22	TOWN PEMBROKE	932					
B2-2216	OFF CHANDLER STREET	0.03	TOWN PEMBROKE	930					
B2-2217	WALNUT ST	0.00	TOWN PEMBROKE	930					
B2-2242	CRESCENT AVE	0.00	TOWN PEMBROKE	930					
B2-2321	LINK STREET	0.06	TOWN PEMBROKE	930					
B2-2430	CHANDLER ST	0.11	TOWN PEMBROKE	932					
B2-2437	MORSE ST	0.11	TOWN PEMBROKE	932					
B2-2461	LINK STREET	0.00	TOWN PEMBROKE	930					
B2-2464	CHANDLER ST	0.11	TOWN PEMBROKE	930					
B2-2500	PLYMOUTH ST	0.38	TOWN PEMBROKE						
B2-2532	RAMSDELL ST	0.06	TOWN PEMBROKE	932					
B2-2544	RAMSDELL ST	0.00	TOWN PEMBROKE	930					
B2-2546	PLYMOUTH ST	0.39	TOWN PEMBROKE						
B2-2659	PLYMOUTH ST	0.06	TOWN PEMBROKE	930					
B2-2673	ELMER AVENUE	0.32	TOWN PEMBROKE	930					
B2-2891	C STREET	0.33	TOWN PEMBROKE	930					
B2-2897	HOLMES AVE	0.28	TOWN PEMBROKE	930					
B2-3	CHANDLER ST	2.24	TOWN PEMBROKE	932					
B2-3106	BEECH STREET	0.11	TOWN PEMBROKE	932					
B2-3108	BEECH STREET	0.17	TOWN PEMBROKE						
B2-3115	BARTLETT ST	0.06	TOWN PEMBROKE						
B2-3184	HIGH STREET N	0.06	TOWN PEMBROKE	930					
B2-57	HALIFAX LINE	0.01	TOWN PEMBROKE						
B2-58	HALIFAX LINE	0.01	TOWN PEMBROKE						
B2-725	B STREET	0.06	TOWN PEMBROKE						
B3-3016	CENTER ST	0.06	TOWN PEMBROKE	930					
B4-28	SCHOOL ST	0.23	TOWN PEMBROKE						
B5-15	555 CENTER ST	22.46	TOWN PEMBROKE	930					
B6-18	SOUTH BOUNDARY RD	0.36	TOWN PEMBROKE	930					
B6-133	WEST BOUNDARY RD	0.88	TOWN PEMBROKE	930					

B6-351	4 SOUTH BOUNDARY RD	0.27	TOWN PEMBROKE	930					
B6-376	95 GLENWOOD RD	80.00	TOWN PEMBROKE	931					
B6-379	FURNACE COLONY DR	0.07	TOWN PEMBROKE	931					
B8-92	MATTAKEESETT STREET	9.81	TOWN PEMBROKE	930					
B8-99	MATTAKEESETT STREET	0.24	TOWN PEMBROKE	930					
B8-108	0 FURNACE LANE	2.32	TOWN PEMBROKE	930					
B8-120	224 MATTAKEESETT	0.03	TOWN PEMBROKE	930					
B8-121	0 MATTAKEESETT ST	0.025	TOWN PEMBROKE	930					
B9-381	38 FERNDALE AVE	0.21	TOWN PEMBROKE	930					
B9-448	BONNEY ST	0.01	TOWN PEMBROKE	932					
B9-7R1	OLDHAM ST	1.37	TOWN PEMBROKE	930					
B9-7S	174 OLDHAM ST	0.93	TOWN PEMBROKE	930					
B13-9	326 WEST ELM ST	44.67	TOWN PEMBROKE	937					
B13-9A	320 WEST ELM ST	0.95	TOWN PEMBROKE	936					
C3-3	OWL HEAD PROMENADE	12.88	TOWN PEMBROKE	930					
C3-4	OWL HEAD PROMENADE	2.35	TOWN PEMBROKE	932					
C3-6	SCHOOL ST	1.22	TOWN PEMBROKE	932					
C3-13	OWL HEAD BLF	0.14	TOWN PEMBROKE	930					
C3-3371	LEACH STREET	0.06	TOWN PEMBROKE						
C3-3388	BEACH STREET	0.07	TOWN PEMBROKE						
C3-3409	LEACH STREET	0.22	TOWN PEMBROKE	930					
C3-3426	LEACH STREET	0.17	TOWN PEMBROKE	930					
C3-3430	LEACH STREET	0.11	TOWN PEMBROKE	930					
C3-3432	LEACH STREET	0.06	TOWN PEMBROKE	932					
C3-3717	MILLER STREET	0.17	TOWN PEMBROKE	930					
C3-3782	EDGE HILL RD	0.06	TOWN PEMBROKE	930					

C3-3840	OWLS HEAD ST	0.14	TOWN PEMBROKE	932					
C4-26	MONROE ST	2.95	TOWN PEMBROKE	930					
C4-3397	BEACH STREET	0.06	TOWN PEMBROKE	930					
C4-4000	MUNROE ST	2.47	TOWN PEMBROKE	930					
C4-4044	MUNROE ST	0.44	TOWN PEMBROKE	930					
C4-6	BEAVER ST	0.85	TOWN PEMBROKE	930					
C6-42	7 MILL POND RD	0.11	TOWN PEMBROKE	936					
C7-35	HOBOMOCK ST	0.03	TOWN PEMBROKE	930					
C7-52	356 CENTER ST	11.89	TOWN PEMBROKE	930					
C8-1	GROVE ST	2.02	TOWN PEMBROKE	930					
C8-1G	QUEENSBROOK RD	1.65	TOWN PEMBROKE	930					
C8-1L	ANDREW DRIVE	2.45	TOWN PEMBROKE	930					
C8-4	CENTER STREET	0.01	TOWN PEMBROKE	930					
C8-9	CENTER ST	1.75	TOWN PEMBROKE						
C9-12	OLDHAM ST	0.05	TOWN PEMBROKE	930					
C9-50	OLDHAM ST	22.48	TOWN PEMBROKE	930					
C10-1	CEDAR SWAMP	178.27	TOWN PEMBROKE	930					
C12-1	CEDAR SWAMP	263.67	TOWN PEMBROKE	930					
C12-10	CEDAR SWAMP	1.00	TOWN PEMBROKE						
C12-41	OFF WEST ELM ST	1.25	TOWN PEMBROKE						
C12-49	LAND LOCKED	1.28	TOWN PEMBROKE	932					
C13-37	CEDAR SWAMP	2.00	TOWN PEMBROKE	932					
C13-38	LAND LOCKED	2.00	TOWN PEMBROKE	932					
D3-1	559 SCHOOL ST	38.96	TOWN PEMBROKE	934					
D10-6	CENTER ST	0.50	TOWN PEMBROKE						
D10-36	177 FAIRWOOD DR	1.03	TOWN PEMBROKE						
D11-9	BARKER ST	9.62	TOWN PEMBROKE						
D13-44	WASHINGTON ST	0.01	TOWN PEMBROKE	930					
D13-45	WASHINGTON ST	0.03	TOWN PEMBROKE	930					
D14-1	WASHINGTON ST	0.25	TOWN PEMBROKE	930					
D14-75	HAMILTON DR	0.00	TOWN PEMBROKE	930					
D15-13	BRICK KILN LN	50.19	TOWN PEMBROKE						
D2-275	SCHOOL ST	1.14	TOWN PEMBROKE	930					

D2-276	SCHOOL ST	1.23	TOWN PEMBROKE	930					
D4-46	SCHOOL ST	3.28	TOWNPEMBROKE	930					
D4-5	SCHOOL ST	49.86	TOWN PEMBROKE	930					
D6-11	HOBOMOCK ST	0.45	TOWN PEMBROKE	930					
D8-5A	MOUNTAIN AVE	19.22	TOWN PEMBROKE	930					
D9-2N	ELLIOTT AVE	4.70	TOWN PEMBROKE	930					
E2-2	STATION ST	12.37	TOWN PEMBROKE	930					
E2-9E-1	STATION ST	8.34	TOWN PEMBROKE	932					
E2-14	PELHAM ST	55.06	TOWN PEMBROKE	930					
E3-1	PELHAM ST	14.78	TOWN PEMBROKE	932					
E3-2	PELHAM ST	23.40	TOWN PEMBROKE	930					
E3-9	PELHAM ST	6.30	TOWN PEMBROKE	930					
E3-23	PELHAM ST	0.00	TOWN PEMBROKE	930					
E4-11	PELHAM ST	3.03	TOWN PEMBROKE	930					
E4-16	PLAIN ST	23.65	TOWN PEMBROKE	932					
E4-28D	PELHAM ST	0.01	TOWN PEMBROKE	930					
E4-123	10 CARDINAL CIRCLE	1.02	TOWN PEMBROKE	930					
E4-114	25 BLUEJAY WAY	1.21	TOWN PEMBROKE	930					
E5-104	16 BLUEJAY WAY	10.32	TOWN PEMBROKE	930					
E6-6A	138 FOREST ST	1.18	TOWN PEMBROKE	930					
E6-23	29 CLAREMONT RD	0.92	TOWN PEMBROKE	930					
E6-24	39 CLAREMONT RD	0.92	TOWN PEMBROKE	930					
E6-43A	FOREST ST	7.10	TOWN PEMBROKE	930					
E8-59	VILLAGE WAY	2.48	TOWN PEMBROKE	930					
E9-13	OLD WASHINGTON ST	0.95	TOWN PEMBROKE						
E9-13B	84 OLD WASHINGTON ST	1.44	TOWN PEMBROKE						
E9-14A	OLD WASHINGTON ST	0.92	TOWN PEMBROKE	930					
E9-50	66 PUDDING BROOK DR	1.73	TOWN PEMBROKE	930					
E9-62	HIGHLAND DR	5.16	TOWN PEMBROKE	932					
E10-37	171 FAIRWOOD DR	0.92	TOWN PEMBROKE	930					
E10-42	FAIRWOOD DR	2.54	TOWN PEMBROKE	932					

E10-54	158 FAIRWOOD DR	0.92	TOWN PEMBROKE	930					
E10-59	FAIRWOOD DR	1.98	TOWN PEMBROKE	932					
E10-60	FAIRWOOD DR	1.72	TOWN PEMBROKE	932					
E13-9	HILLVALE ROAD	140.40	TOWN PEMBROKE	930					
E14-8	WATER STREET	1.02	TOWN PEMBROKE						
E14-86	40 BURR AVE	0.49	PEMBROKE TOWN	930					
E14-129	WATER STREET	0.00	TOWN PEMBROKE	930					
E14-132	SCHOOSETT ST	0.08	TOWN PEMBROKE	936					
F2-15	CHAPEL ST	0.45	TOWN PEMBROKE						
F3-163	8 LAKE SHORE DR	0.36	TOWN PEMBROKE						
F3-164	LAKESHORE DR	0.39	TOWN PEMBROKE						
F3-167	LAKESHORE DR	0.52	TOWN PEMBROKE	930					
F4-7	160 BIRCH ST	30.32	TOWN PEMBROKE	930					
F4-51C	BIRCH STREET	0.04	TOWN PEMBROKE	932					
F4-90	33 UNIVERSITY AVE	0.42	TOWN PEMBROKE	930					
F7-3	HIGH ST	1.08	TOWN PEMBROKE						
F9-1	WASHINGTON STREET	17.89	TOWN PEMBROKE	930					
F9-12B	86 CONGRESS ST	1.31	TOWN PEMBROKE	930					
F9-38	754 WASHINGTON	0.92	TOWN PEMBROKE	930					
F10-64	JUNIPER LANE	0.90	TOWN PEMBROKE	930					
F10-66	JUNIPER LANE	0.81	TOWN PEMBROKE						
F10-113	23 MIRAMAR DR	2.89	TOWN PEMBROKE	930					
F10-144	BEVERLY WAY	8.66	TOWN PEMBROKE	936					
F11-29	165 EDGEWATER DR	0.92	TOWN PEMBROKE	932					
F13-21	OAK STREET	12.99	TOWN PEMBROKE						
F13-39A	PILGRIM ROAD	1.88	TOWN PEMBROKE	930					
F14-14	OAK STREET	10.44	TOWN PEMBROKE	930					
F16-2	WATER STREET	32.01	TOWN PEMBROKE						
G3-3	DARTMOUTH CIRCLE	12.53	TOWN PEMBROKE	930					
G3-4	LAKESHORE DRIVE	0.42	TOWN PEMBROKE	930					
G3-37	YALE ROAD	0.51	TOWN PEMBROKE						

G3-49	CHAPEL STREET	0.46	TOWN PEMBROKE						
G4-30	40 YALE ROAD	0.66	TOWN PEMBROKE	937					
G9-1	TAYLOR STREET	8.94	TOWN PEMBROKE	930					
G10-10D	TAYLOR STREET	5.12	TOWN PEMBROKE	936					
G11-13	TAYLOR ST	3.27	TOWN PEMBROKE	930					
G12-12	RANDALL ST	1.30	TOWN PEMBROKE	930					
G13-11-27	LONG HILL RD	7.34	TOWN PEMBROKE	930					
G13-37	72 HEMLOCK DR	2.45	TOWN PEMBROKE	930					
TOTAL NON-SPECIFIED TOWN PROPERTIES:		**1,470.13**							
TOTAL TOWN OF PEMBROKE OWNED ACRES:		**3,352.20**							

Table 23: Property Owned By Other Towns

PROPERTY OWNED BY OTHER TOWNS										
PARCEL ID #	**STREET ADDRESS**	**ACREAGE**	**OWNER/ MANAGEMENT AGENCY**	**LAND USE CODE /DESCRIPTION**	**PUBLIC ACCESS**	**RECREATIONAL POTENTIAL**	**DEGREE OF PROTECTION**	**CONDITION**	**TYPE OF PUBLIC GRANT ACCEPTED**	**ZONING**
A6-322	FAIRVIEW AVE	0.98	ABINGTON & ROCKLAND/ WATER DEPT							
A7-67	89 FAIRVIEW AVE	0.36	ABINGTON & ROCKLAND / WATER DEPT							
B2-877	CENTER ST	4.32	CITY OF BROCKTON							
B3-3446	LEACH ST	0.19	CITY OF BROCKTON							
B3-90	874 CENTER ST	91.12	CITY OF BROCKTON							
B4-84A	ELMER ST	1.00	CITY OF BROCKTON							
B4-85	ELMER ST	2.64	CITY OF BROCKTON							
B6-150	RIDGE AVE	0.77	ABINGTON & ROCKLAND / WATER DEPT							

B7-14	53 PHILLIPS RD	5.59	ABINGTON & ROCKLAND / WATER DEPT							
C3-3385	BEACH ST	0.22	CITY OF BROCKTON / WATER DEPT							
C3-3389	BEACH ST	0.84	CITY OF BROCKTON / WATER DEPT							
C3-3817	OWL`S HEAD PROMENADE	0.30	CITY OF BROCKTON							
C3-3864	OWL`S HEAD STREET	0.06	CITY OF BROCKTON							
C6-1A	CENTER ST	0.14	CITY OF BROCKTON							
C7-32A	CENTER ST	0.18	CITY OF BROCKTON							
C7-63A	CENTER ST	0.36	CITY OF BROCKTON							
D1-1	SCHOOL ST	3.42	KINGSTON / CONSERVATION COMMISSION							
E2-4	STATION ST	4.36	CITY OF BROCKTON							
TOTAL PROPERTY OWNED BY OTHER TOWNS:		**116.84**								

Table 24: State Owned Properties

STATE OWNED PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
E10-18A	WASHINGTON STREET	0.10	COMMONWEALTH OF MASSACHUSETTS /
E10-64A	WASHINGTON STREET	0.21	COMMONWEALTH OF MASSACHUSETTS /
E12-12B	WASHINGTON STREET	0.33	COMMONWEALTH OF MASSACHUSETTS /
F15-32B	CHURCH STREET	0.16	COMMONWEALTH OF MASSACHUSETTS /
F9-1A	WASHINGTON STREET	0.23	COMMONWEALTH OF MASSACHUSETTS /
TOTAL STATE OWNED PROPERTIES:		**1.04**	

Table 25: US Government Owned Properties

U.S. GOVERNMENT OWNED PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
C9-96	3 ELLIOTT AVE	1.86	UNITED STATES POSTAL SERVICE
TOTAL U.S. GOV. PROPERTIES:		**1.86**	

Table 26: Non-Profit Owned Properties

NON-PROFIT OWNED PROPERTIES – CHURCH PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
A5-292	540 MATTAKEESETT STREET	3.56	BRYANTVILLE UNITED METHODIST /
C8-52	1 GREENWOOD AVENUE	0.28	FIRST PARISH CHURCH IN PEMBROKE /
C9-4	105 CENTER STREET	0.87	FIRST PARISH UNITARIAN SOCIETY /
C9-38	110 CENTER STREET	0.05	FIRST PARISH UNITARIAN SOCIETY / LADIES SEWING CIRCLE
D14-18	145 WASHINGTON STREET	11.67	ROMAN CATHOLIC ARCHBISHOP OF BOSTON / ST. THECLA`S PARISH
F7-9	TAYLOR STREET	0.21	WEST DUXBURY METHODIST CHURCH /
F7-17	421 HIGH STREET	0.63	HIGH STREET UNITED METHODIST CHURCH /
F8-29	786 WASHINGTON STREET	1.12	PLYMOUTH BAY CHURCH OF THE ASSEMB OF GOD / C/O PEMBROKE ASSEMBLY OF GOD, INC.
F15-1	334 OLD OAK STREET	40.38	NORTH RIVER COMMUNITY CHURCH /
G12-7	20A RANDALL STREET	129.15	ARNOLD HALL, INC.
	TOTAL CHURCH PROPERTIES:	**187.92793**	

Table 27: Wildlands Trust Properties

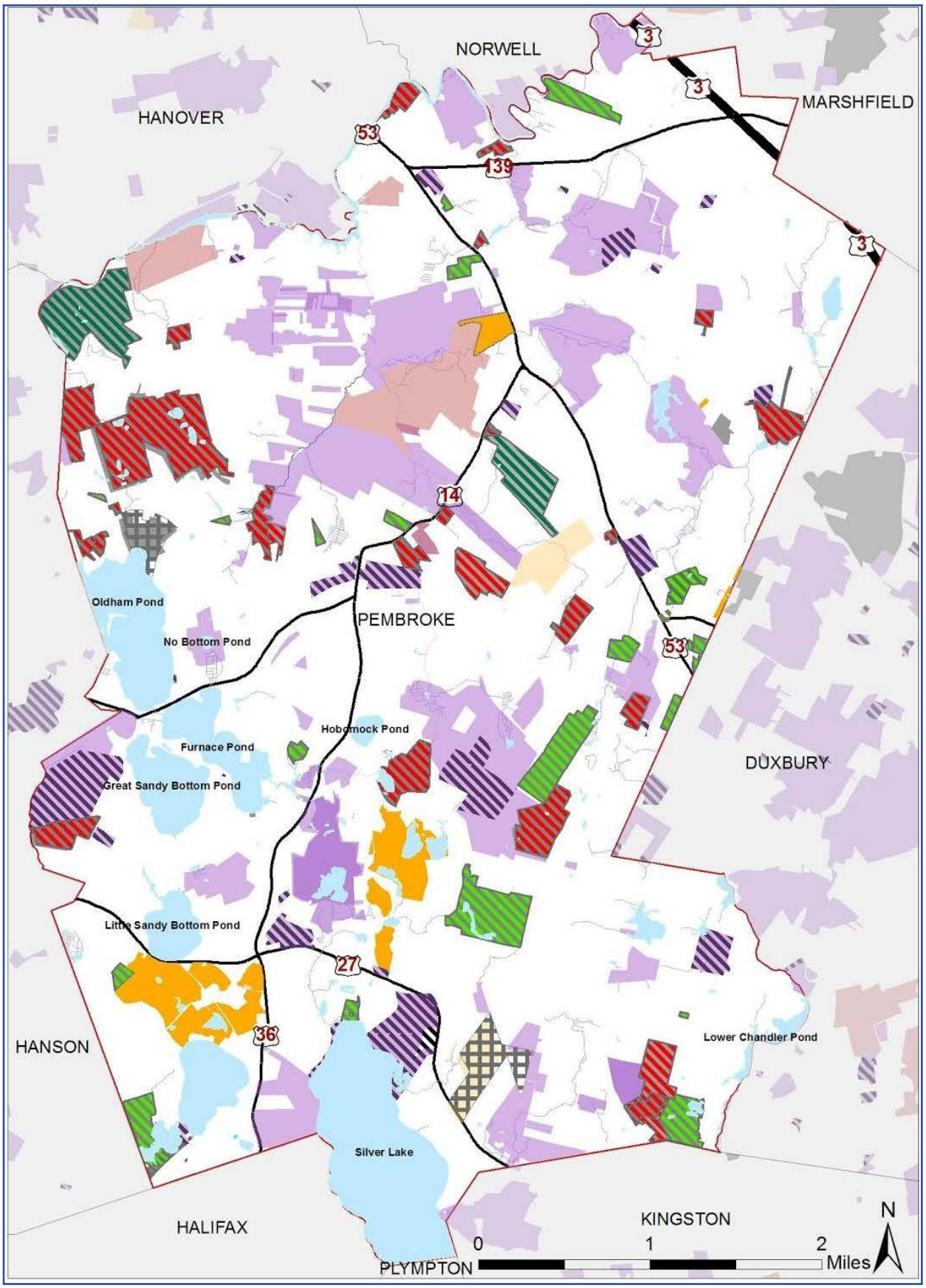
WILDLANDS TRUST PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
B13-3	WEST ELM STREET	78.58	WILDLANDS TRUST INC
C11-12	CEDAR SWAMP	40.00	WILDLANDS TRUST INC
C14-3	CANOE CLUB LANE	20.03	WILDLANDS TRUST INC
D10-23	10 CENTER STREET	9.30	WILDLANDS TRUST INC
D11-1	BARKER STREET	24.00	WILDLANDS TRUST INC
D11-15	BARKER STREET	3.20	WILDLANDS TRUST INC
D11-2A	99 BARKER STREET	73.00	WILDLANDS TRUST INC
D12-2	WASHINGTON STREET	27.00	WILDLANDS TRUST INC
TOTAL WILDLANDS TRUST PROPERTIES:		**275.11**	

Table 28: Historical Society Properties

HISTORICAL SOCIETY PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
C9-37	116 CENTER STREET	0.34	PEMBROKE HISTORICAL SOCIETY
D10-54	FAIRWOOD DRIVE	0.06	PEMBROKE HISTORICAL SOCIETY, INC. PETER`S WELL
D14-2	70 WASHINGTON STREET	0.88	PEMBROKE HISTORICAL SOCIETY QUAKER MEETING HOUSE
E11-1A	52 BARKER STREET	5.10	PEMBROKE HISTORICAL SOCIETY, INC.
TOTAL HISTORIC SOCIETY PROPERTIES:		**6.37**	

Table 29: Misc. Non-Profit Properties

MISC. NON-PROFIT PROPERTIES			
PARCEL #	**STREET ADDRESS**	**ACREAGE**	**OWNER**
A5-59	9 UNION STREET	0.25	COBB LIBRARY /
A9-38	OLDHAM STREET	0.27	GIRL SCOUTS OF AMERICA / ISLAND
B6-97	85 FURNACE COLONY DRIVE	0.14	NONOTUCK RESOURCE ASSOCIATES INC.
B9-38	4 COVE LANE	0.18	ELI AND BESSIE COHEN CAMPS OF MASSACHUSETTS IN
B9-164	41 ADAMS AVENUE	0.23	OLDHAM VILLAGE IMPROVEMENT /
B10-15	290 OLDHAM STREET	36.70	COHEN ELI / COHEN BESSIE
C9-35	140 CENTER STREET	0.25	VETERANS OF FOREIGN WARS / POLICE BOYS CLUB
D3-7C	624 SCHOOL STREET	3.54	NEV REALTY TRUST / BRYAN EFRON TRUSTEE
D3-7D	630 SCHOOL STREET	3.92	NEW ENGLAND VILLAGE INC /
D3-22	664 SCHOOL STREET	74.05	NEW ENGLAND VILLAGES, INC. /
D15-67-1	48 SCHOOSETT STREET	8.65	CARDINAL CUSHIING COUNCIL BLDG ASSOCIATION INC / C/O KNIGHTS OF COLUMBUS
D15-70	54 BRICK KILN LANE	2.51	SOUTH SHORE COMMUNITY RESIDENCES INC /
E14-104	9 SABRINA LANE	1.61	CARDINAL CUSHING SCHOOL & TRAINING / CENTER INC.
F11-23	330 PLEASANT STREET	1.24	SEVEN HILLS COMMUNITY SERVICES, INC. /
G10-3	27 TAYLOR STREET	0.32	EAST PEMBROKE COMMUNITY CLUB /
TOTAL MISC. NON-PROFIT PROPERTIES:		**133.87**	
TOTAL NON-PROFIT PROPERTIES:		**603.27**	


NORWELL
HANOVER
MARSHFIELD
3
53
139
14
Oldham Pond
No Bottom Pond
PEMBROKE
Hobomock Pond
Furnace Pond
Great Sandy Bottom Pond
DUXBURY
Little Sandy Bottom Pond
27
36
HANSON
Lower Chandler Pond
Silver Lake
HALIFAX
KINGSTON
PLYMPTON
0
1
2
Miles
N

Map 5.1 Pembroke's Open Space Lands

Pembroke's Open Space

A large amount of Pembroke's total area is designated open space under varying ownership types and levels of protection. The most apparent gaps in protected open space areas are around the eastern part of town abutting Duxbury, and around the ponds between Routes 14 and 36.

Given the large amount of open space protected in perpetuity in neighboring Duxbury, as well as the large core habitat area found along this border (not depicted in map, see **Map 4.8** connecting protected open spaces along the eastern border and coordinating efforts with Duxbury could create larger contiguous stretches of protected lands covering this important natural resource.

Works Cited for Section 5:

Catanzaro, Paul "Frequently Asked Questions About Conservation Restrictions." *Mass Woods*. University of Massachusetts Amherst, n.d. Web. 14 Mar. 2017

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Map 5.1 Open Space Data Sources

Office of Geographic Information (MassGIS), Commonwealth of Massachusetts,
Information Technology Division: Eot Roads 231, Towns Poly, M231 Tax Par, Open space.

OCPC, Town of Pembroke: Lakes Pembroke, Streams Pembroke.

Section 6: COMMUNITY VISION

6. A DESCRIPTION OF PROCESS

The Pembroke Open Space Committee engaged the services of the Conway School for the update to their Open Space and Recreation Plan in the winter of 2017. In late January, the Conway student team, consisting of Ben Rippe, Devan Arnold, and Ben Covino, met with the client and chair of the Open Space Committee, Mike McDonough, members of the Open Space Committee, members of the Pembroke Conservation Commission, and Pembroke's Planning Board. The purpose of this gathering was to meet the stakeholders, collect preliminary input and materials, learn about conservation history in Pembroke, and understand the attendees' priorities in regard to open space and recreation.

The first public forum to obtain community input on the project was held on February 2, 2017 at the Pembroke Public Library's meeting room. A dozen people attended, comprising mostly of Conservation Commission and Open Space Committee members, as well as representatives from other interested parties, such as the Historical Society and the Recreation Commission.

The Conway student team gave a brief presentation about the role of an OSRP and how it could assist a community like Pembroke. The Conway student team facilitated activities to elicit community input on various aspects of the project. Participants were asked whether goals identified from the past OSRP update were still relevant to Pembroke's community, and to verify if the information collected thus far was accurate and relevant. Overwhelmingly the feedback supported the previously stated goals to protect Pembroke's natural, cultural, and historical resources. Additionally, participants shared opinions regarding specific struggles and challenges associated with protecting these resources, such as managing invasive species, maintaining access and signage at the town's numerous open space properties, and the contentious and antiquated water sharing relationships between Pembroke and surrounding towns that use water from its aquifers.

Figure 33: Local citizens and Conway students engaged in activities at public forum.

In mid-February, an updated open space survey was published on the town's website and posted to various town Facebook pages and Pembroke Public Schools websites. The survey provided multiple choice, rate-by-importance, and open-ended questions regarding citizens' needs and concerns about open space and recreation in Pembroke. Active for three weeks, the survey received 278 responses. Assuming each response correlates with one town resident, about 1.4% of the town's population participated in the survey.

A second public forum held on March 2 at the same location drew nine participants. The Conway student team presented their analyses and working recommendations for the town's open space plan, and conducted activities to obtain feedback from attendees on the recommendations. The attendees identified areas of town they would like to protect from development and guide development towards. The participants also identified areas of open space that were well used and maintained, and those that require attention.

Findings from the meetings, survey, and 2005 OSRP revealed the resources that Pembroke's residents' value and wish to see preserved. In general, these community engagement efforts highlighted residents' concerns about the loss and degradation of natural resources, especially water and woodlands. Pembroke's citizens regard their natural and historical resources as key contributors to their community's "semi-rural' character. The development of new homes within Pembroke continues to encroach further into woods and closer to wetland borders.

Pembroke's community feels that continued pressures from long-term water sharing now threaten to diminish the quality and quantity of their ground and surface water, especially with regards to extended drought conditions.

6. B STATEMENT OF OPEN SPACE AND RECREATION GOALS

Through these two public forums, meetings with local officials, the online survey, and the previous iteration of Pembroke's OSRP, five broad goals emerged for the future development, protection, and enhancement of Pembroke's open space and recreation areas. These goals largely focus on protecting and improving the areas which strongly contribute to the character of the town, and which enhance the general quality of life for Pembroke's residents and visitors. Goals involving the protection or preservation of natural, historic, or cultural resources respond to the threats posed by development pressure and the encroachment of residential sprawl. This Open Space and Recreation Plan update presents five goals with the following visions in mind.

Town Goals and Visions

Protect the Town's surface and groundwater.

The surface and groundwater of Pembroke are protected through functioning stormwater infrastructure and planning. Residents of Pembroke reduced their use of fertilizers and pesticides to prevent excess nutrients and contaminants from entering their drinking water or harming the natural communities of their town. Pembroke works with the communities of Brockton, Abington, and Rockland to make sure that withdrawal from reservoirs does not disrupt hydrologic functions nor imperil aquatic ecosystems, while providing residents with a sufficient supply of potable water.

Accommodate development while ensuring protection of environmental, historic, and cultural resources.

The cultural and historical character of Pembroke remains intact and has not been compromised to accommodate growth. The Historical District and the Town Center are revitalized, providing gathering spaces for citizens and inviting locations for businesses to thrive. Focused development around village centers has strengthened cohesive communities and directed growth away from the woods and waters of Pembroke. Historic structures and sites tell the story of how Pembroke evolved over the course of history, connecting its rich past with those that live in the town today.

Protect Pembroke's wildlife habitats and enhance the ecological integrity and resiliency of the landscape. Wildlife habitats are protected and the integrity of the landscape is strong. Ecosystems function to their fullest, reducing flood damage, filtering stormwater, filtering air pollutants, and generally adapting to climate change in a resilient landscape with high biodiversity. Some of the abandoned cranberry bogs have been returned to their natural forms, functioning as prosperous ecosystems which provide habitat for native biota. The rivers and streams flow cleanly and clearly.

Improve public use of open space lands for recreational activities.

Pembroke's citizens value and use the myriad open spaces for their many different recreation needs. These well maintained lands and facilities allow Pembroke's citizens to physically engage with their town's abundant resources. Residents and visitors of Pembroke regularly hike, play sports, observe nature, and participate in many other activities associated with the town's easily accessed open spaces. The town's many open space resources are. Clear signs and wayfinding clues direct people to different resources while educating them about proper uses for each area and sharing interesting facts pertaining to the history and ecology of Pembroke.

Ensure adequate comprehensive planning for and management of open space and recreation lands.

The various departments and boards in Pembroke collaborate in their planning and management of open space. Members from each department gather to discuss how open space relates to their work and they work together to come up with solutions that benefit all departments. The town digitally archives all open space lands and understands where threats currently exist and how to reduce or prevent impacts of those threats when possible. The town also works with neighboring communities and regional organizations to jointly manage important resources extending across borders.

Through these goals, this plan seeks to maintain and enhance Pembroke's character, protect the health and function of its natural resources, and ensure the quality of life of its residents and visitors.

Section 7: ANALYSIS OF NEEDS

7. A SUMMARY OF RESOURCES PROTECTION NEEDS

According to the goals of the 2005 OSRP and the OSRP surveys from 2005, 2014, and 2017, water is of paramount concern to Pembroke residents, contributing to the scenic, cultural, and natural resources of Pembroke. Situated within the South Coastal and Taunton watersheds, Pembroke is endowed with a complex web of rivers, streams, wetlands, marshes, ponds, lakes, and vernal pools, as well as a substantial aquifer under the southern half of the town, and a second smaller aquifer underlying portions of the northeast corner. These water resources offer habitat, corridors for migration, recreational opportunities, and drinking water for residents in and around Pembroke. Some of the major running-water sources, like the North River, Herring Brook, and Pudding Brook, intersect with major roads, like Routes 53, 14, and 3, which threaten the quality of these resources. Continued development near many of the water resources also threatens the quality of those waters.

Figure 34: The Herring Brook is an important natural, cultural and historic resource

The development of Pembroke from a tourist destination to a year-round residential community likely impacted the health of its many water bodies. Summer vacation homes from the early twentieth century that surrounded the ponds in the southwest were retrofitted to become year-round residences. Today, this high-density residential area has small lot homes with individual septic systems which potentially threaten the water quality of the ponds. On a broader town-wide scale, fertilizers and untreated stormwater runoff from houses, roads, parking lots, and businesses could in part contribute to eutrophication of the water bodies which they surround. Action is necessary to improve the quality of these resources so they may continue to support the town residents and their neighbors.

The aquifers in Pembroke not only provide water to the people of Pembroke, but also contribute drinking water to Brockton, Abington, and Rockland. These towns pull water from Great Sandy Bottom Pond, Silver Lake, and Furnace Pond, which are likely fed in part by the underlying aquifers (Carlson and Lyford, 2005). This transfer of water, for which Pembroke receives no monetary or other compensation, has been in effect since the early twentieth century. In light of current drought conditions as well as future drought projections, the withdrawal of water from the aquifer and its hydrologically connected water bodies may threaten its long-term viability and health. This poses a danger not only to the communities that use this water for drinking and irrigation, but also to the communities of plants and animals whose habitats rely on the aquifer-fed waterbodies.

A long history of agriculture, predominantly in the form of cranberry bog cultivation, altered the hydrology of some of the water bodies in Pembroke. These bogs were once quite common, and originally constructed along many of the ponds and streams in town. Today there are only a handful of active bog sites, but the legacy of this once booming industry is still apparent in the many decommissioned sites throughout Pembroke. Combined efforts by the town's Water Department, the Conservation Commission, and the Wildlands Trust have protected these once active bogs from development and allow them to return to semi-wild states in which they can enhance water quality. Further restoration efforts to return bogs to wetland ecosystems (as the Eel River Project has done in Plymouth, MA), could positively contribute to water and habitat quality in these areas.

The natural landscapes of Pembroke vary from wetlands to forested uplands. These different environments provide habitat and corridors for rare and threatened species as well as many common species in Pembroke. The extensive water networks also provide important migration routes and spawning areas for fish species. According to the Natural Heritage and Endangered Species Project's (NHESP) BioMap2 data, Pembroke has approximately 3,239 acres of core habitat that supports rare, threatened, or endangered animal or plant species. The largest tract of identified core habitat in Pembroke is the Great Cedar Swamp in the north, which covers approximately 225 acres.

Although most of this habitat area is under permanent protection, there are still portions of identified core habitat throughout the town and in neighboring communities that are not currently protected and are threatened by increased development and the indirect impacts (increased stormwater runoff and pollution) associated with them. Continued efforts within Pembroke and in collaboration with abutting towns is needed to preserve these important and sensitive habitats.

All of Pembroke's largest surface water bodies (Oldham, Furnace, and Stetson Ponds, and Silver Lake) are classified as core habitat. These important natural resources help to support abundant plant and animal species that contribute to a healthy and functional ecosystem and to the scenic character of the town. However, these special environments have been fragmented and have become isolated from one another over the years as development expanded through the more ecologically sensitive parts of town, creating gaps in important corridors and reducing the connectivity of these core habitat areas.

There have been efforts by groups such as Wildlands Trust, to connect these resources by creating inter-town trail networks through protected lands in these habitat areas, but there is still much work to be done.

Figure 35: Trails can be an important tool for connecting open spaces within and across town borders.

Because these core habitat areas extend beyond the town's borders, especially along the northern and eastern borders, alliances between Pembroke and its neighbors would be more effective than solo efforts.

Additional habitat areas include nine certified vernal pools and eighty-one potential vernal pools. Vernal pools offer habitat and breeding ground for environmentally sensitive species, like fairy shrimp and wood frogs. Certifying vernal pools and connecting vernal pools via upland corridors and landscape block areas could assist in enhancing and protecting biodiversity.

7. B SUMMARY OF COMMUNITY'S NEEDS

Throughout Pembroke, there are ample opportunities to partake in outdoor recreation, from hiking, swimming, and canoeing to organized sports. Pembroke is fortunate to have a wealth of recreational spaces, including woods, rivers, parks, and sports fields, that allow people to be physically active and engaged with both their natural and human community.

Through two public meetings and an online survey, many Pembroke residents indicated that the diverse open spaces in town strongly contribute to the town's overall identity and make it a special and lovable place. When people were asked in the 2017 survey about which specific areas are important contributors to the visual character of the town, the top three responses were the historic town center, the ample water resources, and the abundant forested areas. Specifically, Herring Run was mentioned repeatedly as a place that embodies scenic quality. Continuing to make efforts to protect important resources that could potentially be lost to development was an often voiced need of the community.

Of the respondents to the survey, 63 percent stated that they consider Pembroke to be a town in transition. Given the trends in growth and development outlined in previous sections, it is apparent that this transition is eroding the town's rural, small town character and creating a more developed suburban feel. The fear of

losing the defining character of the town was echoed in discussions with residents at two public OSRP meetings. In the 2017 open space survey, 67 percent of people reported that continuing development was the most imminent threat to the many special natural, historic, and cultural resources throughout the town. Half of the 67 percent of people who considered development to most imminent threat to the town's resources, specified new housing developments as being particularly dangerous to the town's character.

Many individuals have reported that Pembroke has a number of open spaces not currently used by the public due to the fact that many are unaware that such resources exist. Although 68 percent of those surveyed thought that the current open space areas within town were easy to find and enjoy, when asked what steps should be made to increase the use of open space, the most common suggestion (35%) was to increase awareness through advertising and promotion, especially through social media platforms and on the town's website. By increasing awareness and use of the many diverse recreational opportunities within town, these areas may become safer and better cared for through an increased sense of public ownership.

Of the already established protected open spaces, most survey respondents mentioned a need for improvements in signs, maintenance, and access. When polled on what activities they enjoy at designated open space areas, nearly all respondents (93%) reported walking as a principal activity. One of the biggest concerns voiced by residents was the lack of proper access to many of the open space areas. Specifically, the lack of connected sidewalk routes was frequently noted. There was also a described desire for greater interconnection of existing trail networks, both in Pembroke and into neighboring towns. Additionally, improving access in the form of increased, clearly designated parking areas was highlighted as a community need, and improving signs at and leading to open space areas was mentioned as a way to encourage awareness and more frequent use.

7. C MANAGEMENT NEEDS, POTENTIAL CHANGE OF USE

Survey responses and conversations with residents and town officials highlighted the importance of increasing the management of existing open space areas. The threats to natural resources and open space posed by development need to be addressed.

Pembroke's Open Space Committee runs on a volunteer basis and has a fluctuating state of interest and participation. In turn, it has been difficult for the Open Space Committee to organize times to meet and prioritize its actions. Given these constraints, they need a person or people to monitor the continued efforts to implement the actions laid out in the OSRP, and to identify areas for improvement or concern. Coordinated volunteer work days could tackle some of the large maintenance projects associated with many of the town-owned open space areas. A trial adoption program could encourage local faith, school, and other groups to take on longer-term care of some of the town lands.

Pembroke would benefit greatly from digitizing their town records to provide a centralized, updated record of town development projects, and the state of current resources.

This would make communication more efficient and accurate, and improve the ease and efficiency of coordinating efforts to maintain and protect these resources. The town's 2004 master plan listed the need to create a centralized digital database of its records. Based on multiple conversations with various town departments and committees, and given the difficulty experienced in accessing compiled and concise data from these various departments, little progress has apparently been made since this recommendation was presented.

There is also a need to rethink the current zoning regulations for the town, with specific attention given to regulations pertaining to clustered and mixed use development. Pembroke is a steadily growing town, and it is both unlikely and undesirable that all development should cease. Rather, the challenge is to wisely plan for development in a way that poses minimal threat to the many resources found within the town. Through public meetings and the open space survey, the town's residents communicated their desire for walkable communities, and they would prefer that development is conducted in ways that reduce impact on the town's natural and cultural resources. Current zoning regulations limit opportunities for denser infill development, a form of development that could relieve pressure on sensitive resource areas and create mixed use communities and village centers. These types of communities were once the standard for towns in New England, but have been lost as automobile culture and the desire for large lot sizes have directed growth away from this model. Pembroke needs to address the regulatory and social hurdles which currently limit the town from directing growth in this direction.

7. D IMPLICATIONS OF THE STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN

The Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) is a document provided by the state government that discusses common needs, goals, preferences, and histories of outdoor and recreational spaces across the varied regions of the Commonwealth. Using information provided by the SCORP, communities statewide will be guided to make informed decisions regarding the types of outdoor and recreational spaces that are most needed, most population, and may reap possible grants and funding from the state level. Communities that have an updated SCORP of their own are eligible to receive grants from the Land and Water Conservation Fund to improve upon or create recreational projects.

The SCORP is broken down into five major chapters, the first chapter identifies the benefits of outdoor recreation and open space protection, funding for outdoor recreation projects, the statewide comprehensive outdoor recreation plan and planning on a local level. The second chapter of the SCORP provides an overview of Massachusetts including geography, population trends, development impacts and economic trends, as well as a history of preferred and population outdoor recreation activities across the region.

Chapter 3 reviews the outdoor recreation supply for Massachusetts including public, private and non-profit land owners. Chapter 4 reviews the outdoor recreation demand as well as the recreation needs survey results.

The report findings for Pembroke present opportunities for the community's recreational facilities to improve in a way that will cater to the needs of residents while also adhering to SCORP guidelines, allowing for possible grants and additional funding. The Land and Water Conservation Fund (LWCF) provides grants and funding to communities who procure land to set aside for conservation, preservation, and recreational uses. Pembroke has several wetland ecosystems that the town is working to protect for both environmental and recreational purposes. Considering guidelines for land protection as outlined by the LWCF, Pembroke planners can best identify how to conserve and acquire land that will have the most recreational and ecological value.

The SCORP also holds communities accountable for providing recreational and outdoor activities that provide specifically for the town's population. Pembroke has a large population of baby boomers, residents who are aging towards their elderly years. Recreational planners in Pembroke must consider accessibility and disability issues, as many of the trails and paths that are popular in town will no longer meet the needs and desires of an aging population. SCORP suggests gardening and swimming are more popular than walking or biking in households with disabled residents, and with a growing population of residents who may develop disabilities, a shift in recreational focus to improve swimming and gardening opportunities in town would better follow SCORP guidelines. These are among the many examples SCORP can be used to effectively plan and fund Pembroke's recreational future.

Pembroke's open space and recreational goals focus on sustainable community development, allowing for greater recreational opportunities for all residents while also maximizing environmental protection, appreciation, and well-being.

Recreational facilities, such as softball fields and play structures, may be constructed or improved upon in neighborhoods that have less access to recreational outlets so that residents do not have to drive outside of their neighborhood for outdoor recreation. An increase in the number of facilities will lessen demand for these spaces, and will allow for less maintenance and upkeep of certain locations, ultimately improving both the quality and quantity of these built structures for each geographic population of Pembroke.

Improving access from neighborhoods to existing facilities elsewhere in town, through either biking or walking connections, is a realistic opportunity to increase access to recreational and conservation spaces to Pembroke residents who may otherwise need an automobile to access such areas. Many recreational areas go unknown to the public, due to insufficient or obscured signage or general lack of public awareness. Local educational efforts to inform residents of all recreational spaces in town may lead to an increased use in less popularized locations, decreasing demand on the most frequent spaces. As more residents take advantage of these recreation and conservation areas, appreciated for nature will increase, as well as environmental awareness, education, and stewardship.

Outside of locational accessibility, recreational opportunities must be provided for all age groups. Pembroke's generally aging population may no longer be well served by walking trails

or sports facilities and will need additional recreational outlets. Gardening and swimming is increasingly popular among Pembroke's older residents. Community gardens, whether operated through town boards, through civic organizations, or privately, add a social aspect to gardening as well. Most of Pembroke's municipal recreational areas are not easily accessible to people with disabilities, regardless of age, through the elderly are more proportionately affected. Access to recreational areas in Pembroke's passive and active recreational areas for people with mobility limitations is lacking and needs to be incorporated into new projects and facility upgrades.

The goals outlined in this report hope to create inclusive recreational spaces that provide for all of Pembroke's population, despite individual location, age, disability, or other factor. These spaces particularly include recreational opportunities on conservation lands and preserved open spaces, allowing for both the ecological health of the environment and the mental spirit of Pembroke's residents to better flourish.

Goal 1. Access for Underserved Populations.

The SCORP finds that people with disabilities may face a greater challenge than most if facilities are not designed with their needs in mind or programming is not accessible to them. Having a disability should not prevent someone from using a park or open space. As citied within the SCORP, 11.7 percent of Massachusetts residents report to have a disability.

The SCORP identified the following objectives:

1. Support the acquisition of land and development of new open spaces in areas that lack existing or useable open spaces.
2. Develop parks and open spaces that offer amenities that go above and beyond ADA requirements for people with disabilities.
3. Consider the needs of underserved demographic groups, senior citizens and teenagers, in park and open space designs.
4. Encourage establishment of programming endowments.

Goal 2. Support the Statewide Trails Initiative.

Trails are important for a number of different reasons. They connect communities. They provide a non-vehicular mode of transit. They improve public health by giving people an active way to get where they are going. They can increase the value of homes and businesses by making an area a more desirable place to live or work.

Trails are also the second most requested recreational amenity by survey respondents. The phone survey found that 50.3 percent of people wanted new or improved hiking trails; paved, multi-use trails, such as rail trails; unpaved, multi-use trails, such as mountain bike trails. The same activities were also expected to show a continuing increase in popularity over the next five years.

The SCORP identified the following objectives:

1. Support the acquisition of land and development of new open spaces that can provide a trail network.
2. Fill in the gaps of existing trail networks.

3. Ensure that any existing or new trails are fully accessible to people with disabilities.

Goal 3. Increase the Availability of Water-based Recreation.

Protecting water resources serves multiple purposes. It provides people a place to recreate. It protects a habitat for plant and animal species that depend on its water quality. It helps to protect our drinking water supplies. When asked what services our state and local parks and open spaces provide, other than outdoor recreation, the top three answers were: protecting wildlife, improving quality of life, and protecting drinking water supplies. Water-based recreation was the number one most requested amenity by phone survey respondents when asked what three new or improved facilities should be developed in state parks. Fifty-eight percent requested some type of water amenity, including beaches; outdoor swimming pools or spray parks, fresh or saltwater swimming areas and motor boating or sailing areas.

The SCORP identified the following objectives:

1. Support the acquisition of land that will provide for water-based recreation.
2. Support the acquisition of land that will increase drinking water supply.
3. Develop water-based recreation facilities, including swimming areas, spray parks, boating facilities, fishing areas, etc.

Goal 4. Support the Creation and Renovation of Neighborhood Parks.

To get more people outside, facilities and amenities should be developed close to where people reside. This can be accomplished through the development of new and the improvement of existing, neighborhood parks. Parks and open spaces provide places for communities to gather, whether it be a family or neighborhood get together. Respondents to the phone survey were interested in improvements to neighborhood parks, such as dog parks, playgrounds, and picnic areas. Playgrounds and off-leash dog parks were the second and fifth most requested improvement, respectively, in community facilities. Community gardens, nature playgrounds, and spray parks were also desired at high rates.

The SCORP identified the following objectives:

1. Promote the acquisition and development of neighborhood parks where none currently exist.
2. Develop amenities supported by neighborhood parks, such as playgrounds, off-leash dog parks, and community gardens.
3. Work with community development organizations to improve walking access to local parks.

Works Cited for Section 7:

Carlson, C.S., and Lyford, F.P., 2005, Simulated ground-water flow for a pond-dominated aquifer system near Great Sandy Bottom Pond, Pembroke, Massachusetts: U.S. Geological Survey Scientific Investigations Report 2004-5269, 43 p.

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Section 8: ADA SELF EVALUATION

TOWN OF PEMBROKE, MASSACHUSETTS
ADA SELF EVALUATION, TRANSITION, AND GRIEVANCE PLAN
Updated August, 2018

The Town of Pembroke voted unanimously after holding a public hearing on June 30, 1997 to amend the Town's Community Action Statement Strategy to become compliant with the 1990 Americans with Disabilities Act. The ADA was amended in 2008 to include several changes that require towns to make additional modifications to improve accessibility to those with impairments that limit their ability to access governmental services. This self-evaluation and transition plan supersedes and replaces the Town of Pembroke's older plan.

This 2018 ADA Self Evaluation consists of the following sections:

- Self-Evaluation

  A Self-evaluation of the 6 town-owned buildings and 6 recreational sites to identify the following:
  1. The primary use of the site.
  2. A summary of ADA compliance in the Town of Pembroke and areas that require attention to become compliant. These issues were found by the Weston & Sampson team and outlined in the priorities listed in the *Checklist for Existing Facilities* from Adaptive Environments Center, Inc. for the National Institute on Disability and Rehabilitation Research, as provided by the Massachusetts Office on Disability.
  3. Funding needed to accomplish the goals outlined above.

- Transition Plan

  A Transition Plan established by Weston & Sampson to address the following:
  1. Location and use of the 6 buildings and 6 recreational sites.
  2. Condition of each of these sites and surrounding areas.
  3. Site facility and access.
  4. Long-term improvements to address access issues within each site.

- Grievance Plan

A suggested grievance plan for handling and resolving complaints regarding the ADA compliance of municipal buildings and programs.

Town of Pembroke

MINUTES OF THE SELECTMEN'S MEETING
SEPTEMBER 24, 2018

PRESENT: Matthew J. Furlong (Chairman), Arthur P. Boyle, Jr. (Vice-Chairman), Willard J. Boulter, Jr. (Clerk), John G. Brown, Jr. (Selectman), Edwin J. Thorne (Town Administrator), Michael Buckley (Town Accountant), Catherine Salmon (Chief Assessor), Brandon Gulnick (Administrative Assistant), Robert Almy, Burt White, Rob Adams, Brooke Young, Sabrina Chilcott (Assistant to the Town Administrator) and others. NOT PRESENT: Daniel W. Trabucco (Selectman)

At 7:00 pm, Mr. Furlong opened the meeting and advised that this meeting is being made available to the public through a live video and audio broadcast on Comcast Government Access Channel 15 and is also being recorded for airing on the channel at future dates. Comments made in open session will be recorded.

7:00 ROBERT ALMY, WESTON & SAMPSON: SELF EVALUATION, GRIEVANCE PLAN AND ADA TRANSITION PLAN

Brandon Gulnick of the Selectmen's office presented an overview of the Town Administrator's Self Evaluation Plan that was conducted in conjunction with Weston & Sampson's Americans with Disabilities Act (ADA) Transition Plan. Mr. Gulnick explained that the town undertook this Community Compact funded project to become eligible for state and federal grant funding to improve accessibility throughout the town's six public buildings and six of the parks and beaches. Mr. Gulnick stated that the review showed that the town, whose buildings were constructed prior to the adoption of the Act, is in general compliance with the 1991 mandates for parking, access and availability; however, the new standards adopted in 2010 have revealed opportunity for improvement. Robert Almy of Weston & Sampson defined the process of the review including the checklist used to evaluate the facilities, the approach and parking at each facility, the accessibility to the services offered, access to restrooms and access to emergency communications. Mr. Almy confirmed that the sites evaluated included the Town Hall, Police Station, Community Center, Library, center Fire Station, and Council on Aging; the recreational facilities included the Town Landing, Luddam's Ford, Stetson Beach, Little Sandy Beach, Tubb's Meadow, and Herring Run Park. Mr. Almy confirmed that the staff was very helpful and he worked closely with Mr. Gulnick as well as an architect for facilities and a landscape architect for recreational facilities. Mr. Almy advised that the Community center is not listed as the age and condition of the building is not currently amenable to compliance upgrades. Mr. Almy concluded by stating that by adopting the Self Evaluation Plan, the ADA Transition Plan and the Grievance Plan, the town is exercising good faith efforts to the state and cannot be challenged meaningfully for non-compliance while working towards solutions. Mr. Gulnick presented the Grievance Plan to the Board, explaining that a formal plan doesn't exist at this time, leaving a patron with an issue entering the building or using a service without an opportunity to raise their concerns; with this plan, they will have a process to bring their concerns to the Board of Selectmen. Mr. Gulnick explained the opportunities for funding through the Municipal Improvement Grant process once the plans are adopted; project grants are up to $250,000 annually. Mr. Gulnick confirmed that some of the preliminary projects include Town Landing access ramps, border areas with ramps to the floating dock; Town Hal door handles, restroom automated door systems; Herring Run Park stone dust paths, and Council on Aging entry door changes. Mr. Boyle moved to adopt the ADA Transition Plan for the Town of Pembroke as presented; Mr. Brown seconded the motion. The vote was unanimously in favor. Mr. Boyle moved to adopt the Self Evaluation Plan and Grievance Plan for the Town of Pembroke as presented; Mr. Brown seconded the motion. The vote was unanimously in favor.

TRANSITION PLAN

This Memorandum summaries ADA compliance surveys of 12 publically owned sites in the Town of Pembroke, Massachusetts. The Town is in the process of developing and ADA Compliance Plan pursuant to Federal guidelines that address potential barriers to public services. The Town sites evaluated are:

• Town Hall	100 Center Street	Attachment A
• Police Station	80 Center Street	Attachment B
• Community Center	128 Center Street	Attachment C
• Council on Aging	144 Center Street	Attachment D
• Library	142 Center Street	Attachment E
• Fire Station Headquarters	172 Center Street	Attachment F
• Herring Run State Park	211 Barker Street	Attachment G
• Tubb's Meadow	Monroe Street	Attachment H
• Luddam's Ford Park	West Elm Street	Attachment I
• Town Landing	183 Wampatuck Street	Attachment J
• Little Sandy	Woodbine Avenue	Attachment K
• Stetson Beach	350 Plymouth Street	Attachment L

Several general surveys and guidance documents have been developed. The survey team used Institute for Human Centered Design survey materials and experience with applicable architectural and recreational facility standards to guide both observations and measurements. Additional general information was acquired from the town and the state's GIS map of the area. Data and observations included location and use of site, condition of the site and surrounding area, site and facility access, external barriers to access, and internal barriers to access and use. For each site, both short-term and long-term improvements to address access issues were provided. Typical short-term recommendations for recreational facilities include upgrading paths using temporary mats or compacted materials, providing accessible portable toilet facilities, and providing clearly marked handicapped parking and access. Typical long-term recommendations at recreational locations included design and replacement of access ramps to swimming areas, replacing docks and floats, and design and installation of accessible permanent restroom facilities at heavily used areas. Town buildings range from new, and fully ADA compliant (the library) to older, repurposed facilities (the Recreation Center) that would require extensive modification to meet ADA standards. Typical short-term improvements include improved markings and signage for ADA compliant parking, improving existing access ramps, upgrading doorways or installing power door operators, upgrading door hardware in areas providing direct access to public services. Long-term improvements include reconfiguring internal door openings, enlarging and reconfiguring restroom facilities, relocating essential public services to accessible floors.

Recommendations specific to each facility are provided in the attachments to this memorandum.

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2009 to evaluate the condition of ADA-mandated accessibility to the Town Hall in Pembroke, Massachusetts. After a description of the site and interior conditions of the building, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Town Hall at 100 Center Street.

Figure 36: Pembroke Town Hall

3. Name and Location of Site.

   The Town Hall is located on a 1.97 acre Town-owned site (Parcel C9-39), accessed primarily from Center Street to the North. It is adjacent to the Police Department parcel to the east and the Recreation/Library parcels to the South.

4. Existing Condition of Facility.
   a. Primary Uses: Town Hall is used for typical municipal administrative and service purposes. There is considerable public access on an individual and group basis.
   b. Hours of Operation: Town Hall is open weekdays during normal business hours, with frequent evening and occasional weekend openings for meetings, hearings, etc. It is also used as a polling place.
   c. Employee access needs: Town Hall employees are typically professional, administrative and building maintenance staff. Their access needs can be assumed to be similar to that of the general public.
   d. Nature of Site and Building Development: The Town Hall was initially constructed but damaged by fire and rebuilt in 1978 with a two-story addition at the south of the original building. The addition included an accessible public entrance, elevator, and other new areas. The Pembroke Assessor's records indicate a total of 12,648 square feet of floor space, with a current building value of $1,396,300 as of 2019.
   e. Surrounding Town uses include the Police Station to the east and the Recreation, Library and Community Center to the South, all of which share some degree of common pedestrian and vehicle access, as well as parking.
5. Conditions of Facility Access.
   a. Approach to the parking lot, parking spaces, and signage: The Town Hall is marked by two yard signs, both visible from the street. The parking areas is paved and contains approximately 46 marked parking spaces, with additional informal capacity. Three of the marked spaces are designated as accessible. Two of these paces are immediately opposite the entrance to the adjacent Police Station and is generally accessible from either buildings, although signage at the space only indicates the

direction to the Town Hall entrance, and the space has no marked access aisle. There are no marked van-accessible spaces. There is no direct access from a public way.

The condition of accessible parking spaces and accessible routes is generally good. However, the front-to-back and cross-slope of the spaces varies but is typically between 1.4 and 3.0 degrees, in excess of the ADA standard of 1.2 degrees. The pathway to the Town Hall entrance is compliant in the direction of travel but may exceed the allowable cross-slope pitch in places, depending on the exact direction of approach.

We note that the original Town Hall entrance porch, facing northwest towards Center Street, is not accessible from the exterior or from the building interior due to exterior steps and a high threshold at the door.

b. Entrance and access to primary uses:
Door and Sill – Main (rear) entrance.
The main (lower-level) entrance is generally accessible, but the door threshold does not fully meet ADA standards. It appears that there has been an issue with site flooding around the covered entry porch. The door threshold appears to have been retrofitted to control water intrusion into the building. There is a raised wood threshold at the interior and exterior of the door. This threshold is beveled on both sides, but well exceeds the allowable total height of ½ inch. The interior side of the threshold is also worn from use and exceeds the maximum allowable vertical step of ¼ inch. The door, hardware, and operation are otherwise compliant.

Figure 37: Town Hall Main (rear) entrance door and sill

c. Directional signage to primary uses within the building.
The interior signage at Town Hall does not generally meet ADA standards. Most permanent rooms and spaces are clearly identified, but the signage is typically high-mounted (in some cases, low-mounted) and lacks the required Braille characters.

Figure 38: Non-compliant signage in Town Hall

The two accessible toilet rooms, including their power door operators, are clearly marked, but also lack Braille characters. "Men's" and "Women's" toilet room signage is mounted too high and does not include raised or Braille characters.

Figure 39: Non-compliant restroom signage in Town Hall

d. Doorways and Door Hardware.
With the exception of the accessible restroom facilities discussed below, most doors and doorways at Town Hall do not conform to ADA accessibility standards. This is typically due to one or more of the following conditions:

- Lack of appropriate hardware. Most doors have standard doorknobs, which cannot be operated with a closed fist or without grasping. Lever handles or simple push-pull hardware are required.

Figure 40: Non-compliant door hardware at Town Hall

- Lack of adequate side clearance at doors. A minimum 18 inch clearance is required at the latch-pull side of any passage or entry door. In some cases at Town Hall this is the result of furniture placed too close to the door; in other cases the door swing or location is problematic. In addition, where automatic door closers are used, a minimum 12 inch clearance is also required at the latch push side; however, few if any automatic closers were noted at Town Hall other than at restroom and exterior entrances.

e. Service Counters.

Height-transaction area.

In several locations the transaction counters exceed the ADA maximum of 36 inches.

Figure 41: Non-compliant counter height

f. Access aisle – turnaround space.

In some locations there is no open area within the room to allow a wheelchair to turn around. This is especially problematic in cases where the door swings into the access aisle space.

g. Access to staff and other services.
Signage and floor; functionality (height and visibility). As noted above, the interior signage at Town Hall does not generally meet ADA standards.

h. Restroom facilities.
The Men's and Women's restroom facilities in Town Hall offer some degree of accessibility, but there are several non-compliant conditions which should be corrected. These include the following:
Lower Level Women's Room: This room is designated as accessible, and is provided with an automatic door operator. As noted above, the exterior signage is not ADA-compliant. The interior of the toilet room is generally compliant.
Lower Level Men's Room: This room is not identified as accessible, and was therefore not evaluated for compliance. However, it was noted that some effort has been made to provide accessible features (such as the lavatory), but full compliance is probably not possible due to space constraints.
Upper Level Women's Room: This room is not identified as accessible, and was therefore not fully evaluated for compliance. However, it was noted that some effort has been made to provide accessible features (such as the lavatory, grab bars, etc.), but that full compliance would require modifications to at least the following items:

- Interior door latch (privacy deadbolt) interferes with pull handle clearance.
- Latch-pull side clearance at door is inadequate.
- Rear-wall grab bar is mounted at 38 inches AFF – ADA maximum is 36 inches.

Upper Level Men's Room: This room is designated as accessible, and is provided with an automatic door operator. As noted above, the exterior signage is not ADA-compliant. The interior of the toilet room is non-compliant in several respects:

- The urinal is mounted higher than the 17 inches ADA maximum. The required 30 inches by 48 inches of clear floor space may not be present.
- There are two toilets in the accessible toilet stall. This interferes with the required 60 inches minimum rear-wall clearance at the toilet, and may violate the State Plumbing Code (subject to verification of dimensions, this may be correctable by eliminating one of the toilets.
- The floor mounted cabinet heater interferes with the required 56 inch minimum side-wall clearance at the toilet.
- The toilet compartment door swings out and lacks the required clear floor area and pull-side clearances (subject to verification of dimensions, this may be correctable by reversing the door to swing in to the compartment.
- The bottom edge of the mirror is mounted above the maximum 40 inch limit.

Figure 42: Men's room with 2 toilets

i. Emergency Communication Equipment.
The building is equipped with a fire alarm system, and horn-strobe units were noted at several locations. However, a full survey of the coverage of these signaling devices in all accessible portions of the building was not conducted.

j. Issues with access to other specialized services. None noted.

6. Barriers that limit access to existing buildings.
   a. Description of each barrier and nature of limitation.
   Condition of parking and pathway surfacing.
   Parking areas and accessible routes are in generally good condition, but slopes may locally exceed ADA maximums. Van-accessible spaces are not identified, although there appears to be space to provide spaces and aisles of the required dimensions.

   Ramps and doors.
   The main (lower-level) entrance door has a non-compliant threshold. This is not a complete barrier to access but may pose a challenge to some individuals.

   Signage and service locations.
   Signage is generally non-compliant. Service locations within the building are generally accessible but there are problems with door configuration and operation, service counter height, wheelchair turning space, etc.

   Counters and other work surfaces.
   See above for counter height limitations and wheelchair turning space at public service locations.

   Restroom facilities.
   There are designated accessible restrooms at both floor levels, but not all elements are compliant, particularly at the upper-level Men's room.

   Other Issues.
   See above for consideration of assumed site flooding at rear (accessible) entrance and its impact on accessible parking and building access.

7. Short Term Site Improvements.
    a. Accessible Parking.
    Re-stripe and designate van-accessible space and access aisle.

8. Long Term Site Improvements.
    a. Parking and Pathway Slopes.
    Correct grading and drainage around rear building entrance to achieve correct ADA grades (no steeper than 1:48) across accessible parking spaces, access aisles and accessible route to entrance. Site drainage improvements may be necessary to control flooding in this area.

9. Short Term Building Improvements.
    a. Entrance Threshold: priority repair. As noted above, the door threshold exceeds the allowable ADA height. However, the deteriorated interior portion of the threshold should be replaced to provide a consistent edge with no more than ¼ inch vertical step.
    b. Men's Room Accessibility. The upper-level Men's room requires several modifications to make it fully accessible:
        - Provide ADA-compliant signage, including at power door operator.
        - Reconfigure toilet stall to provide correct side and rear wall clearance, floor space, and door swing. This will require the removal of one of the two toilets, and may require moving or changing the cabinet heater.
        - Rehang the urinal a maximum (lip) height of 17 inches. Ensure required 30 inch by 48 inch floor space is available and that urinal is no closer than 15 inches to a side wall or partition. Cut back interior drywall partition as needed to provide clearance for the 90-degree turn to the urinal.
        - Lower mirror to 40 inches maximum above the floor.
    c. Interior Signage.
    Provide consistent ADA-standard signage for all accessible doorways, routes and spaces.

    d. Door Hardware – priority items.
    Provide level-handle hardware at any doors expected to be used by the general public. Ensure single-action release (from the room or exit side) of doors subject to cloaking (i.e., no separate deadbolts, etc.).

    e. Service Counters – interim accommodation.
    Where ADA-accessible height (36 inches or less) counters are not available, ensure that alternate accommodation is available. This can include a desk or table of appropriate height in the same service area, equally accessible to all users. Furniture, including counters, should be moved to provide compliant door clearance and fully accessible routes.

    f. Door Clearances – furniture interference.
    Remove or relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer. This should include the relocation of service counters, where possible.

10. Long Term Building Improvements.
    a. Entrance Threshold.
    In conjunction with regrading and drainage improvements around the main entrance area noted above, provide ADA-compliant entrance door system, including threshold, plus new or modified door and hardware as necessary. ADA-compliant signage, including Braille lettering at power door operators, should be included.

    b. Door Hardware – remaining locations.
    Provide lever-handle hardware at remaining doors. Include tactile warning on backside of handle at doors to hazardous locations.

    c. Service Counters – transaction height.
    Provide permanent sections of all transaction/service counters at ADA-compliant height (36 inches or less). These sections should have the same approach path and access to customer services as higher-level counters.

    d. Door Clearances and Swings.
    Reconfigure or relocate door openings and/or change door swings to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch-push side where the door is equipped with a closer.

    e. Alarm System Upgrades.
    Provide audio-visual signaling at all required areas of the building.

Police Station
80 Center Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2008 to evaluate the condition of ADA-mandated accessibility at the Police Station in Pembroke, Massachusetts. After a description of the site and interior conditions of the building, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Police Station at 80 Center Street.

Figure 43: Pembroke Police Station

3. Name and Location of Site.
   The Police Station is located on a 1.811 acre Town-owned site (Parcel C10-17), accessed primarily from Center Street to the North. It is adjacent to the Town Hall parcel to the West and the Recreation/Library parcels to the South.

4. Existing Condition of Facility.
   a. Existing conditions.
      Primary Uses: The Police Station is used for typical public safety administrative, service and detention purposes. There is some public access on an individual or small group basis.
      Hours of Operation: The Police Station is a first-responder facility and is open 24 hours a day, seven days a week. It has no secondary municipal function.
      Employee Access Needs: Police Department employees include sworn officers and some administrative staff. Officers are by definition able-bodied as a condition of their job responsibilities, and have no special accessibility requirements. The access needs of administrative staff, public visitors to the facility and individuals in Police detention can be assumed to be the same as that of the general public.

   b. Nature of Site and Building Development.
      The Police Station is a wood frame, 2-story structure with basement, initially constructed in 1978. The Pembroke Assessor's records indicate a total of 8,928 square feet of floor space, with a current building value of $1,179,700 as of 2019.

c. Surrounding Town uses include the Town Hall to the West and the Recreation, Library and Community Center to the South, all of which share some degree of common pedestrian and vehicle access, as well as parking.

5. Conditions of Facility Access.

Approach to parking lot, parking spaces and signage.

The Police Station is marked by a free-standing yard sign and single sign above the main building entrance, both visible from the street. The parking area at the rear of the building is paved and contains approximately 45 marked parking spaces, with additional informal capacity. None of the marked spaces are designated as accessible. There is one accessible space at the Town Hall side of the access driveway which is immediately opposite the Police Station entrance, although signage at that space only indicates the direction to the Town Hall entrance. There is no marked access aisle or van-accessible space. There is no direct sidewalk access from a public way.

The condition of accessible parking spaces and the accessible route to the building entrance is generally good. However, the front-to-back slope of the space may slightly exceed the ADA standard of 1.2 degrees. The accessible route to the Police Station entrance appears to be compliant in slope, but the path crosses a busy access driveway and is not marked as a crosswalk.

Entrance and Access to Primary Uses.

Door and Sill – Main (front) entrance.

The main entrance is not accessible, due to an excessive vertical step (approximately 3 inches) between the exterior landing and the building floor. The outer door swings out, and may interfere with ADA entry clearance requirements at the landing. The threshold at the interior side of the entry door is also higher than the ADA maximum of ½ inch. Door hardware is non-compliant. There is no power door operator.

Directional Signage to Primary Uses within Building.

The interior signage at the Police Station is limited and typically does not meet ADA standards. Some permanent rooms and spaces are clearly identified, but the signage is not mounted at consistent heights or locations and lacks the required raised lettering and Braille characters. However, we note that most public access to the Police Station is limited to the main entrance vestibule. Public access to other areas of the building is provided on an escort-only basis, so ADA-compliant signage is not a critical concern.

Doorways and Door Hardware.

With the exception of the Men's and Women's restrooms discussed below, most doors and doorways at the Police Station do not conform to ADA accessibility standards. This is typically due to one or more of the following conditions:

- Lack of appropriate hardware. Most doors have standard doorknobs, which cannot be operated with a closed fist or without grasping. Lever handles or simple push-pull hardware are required.
- Lack of adequate side clearance at doors. A minimum of 18 inches clearance is required at the latch-pull side of any passage or entry door. In some cases this is the result of furniture placed too close to the door; in other cases the door swing or

location is problematic. In addition, where automatic door closers are used, a minimum 12 inch clearance is also required at the latch push side; however, few if any automatic closers were noted at Town Hall other than at the restrooms.

Window Counter at Entrance Vestibule.
Height – transaction area – 36 inches maximum height.
The window counter is approximately 45 inches high, which exceeds the ADA limit of 36 inches. However, this is not a transaction window so there is no functional barrier. The speaker grille in the fixed window is mounted above the reach of a person in a wheelchair; a maximum mounting height of 54 inches is recommended.

Access to staff and other services.
Signage and floor; functionality (height and visibility). As noted above, the interior signage at the Police Station does not generally meet ADA standards.

Restroom Facilities.
The first-floor Men's and Women's restrooms at the Police Station offer some degree of accessibility, but there are several non-compliant conditions, including the following:

First Floor Men's Room.
This room is designated as accessible, and is provided with an automatic door operator. As noted above, the exterior signage is not ADA-compliant. The interior of the toilet room is non-compliant in several respects:

- The entrance door swing interferes with the required clear floor space at the lavatory.
- Supply and waste piping beneath the lavatory is not covered or insulated.
- The urinals are mounted higher than the 17 inch ADA maximum.
- There is insufficient clearance at the door to the toilet stall.

First Floor Women's Room.
Some effort has been made to improve the accessibility of this room, but it is non-compliant in several respects:

- Insufficient clearance between the toilet and lavatory (60 inches of clear space at the back wall is required for the toilet.
- Rear wall grab bar is missing.
- The bottom edge of the mirror is mounted above the maximum 40 inch limit.
- Supply and waste piping beneath the lavatory is not covered or insulated.
- We note that the room is probably too small to be made fully accessible.

Basement and Second Floor Areas.
There are employee facilities, storage and utility areas in the basement and on the second floor. All are accessed by stairs, and there is no elevator or chair lift. None of these areas are open to public use, and they were therefore not evaluated for accessibility.

Emergency Communication Equipment.
The building is equipped with a fire alarm system, and horn/strobe units were noted at several locations. However, a full survey of the coverage of these signaling devices was not conducted.

Issues with access to other specialized services.
Detention Area: The detention area, including holding cells and booking areas is understood to be generally non-ADA compliant, as well as obsolete by current conditions, standards. No detailed assessment was performed.

Sally Port: The attached rear garage is used as a sally port for transferring detainees in and out of the holding cells and booking area. There is a full step up to the main floor.

6. Barriers that limit access to existing building.
    a. Description of each barrier and nature of limitation.
    Condition of parking and pathway surfacing. Parking area and accessible route are in generally good condition, but slopes may locally exceed ADA maximums. A van-accessible space is not identified.

    Ramps and Doors. The main entrance door has a non-compliant landing and threshold.

    Signage and Service Locations. Signage is generally non-compliant, as discussed above. Non-escorted public use of the building is generally limited to the main entrance vestibule.

    Restroom Facilities: There are partially-accessible restrooms at the main floor level, but not all elements are compliant.

    Detention Area. The holding cells, toilets, and booking area are generally not in compliance with ADA and corrections standards.

    Sally Port: The doorway leading from the sally port into the main floor of the building has a full step up and is therefore not accessible.

7. Short Term Site Improvements.
    Accessible Parking. Re-stripe and designate van-accessible space and access site.
    Entry Walkway and Landing. Re-grade and resurface walkway and provide raised landing within ½ inch of the interior floor elevation.

8. Long Term Site Improvements.
    Parking Location. Consider locating accessible parking on the Police Station side of the access driveway to avoid crossing traffic and to shorten the accessible path to the building.

9. Short Term Building Improvements.
    Entrance Threshold and Door. In conjunction with walkway and exterior landing modification noted above, install new entrance doorway with compliant threshold, hardware and operation. A power operator is recommended for consistency with other Town buildings.
    Interior Signage. Provide consistent ADA-standard signage for all accessible doorways, routes and spaces.

Door Hardware Priority Item. Provide lever-handle hardware at any doors expected to be used by the general public, whether escorted or not. Ensure single-action release (from the room or exit side) of doors subject to locking (i.e., no separate deadbolts, etc.).
Service Window accessible communication: Relocate speaking grille to 54 inches maximum above the floor, provide a supplementary lower grille, or provide an electronic intercom at an accessible height.
Door Clearances furniture interference: Remove or relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.
Sally Port landing and ramp: Provide a level landing at the garage side of the interior door, with a ramp down to the garage floor level. Landing size and slope of ramp will depend on available space and direction of travel. Both can be portable.

10. Long Term Building Improvements.
Door Hardware: Provide lever-handle hardware at remaining doors. Include tactile warning on backside of handle at doors to hazardous locations.
Door Clearances and Swings. Reconfigure door openings and/or change door swings to allow 18 inches clear at the latch-pull side of doors, plus 12 inches at the latch push side where the door is equipped with a closer.
Detention Area. Reconfigure area to meet applicable ADA and corrections standards.

Community Center
128 Center Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2008 to evaluate the condition of ADA-mandated accessibility at the Recreation Center in Pembroke, Massachusetts. After a description of the site and interior conditions of the buildings, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Recreation Center at 128 Center Street.

Figure 44: Pembroke Recreation Center

3. Name and Location of Site.
   The Recreation Center is located on a 34.19 acre Town-owned site (Parcel D9-1), accessed primarily from Center Street to the west. It is adjacent to the Town Hall and Police Station parcels to the north and the Community Center parcel to the west. The Library is located to the south of the Recreation Center, on the same parcel.

4. Existing Condition of Facility.
   Primary Uses: The Recreation Center is used for multiple community purposes, including school, camp, and athletic programs, child care, food pantry, and outreach services, etc. There is extensive public access on an individual, small group and larger group basis.
   Hours of Operation: The Recreation Center is open during typical weekday hours, with frequent evening and weekend use.
   Employee access needs: Assumed to be the same as that of the general public.

   Nature of Site and Building Development.
   The Recreation Center is a large, 2-story brick structure with basement, initially constructed as the Pembroke High School in 1934 (south portion) and subsequently expanded to the north. For all buildings on the parcel (The Recreation Center and the Library), the Pembroke Assessor's records indicate a total of 68,618 square feet of floor space, with a current building value of 7,706,600 as of 2019. For the purposes of this report we estimate that the Recreation Center contains approximately 46,618 square feet.

Surrounding Town Uses.
These include tennis and basketball courts plus Town Hall and Police Station to the north, the Town Field to the west, ball fields to the east and the Community Center and Library to the south, all of which share some degree of common pedestrian and vehicle access, as well as parking.

5. Conditions of Facility Access.
Approach to parking lot, parking spaces and signage.
The Recreation Center is marked by a small free-standing signpost on Center Street. There is little or no other exterior identifying signage. There are paved parking areas at the north, east, and south sides of the building, mostly at the east. These areas contain approximately 144 marked spaces, 8 of which are designated as accessible. There are no marked van-accessible spaces. There is no direct sidewalk access from a public way.

The condition of the accessible parking spaces and the accessible routes to the building entrance is variable.

South Entrance (original building) (2 spaces).
The spaces are generally compliant for slope, access, and signage. Pavement in and around the spaces is in fair to poor condition.

Figure 45: A straight run concrete access ramp leads to the building entrance.

This ramp is generally in conformance with ADA standards for dimension and slope, but has the following deficiencies:

- Settlement of the adjacent pavement and the ramp itself have resulted in irregular vertical steps at the top and bottom of the ramp, in excess of ½ inch.
- Handrails are provided only at one side of the ramp.

North Entrance (original building) (2 spaces)
The front-to-back and cross-slope of the spaces exceeds the ADA standard of 1:48 (1.2 degrees). The route to the access ramp also exceeds the allowable slope and crosses asphalt pavement in very poor condition. There is no designated access and the lower space is overlapped by a portion of the adjacent ramp.

A switchback wood access ramp leads to the building entrance.

Figure 46: Switchback wood access ramp

This ramp is generally in conformance with ADA standards for dimension, slope and railings, but has the following deficiencies:

- Gaps between planks exceed ½ inch.
- Top landing approximately 1 ½ inch below the building floor.
- Deteriorated, irregular concrete at lower section with excessive "step" to wood portion of ramp.

Figure 47: Gaps between planks and deteriorated, irregular concrete

North Parking (1 space)

This space is associated with the tennis and basketball courts and was not evaluated for ADA compliance or access to the Recreation Center building.

East Parking (3 spaces)

These spaces are part of a longer row of angled parking. They do not meet ADA dimensional requirements, lack access aisles and required signage. The route from these spaces to the building entrance was not evaluated.

The building entrance closest to these three spaces is not usable and count not be evaluated. No signage or exterior hardware was noted. The exterior landing did not appear to conform to ADA dimension, slope and surface requirements.

Entrance and access to primary uses.
Doors and Sills:

Main (front) Entrance.

The main entrance is not accessible. There is an interior ramp which appears to have been built over the original steps, but the ramp is excessively steep and lacks handrails. There is no level landing at either side of the entry door, and the threshold exceeds the allowable height.

Figure 48: South Entrance

Figure 49: Main Entrance'

South Entrance.

The south Entrance is generally ADA compliant. It was noted that the double entrance doors are provided with unequal leaves in order to accommodate the required 36 inches wide door.

North Entrance.

The north entrance is not accessible due to the excessive drop (1 ½ inch) from the threshold to the exterior landing, as noted above. The entry doors also appear to be of equal width and may not meet the required 36 inch opening for a single leaf. This needs to be verified.

Figure 50: North Entrance

Directional signage to primary uses within building.
The interior signage at the Recreation Center is limited and typically does not meet ADA standards. Some permanent rooms and spaces are clearly identified, but the signage is not mounted at consistent heights or locations and lacks the required raised lettering and Braille characters.

Doorways and Door Hardware.
Almost without exception, the interior doors and doorways at the Recreation Center do not meet ADA accessibility standards. This is typically due to one or more of the following conditions:

- Lack of appropriate hardware. Most doors have standard doorknobs, which cannot be operated with a closed fist or without grasping. Lever handles or simple push-pull hardware are required/
- Lack of adequate side clearance at doors. A minimum 18 inch clearance is required at the latch-pull side of any passage or entry door. In some cases this is the result of furniture placed too close to the door; in other cases the door swing or location is problematic. In addition, where automatic door closers are used, a minimum 12 inch clearance is also required at the latch push side; however, few if any automatic closers were noted at Town Hall other than at the restrooms.
- In many cases the doors opening off the main corridor are set in deep recesses, which do not allow the required latch side clearances.
- Where original double (pair) doors exist, the overall opening size is approximately 5 feet 4 inches. Each door leaf is approximately 32 inches wide, below the ADA standard of 36 inches.

Figure 51: ADA non-compliant door width

Access to staff and other services.
Signage and floor; functionality (height and visibility).
As noted above, the interior signage at the Recreation Center does not generally meet ADA standards.

Restroom facilities.
Overall, no ADA-compliant restroom facilities are present at the Recreation Center. There are numerous toilet rooms in varying conditions of disrepair. In some instances efforts have been made to provide some degree of accessibility, but full accommodation is not available.

In most cases, however, the restrooms are large, and can probably be retrofitted to allow full ADA compliance within the available space. There is one toilet room designated as accessible. While the room itself is large enough to allow full compliance, the following elements do not meet ADA standards:

- Door hardware
- Grab bars
- Rear wall clearance at toilet
- Lavatory handles
- Lack of closure panel or insulation at water piping under lavatory
- Placement of paper towel dispenser

Emergency communication equipment.
The building is equipped with a five alarm system, and horn/strobe units were noted at several locations. However, a full survey of the coverage of these signaling devices was not conducted, and it should be assumed that significant portions of the building do not have compliant audio-visual signaling coverage.

Issues with access to other specialized services.
Accessible circulation within the building and access to individual rooms and spaces is compromised by door hardware and doorway constraints, as discussed above. There is no elevator or chair lift for internal access to the lower level, and no accessible exterior entrance door to that level is available. The raised gymnasium stage and backstage areas are also not accessible.

6. Barriers that limit access to existing building.
Description of each barrier and nature of limitation.

Condition of parking and pathway surfacing.
Parking area and accessible routes are in variable condition. In some cases, slopes exceed ADA maximums. Parking spaces and access aisles are not dimensionally consistent. A van-accessible space is not identified.

Ramps and Doors.
The main (east) entrance door has a non-compliant ramp and threshold. The south entrance is generally accessible but requires paving and surfacing corrections. The north entrance has a non-compliant ramp and landing, as well as deteriorated paving along its access route.

Signage and Service Locations.
Signage is generally non-compliant, as discussed above.

Restroom Facilities.
There are no fully accessible restrooms in the building. See above for additional detail.

Gymnasium Stage and Backstage Areas.
These areas are not accessible, and no equivalent accommodation exists.

7. Short Term Site Improvements.
Accessible Parking.

- Regrade and resurface accessible parking at north entrance, in conjunction with corrections to the access ramp and landing. Provide ADA-standard parking spaces and access aisle(s).
- Correct paving at base of south entrance ramp to eliminate vertical gap between asphalt and concrete.
- Re-stripe and designate at least one van-accessible space and access aisle.

8. Long Term Site Improvements.
   Parking Location.
   - Access the actual needs for and optimum locations of accessible parking based on projected uses of different areas of the building. For example, there are no current programs or activities using the basement (lower) level, so the three designated parking spaces at the east side parking lot are of little or no benefit.

9. Short Term Building Improvements.
   North Entrance.
   In conjunction with accessible parking corrections noted above, reconstruct or replace entrance ramp to provide top landing within ½ inch of the building floor and to eliminate excessive gaps between planks. Verify that one door leaf is 36 inches wide; replace doors with "unbalanced" set as necessary. Consider adding a power door operator for consistency with other Town buildings.

   South Entrance.
   Resurface (grind or overlay) concrete landing and/or ramp to eliminate uneven "step" at top of ramp.

   Main Entrance.
   The dimensional limitations of this space do not allow the installation of and ADA-compliant ramp. The current ramp excessively steep and lacks handrails and a level bottom landing as such it may pose a safety hazard, particularly for unattended wheelchair users. Consider removing the interior and exterior ramp elements and returning to the original configuration of the entrance.

   Interior Signage.
   Provide consistent ADA-standard signage for all accessible doorways, routes and spaces.

   Door Hardware – Priority Items.
   Provide lever-handle hardware at any doors expected to be used by the general public. Ensure single-action release (from the room or exit side) of doors subject to locking (i.e. no separate deadbolts, etc.).

   Door Clearances – Furniture Interference.
   Remove or relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

10. Long Term Building Improvements.
    Door Hardware – Remaining Items.
    Provide lever-handle hardware at remaining doors. Include tactile warning on backside of handle at doors to hazardous locations.

Door Clearances and Swings.
Reconfigure door openings and/or change door swings to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

Alarm System Upgrades.
Provide audio-visual signaling at all required areas of the building.

Pembroke ADA Accessibility
Survey and Recommendations
Council on Aging 149 Center Street.

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2008 to evaluate the condition of ADA-mandated accessibility at the Council on Aging in Pembroke, Massachusetts. After a description of the site and interior conditions of the building, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Council on Aging at 148 Center Street.

Figure 52: Pembroke Council on Aging

3. Name and Location of Site.
   The Council on Aging is located on a 2.41 acre Town-owned site (Parcel C9-46), accessed primarily from Center Street to the north, It is adjacent to the Community Center/Library parcel to the north and east.

4. Existing Condition of Facility.
   Existing Conditions.
   Primary Uses: The Council on Aging is used for typical community service purposes. There is regular public access on an individual and group basis. The Center offers on-site and meals-on-wheels programs, social events, as well as counseling and medical support services.

   Hours of Operation: The Council on Aging is open weekdays during normal business hours, with frequent evening and occasional weekend openings for parties, meetings, etc. It has no other formal municipal role.

Employee Access Needs: Council on Aging employees and volunteers have access needs similar to that of the general public.

Nature of Site and Building Development.
The Council on Aging building was initially constructed in 1924, and has received various modifications over the years. The Pembroke Assessor's records indicate a total of 3,834 square feet of floor space, with a current building value of $930,700 as of August, 2019.

Surrounding Town uses include the Library to the east and the Community Center to the north both of which share some degree of common pedestrian and vehicle access, particularly some parking which is shared with the Library.

5. Conditions of Facility Access.
Approach to parking lot, parking spaces and signage.
The Council on Aging is marked by a yard sign along Center Street and another above the main entrance, both clearly visible from the public way. The parking area is paved and contains approximately 13 marked parking spaces. Two of the marked spaces are designated as accessible. These spaces, however, are located next to a secondary, non-accessible entrance door at the south side of the building. The spaces have the correct signage, but there is no designated van-accessible space.

There is no direct sidewalk access from a public way.

Additional parking, including designated accessible spaces, is shared with the adjacent Library.

Figure 53: Council on Aging Parking Lot

The condition of accessible parking spaces and accessible routes is generally good, with some minor deterioration of asphalt pavements. The sloped pathway to the rear (east) Council on Aging entrance is generally compliant but has gaps or steps in excess of ½ inch due to differential settlement of pavement.

Entrance and access to primary uses.
Doors and Sills – west and east entrances.
Both entrances are accessed by ramps. The west (Center Street) ramp has been recently installed and appears to be fully ADA-compliant. The east ramp at the Library side is

older, and is ADA-compliant in its overall dimensions, however, there is differential settlement between pavements at the intermediate landing, which has resulted in weed growth and excessive vertical and horizontal gaps of ½ inch or more.

Figure 54: Library ramp

Both exterior doors have power operators. The interior vestibule at the west entrance is non-ADA compliant due to the limited distance between the inner and outer doors; 4 feet 8 inches is provided instead of the required 7 feet (7'6" may actually be required in this case due to the large (42" wide) interior door. However, this may not be a violation if the inner door is fixed in its open position whenever the facility is in operation.

There is only 12 inches of space at the latch-pull side of the interior door, where 18 inches is required. The primary uses within the building are generally accessible to persons with disabilities, with specific conditions of non-ADA compliance noted below.

Figure 55: The COA interior doors

Directional signage to primary uses within building.
The interior signage at the Council on Aging is limited and does not meet ADA standards. Few of the permanent rooms and spaces are clearly identified. Signs are mounted on doors instead of on the wall adjacent to the latch, and there are no Braille characters.

Doorways and Door Hardware.

With the exception of the exterior entrance doors and restroom door, most doors and doorways at The Council on Aging do not conform to ADA accessibility standards. This is typically due to one or more of the following conditions:

- *Lack of appropriate hardware*. Most doors have standard doorknobs, which cannot be operated with a closed fist or without grasping. Lever handles or simple push-pull hardware are required.
- *Lack of adequate side clearance at doors*. A minimum 18 inch clearance is required at the latch-pull side of any passage or entry door. This was specifically noted at the interior door at the west entrance and at one or more interior locations.
- *Size of door leaf*. At one or more locations it was noted that the width of individual door leaves at double (French) doors was 24 inches, where ADA requires a minimum clear width of 32 inches for accessible doorways (this is typically achieved with a minimally 36 inch wide door leaf).

Service Counter.

Height – transaction area.
The main reception desk counter is 39 inches high, which exceeds the ADA maximum of 36 inches.

Figure 56: The COA Non-ADA compliant service counter

Access to staff and other services.
Signage and floor; functionality (height and visibility). As noted above, the interior signage at the Council on Aging does not typically meet ADA standards.

Restroom Facilities.
There is a single unisex toilet room for public use behind the reception desk, and a second toilet room in the rear of the building, service Kitchen staff only. The public toilet room offers some degree of accessibility, but there are several non-compliant conditions which should be corrected. These include the following:
Public Unisex Toilet Room.

This room is not designated as accessible. However, it has certain ADA-compliant elements:

- There is an accessible toilet with grab bars.
- There is an accessible lavatory.
- Door hardware is lever-type.
- Overall floor space appears adequate.

However, the accessibility of the room is compromised by the following:

- A large utility sink has been installed between the toilet and the lavatory, reducing the available clearance at the back wall to 50 inches. The ADA required minimum is 60 inches.
- There is insufficient clearance between the door and the lavatory; this may be addressed by modifying the door swing or relocating the lavatory. A smaller lavatory may also be considered.

Figure 57: The COA public unisex toilet room.

Emergency Communication Equipment.
The building is equipped with a fire alarm system, and horn/strobe units were noted at several locations. However, a full survey of the coverage of these signaling devices in all accessible portions of the building was not conducted.

Issues with access to other specialized areas.
Multi-purpose Room Stage. There is a small raised stage across the east end of the Multi-purpose Room, with a single step up approximately 8 inches above the main floor. There is no ramp or lift and this area is therefore not accessible. However, it appears that the activities which take places on this low stage can also be accommodated elsewhere in the room. If that is not the case, the installation of an access ramp should be considered for full, permanent accessibility.

6. Barriers that limit access to existing buildings.
Description of each barrier and nature of limitation.
Condition of parking and pathway surfacing.
Parking areas and accessible routes are in generally good condition, but pavement settlement may locally exceed ADA standards. No van-accessible space is identified,

although there appears to be room to provide the space and access aisle of the required dimensions.

Ramps and Doors.

- The main (west) entrance has a non-compliant interior vestibule, which lacks adequate space between the inner and outer doors and latch-pull clearance at the inner door. This is likely to pose a barrier to a person using a wheelchair unless the inner door is held open.

Signage and Service Locations.

- Signage is generally non-compliant, as discussed above. Service locations within the building are generally accessible but there are problems with door configuration and operation and service counter height.

Counters and Other Work Surfaces.

- See above for counter height limitations at public service locations.

Restroom Facilities.

- There is no designated accessible restroom, and modifications are needed at the single unisex public toilet to make it accessible. See above for additional detail.

Other Issues.

- See above for consideration of the raised stage area at the multi-purpose room.

7. Short Term Site Improvements.
Accessible Parking.
   - Re-stripe and designate a van-accessible space and access aisle.
   - Relocate all accessible parking for optimum proximity to the west entrance ramp.

   Ramp Surfaces.
   - Correct gaps and steps at the intermediate landing of the east (library) side ramp. This may involve grinding, feathering or replacement of asphalt or concrete paving.

8. Long Term Site Improvements.
None Noted.

9. Short Term Building Improvements.
Unisex Toilet Room Accessibility.
   - The public toilet room requires several modifications to make it fully accessible.
   - Provide ADA-compliant signage.
   - Remove utility sink to allow 60 inches rear-wall clearance at toilet.
   - Relocate lavatory and/or modify door swing to provide required clearance at door.

   Interior Signage.
   - Provide consistent ADA-standard signage for all accessible doorways, routes and spaces.

   Door Hardware – Priority Items.

- Provide lever-handle hardware at any doors expected to be used by the general public.
- Ensure single-action release (from the room or exit side) of doors subject to locking (i.e., no separate deadbolts, etc.).

Service Counters – Interim Accommodation.

- Where ADA-accessible height (36" or less) counters are not available, ensure that alternate accommodation is available. This can include a desk or table of appropriate height in the same service area, equally accessible to all users.

Door Clearances – Furniture Interference.

Remove and relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

10. Long Term Building Improvements.

West Entrance Vestibule.

Reconfigure the vestibule and/or inner door to provide the required door clearance dimensions in the vestibule. This will require additional design analysis, but may involve reducing width or changing the swing of the inner door. Building Code considerations may also apply, based on the occupancy classification and number of occupants in the building.

Door Leaves – Double Door Locations.

Replace double 24 inch wide door leaves with a single 36 inch wide door plus a 12 inch fixed sidelight (or inactive leaf, which can be secured with operable top and bottom bolts).

Service Counter – Transaction Height.

Provide a permanent section of the Reception counter at ADA-compliant height (36 inches or less). This section should have the same approach path and access to customer services as higher-level sections.

Door Clearances and Swings.

Reconfigure or relocate door openings and/or change door swings to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer. This will primarily affect the west entrance vestibule, as discussed above.

Multipurpose Room Stage.

If equivalent accommodation cannot be provided at the main floor level, provide a chair lift or ramp for access to the stage.

Alarm System Upgrades.

Provide audio-visual signaling at all required areas of the building.

Pembroke ADA Accessibility
Survey and Recommendations
Pembroke Public Library
142 Center Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2008 to evaluate the condition of ADA-mandated accessibility at the Library in Pembroke, Massachusetts. After a description of the site and interior conditions of the building, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Public Library at 142 Center Street.

Figure 58: Pembroke Public Library

3. Name and Location of Site.
   The Library is located on a 34.19 acre Town-owned site (Parcel D9-1), accessed primarily from Center Street to the west. It is adjacent to the Town Hall and Police Station parcels to the north and the Community Center parcel to the west. The Recreation Center is located to the north of the Library, on the same parcel.

4. Existing Condition of Facility.
   Existing Conditions.
   Primary Uses: The Library is used for typical public and library administrative purposes. There is general public access.
   Hours of Operation: The Library is open Monday through Saturday during typical business hours, with evening hours on most weekdays, and Sunday hours from October through May. It has no secondary municipal function.
   Employee Access Needs: The access needs of Library administrative staff can be assumed to be the same as that of the general public.

   Nature of Site and Building Development.
   The Library is a single-story framed structure with limited second-floor areas, constructed in 1998. For all buildings on the parcel (The Recreation Center and the Library), the Pembroke Assessor's records indicate a total of 68,618 square feet of floor space, with a current building value of $7,706,600. For the purposes of this report, we estimate that the Library itself contains approximately 22,000 square feet and has a building value $2,466,112.

Surrounding Town Uses.
These include tennis and basketball courts plus the Recreation Center, Town Hall, and Police Station to the north, and the Community Center to the west, all of which share some degree of common pedestrian and vehicle access, as well as parking.

5. Conditions of Facility Access
The Pembroke Public Library is the newest of the buildings surveyed, constructed approximately twenty year ago. As such, its design incorporated ADA and Massachusetts Architectural Access Board standards, and it remains compliant in all substantial respects. Minor non-compliant items are discussed below.

Approach to parking lot, parking spaces, and signage.
The Library is marked by a free-standing yard sign at the driveway entrance and a single sign above the main building entrance, both visible from Center Street. The parking areas in front of the building and at the south side are paved and contains approximately 59 marked parking spaces, 5 of which are designated as accessible. Signage for these spaces is inconsistent and typically is not provided at the centerline, head-on position. There is no marked, van-accessible space, although at least one of the marked spaces and its access aisle appear to meet the required dimensions.

Figure 59: Pembroke Library Handicapped Parking Space

Some of the accessible and standard parking spaces noted above may be shared by users of the adjacent Community Center to the west. The condition of accessible parking spaces and the accessible route to the building entrance is generally good. Minor differential settlement of concrete paving was noted near the main entrance, where a gap in excess of the ADA maximum ½ inch was noted.

Entrance and Access to Primary Uses.
Door and Sill – Main (front) entrance.
The main entrance is accessible, and is provided with a power door operator.

All other public entrances, including the rear Terrace door, are also accessible.

Directional Signage to Primary Uses within Building.
The interior signage at the Library is typically in conformance with ADA standards.

Doorways and Door Hardware.

Most of the doors and doorways at the Library conform to ADA accessibility standards. Minor non-compliant conditions were observed, which primarily involved the following:

- Lack of adequate side clearance at doors. A minimum 18 inch clearance is required at the latch-pull side of any passage or entry door. This is typically the result of furniture placed too close to the door; the necessary clearance is generally available.
- In addition, where automatic door closers are used, a minimum 12 inch clearance is also required at the latch push side.
- Lack of tactile warning at doors to hazardous locations.

Water Fountain Not Operational.
This was presumably a temporary condition at the time of our visit. Alternate accommodations in the Children's area was available.

Access to Staff and Other Services.
Signage and floor; functionality (height and visibility).
As noted above, the interior signage at the Library typically conforms to ADA standards.

Restroom Facilities.
All of the public restrooms at the Library are fully accessible in conformance with ADA standards, with one noted exception;

Figure 60: Missing insulation at hot-water piping below lavatory, Men's room

This may have been the result of an incomplete repair and was pointed out to Library staff.

Emergency Communication Equipment.
The building is equipped with a fire alarm system, and horn/strobe units were noted at several locations. However, a full survey of the coverage of these signaling devices was not conducted.

Issues with access to other specialized services.
None noted.

6. Barriers That Limit Access to Existing Building.
Description of each barrier and nature of limitation.
Condition of parking and pathway surfacing.
Parking area and accessible route are in generally good condition, but spaces lack some or all required signage. A van-accessible space is not identified.

Ramps and Doors.
Minor differential settlement of concrete sidewall sections.

Signage and Service Locations.
Signage is generally compliant.

Restroom Facilities.
No barriers noted.

7. Short Term Site Improvements.
   Accessible Parking.
   - Restripe and designate van-accessible space and access aisle. Provide required signage.

8. Long Term Site Improvements.
   Pathways.
   - Along accessible path to main entrance, install high-density joint filler at gaps between sections of paving, where gaps exceed ½ inch horizontally. Fill and grind adjacent surfaces where vertical steps exceed ½ inch.

9. Short Term Building Improvements.
   Door Clearances – Furniture Interference.
   - Remove or relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

   Maintenance and Repair.
   - Repair drinking fountain.
   - Insulate hot water piping under Men's Room lavatory.

10. Long Term Building Improvements.
    Door Hardware.
    - Provide tactile warning on backside of handle at doors to hazardous locations.

Pembroke ADA Accessibility
Survey and Recommendations
Fire Station
172 Center Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed on July 18, 2008 to evaluate the condition of ADA mandated accessibility at the Fire Station in Pembroke, Massachusetts. After a description of the site and interior conditions of the building, recommended improvements are provided in Section 7.

2. Specific Site.
   The subject property is the Pembroke Fire Station at 172 Center Street, at the corner of Elliot Avenue.

Figure 61: Pembroke Fire Station

3. Name and Location of Site.
   The Fire Station is located on a 2.01 acre Town-owned site (Parcel C9-30), fronting primarily on Center Street to the west, with additional vehicle access from Elliot Avenue to the south. It is not adjacent to any other Town facilities but lies approximately 600 feet to the south of the Town Hall/Police Station/Recreation Center/ Council on Aging/Library complex.

4. Existing Condition of Facility.
   Existing Conditions.
   Primary Uses: The Fire Station is used for typical Public Safety administrative, staff and emergency service purposes. There is limited public access.
   Hours of Operation: The Fire Station is a first-responder facility and is open 24 hours a day, seven days a week. It has no secondary municipal function.
   Employee Access Needs: Fire Department employees include fire fighters and some administrative staff. Fire fighters are by definition able-bodied as a condition of their job responsibilities and have no special accessibility requirements. The access needs of administrative staff and public visitors to the facility are assumed to be the same as that of the general public.

Nature of Site and Building Development.
The Fire Station is a 2-story masonry structure with walk-out basement, initially constructed in 1976. The Pembroke Assessor's records indicate a total of 11, 080 square feet of floor space, with a current building value of $1,342,800.

Surrounding Town Uses.
The Fire Station has no immediately adjacent Town uses; the municipal complex is approximately 600 feet to the north, along the same street but separated by commercial properties.

5. Conditions of Facility Access.
Approach to Parking Lot, Parking Spaces, and Signage.
The Fire Station is marked by a single sign above the apparatus bay doors, clearly visible from Center Street. There are three paved parking areas around the building, containing approximately 36 marked parking spaces. Two of the marked spaces are designated as accessible, one near the apparatus bays facing Center Street and one along the north side access driveway. There are not marked access aisles or a van-accessible space. There is no direct sidewalk access from a public way.

The condition of accessible parking spaces and the accessible route to the building entrance is poor. The north side accessible space has excessive cross-slope and back to front slope.

Figure 62: Pembroke Fire Station Handicapped Parking Space.

The accessible space adjacent to the apparatus bays has a vertical sign but no pavement marking for the space or its access aisle. In addition, the driveway leading to this space is marked "Do Not Enter", the path to the building entrance crosses an emergency vehicle exit path, and the condition of pavement is poor.

The sidewalks leading from the parking areas to the main Fire Station entrance have excessive slope, both in the direction of travel and across it. They lack the railings and level landings which would be required for ADA-compliance. Due to the necessary vertical rise, it does not appear that there is sufficient space to correct these deficiencies within the current alignment of the sidewalk or the location of accessible parking.

Entrance and Access to Primary Uses.
Door and Sill – Main (front) entrance.
The main entrance is not accessible, primarily due to an excessive vertical step (approximately 2 ½ inches) between the exterior landing and the building floor. In addition, the exterior landing exceeds the 1:48 ADA maximum slope. The outer door swings out, and may also interfere with ADA door clearance requirements at the landing. The threshold at the interior side of the entry door is also higher than the ADA maximum of ½ inch. Door hardware is non-compliant. There is no power door operator; although this is not required it does not meet the standard of other Town buildings and can reduce certain door clearance requirements.

Figure 63: Pembroke Fire Station Main (front) Entrance

Directional Signage to Primary Uses within Building.
The interior signage provided at the Fire Station is limited and typically does not meet ADA standards. Some permanent rooms and spaces are clearly identified, but the signage is not mounted at consistent heights or locations and lacks the required raised lettering and Braille characters. However, we note that most public access to the Fire Station is limited to the main entrance vestibule.

Doorways and Door Hardware.
No interior or exterior doors or doorways observed at the Fire Station conform to ADA accessibility standards. This is typically due to one or more of the following conditions:

- Lack of appropriate hardware. Most doors have standard doorknobs, which cannot be operated with a closed fist or without grasping. Lever handles or simple push-pull hardware are required. In the few instances where lever-type hardware is provided, door clearances are non-compliant.
- Lack of adequate side clearance doors. A minimum 18 inches clearance is required at the latch-pull side of any passage or entry door. In some cases, this is the result of furniture placed too close to the door; in other cases the door swing or location is problematic. In addition, where automatic door closers are used, a minimum 12 inches clearance is also required at the latch push side; however, few if any automatic closers were noted at the Fire Station, except at exterior doors.

Counter and Service Windows.
ADA height for transaction area – 36 inches maximum.
The writing counter is approximately 42 inches high, and the service windows are between 41 inches and 45 inches high, which all exceed the ADA limit of 36 inches.

Access to Staff and Other Services.
Signage and floor; functionality (height and visibility):
As noted above, the Interior signage at the Fire Station does not generally meet ADA standards.

Lower Level Accessibility:
The lower level contains no public functions and is not currently accessible from the exterior or interior of the building. A kitchen/lounge area, laundry, storage area and gym are included. There is no elevator or chair lift to provide accessibility to the main floor.

There is an exterior doorway which has an ADA-compliant threshold, but door clearances and exterior grading do not currently allow access.

Restroom Facilities.
The first-floor Men's and Women's restrooms at the main level of the Fire Station offer some degree of accessibility, but there are multiple non-compliant in several respects:

First Floor Men's Locker /Toilet Room
This room is not designated as accessible. The exterior signage is non ADA-compliant. The interior of the locker and toilet room is non-compliant in several respects:

- Supply and waste piping beneath the lavatories is not covered or insulated.
- Mirrors are mounted above the ADA maximum of 40 inches.
- One toilet stall has been outfitted for accessibility; however, it lacks regulation grab bars (one is mounted to the stall door, and the rear grab bar is missing), and the stall is too narrow.
- The urinal stall is narrower that the ADA standard of 30 inches, and the urinal may be mounted too high.
- The showers lack accessible thresholds, transfer space, seats and controls. It is noted that these showers are intended for fire fighter use only, and that ADA-compliance is optional.

Figure 64: Fire Station Men's Restroom

First Floor Women's Room.
This room is also not designated as accessible. The exterior signage is not ADA-compliant. The interior of the toilet room is non-compliant in several respects:

- Insufficient clearance between the toilet and lavatory (60 inches clear space at the back wall is required for the toilet).
- Rear wall grab bar is missing.
- Insufficient space between toilet and opposite wall (42 inches required, 31 inches provided).
- The bottom edge of the mirror is mounted above the maximum 40 inch limit.
- Supply and waste piping beneath the lavatory is not covered or insulated.
- Lavatory lacks lever-handle faucets.
- Door hardware and clearance is non-compliant.

We note that the room is probably too small to be made fully accessible.

Figure 65: Fire Station First Floor Women's Room

Emergency Communication Equipment.
The presence or extent of a fire alarm system, including pull stations, detectors and horn/strobe units was not verified at the time of our inspection.

Issues with access to other specialized services.
None noted.

6. Barriers that limit access to existing building.
   Description of each barrier and nature of limitation.

   Condition of parking and pathway surfacing.
   Parking area and accessible route are in generally fair condition, but slopes exceed ADA maximums. A van-accessible space is not identified.

   Ramps and Doors.
   The main entrance door has a non-compliant landing and threshold.

   Signage and Service Locations.
   Signage is generally non-compliant, as discussed above.

Restroom Facilities.
There are partially-accessible restrooms at the main floor level, but not all elements are compliant. See above for additional detail.

Service Windows and Counters.
Service windows and counters exceed the ADA maximum height.

Interior Doors and Doorways.
Doors typically lack accessible hardware. Many doorways lack the required latch-pull side clearance, due to architectural configuration or furniture interference.

7. Short Term Site Improvements.
   Accessible Parking.
   In conjunction with reconstruction/realignment of the entry walkway or ramp, relocate accessible parking spaces. Ensure compliant (1:48 maximum) slopes at parking spaces and access aisle(s). Provide a designated van-accessible space.

   Entry Walkway and Landing.
   Reconfigure walkway to provide level landings and ADA-maximum slopes. Depending on location of accessible path, the walkway may need to be redeveloped as a ramp with compliant railing, etc. Provide raised landing within ½ inch of the interior floor elevation. Where possible, provide a direct accessible walkway to the public sidewalk on Center Street.

8. Long Term Site Improvements.
   None noted.

9. Short Term Building Improvements.
   Entrance Threshold and Door.
   In conjunction with walkway and exterior landing modifications noted above, install new entrance doorway with compliant threshold, hardware and operation. A power operator is recommended for consistency with other Town buildings.

   Interior Signage.
   Provide consistent ADA-standard signage for all accessible doorways, routes and spaces.

   Door Hardware – Priority Items.
   Provide lever-handle hardware at any doors expected to be used by the general public. Ensure single-action release (from the room or exit side) of doors subject to locking (i.e., no separate deadbolts, etc.).

   Service Window and Counter – Accessible Communication.
   Reconfigure one or both service windows to provide a maximum service height of 36 inches. Lower some or all of the writing counter to ADA-compliant height.

   Door Clearances – Furniture Interference.
   Remove or relocate furniture to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

10. Long Term Building Improvements.

Door Hardware.

Provide lever-handle hardware at remaining doors. Include tactile warning on backside of handle at doors to hazardous locations.

Door Clearances and Swings.

Reconfigure door openings and/or change door swings to allow 18 inches clear at the latch-pull side of doors, plus 12 inches clear at the latch push side where the door is equipped with a closer.

Toilet Facilities.

Provide at least one ADA-compliant toilet room for public and administrative staff. Subject to regulatory approval, this may be allowed as a unisex facility. The larger locker/shower/toilet room may be considered for firefighters use only.

Pembroke ADA Accessibility
Survey and Recommendations
Stetson Park
Plymouth Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at Stetson Beach in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

2. Specific Site.
   Stetson Beach is a small sparsely developed public area accessed from an at-grade gravel parking area on the northeast side of Plymouth Street between the street and Stetson Pond.

Figure 66: Stetson Park Public Beach

3. Name and Location of Site.
   Size and Ownership.
   The property comprises a single undeveloped property on the southwest side of Plymouth Street between the street and Chaffin Reservoir.

4. Existing Condition of Site.
   Existing Uses.
   Primary (developed) uses.
   Stetson Park contains a dirt parking area, small float dock at the north side of the parking area. Except for the areas immediately adjacent to the float dock and the boat ramp, the shoreline is vegetated. A single portable toilet is placed at the north side of the parking area. Access from the parking area to the float is from a short steep dirt path. Access to the unimproved boat ramp is a graded dirt slope directly from the parking area. There is a public beach sign indicating hours of use and beach rules.

   Secondary (informal) uses.
   Informal uses may include fishing in the pond from the shore or the float dock. Swimming may occur in the immediate area of the float dock or the boat ramp.

   Nature of Development.
   Parking for Stetson Park is provided in an at grade gravel lot of roughly 20,000 square feet and containing space for approximately 30 vehicles. No parking stalls are marked;

no handicapped spaces are indicated. The restroom facility (portable toilet) provided is not ADA compliant. No emergency telephone is provided.

Surrounding Land Uses (including linkages to other parks)
Chaffin Reservoir sit to the south east of the property and the remainder of surrounding land use is residential.

Figure 67: Stetson Park Float Dock

5. Conditions of Site.
   Approach, parking and signage.
   The Park is not well marked from the street. The parking area is not paved and contains no markings of parking spaces. Both the float dock and the boat ramp are accessed by steep unimproved slopes.

   Entrance and Access to Primary Uses.
   - Directional signage to primary uses: None
   - Access to Float, swimming area, fishing and boat ramp; not developed, not marked.

   Restroom Facilities.
   Portable toilet.

   Emergency Communication Equipment: None

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.
   Lack of accessible surfacing. In order for a pathway to be considered an ORAR, the surfacing has to be accessible. Acceptable surfacing material include, concrete, asphalt, crushed stone, packed soil and soil stabilizer. The only pathways are loose gravel or sand, which is not considered an accessible surface.

7. Short Term Site Improvements.
   - Short term site improvements for accessibility would include defining the pathway from the parking to the beach with a minimum width of 60 inches and

running a removable beach mat from the parking to either the float dock ramp or the normal recreation water level of the pond.

- An option for short term improvements to address the accessible parking spaces would include paving two spaces with room for an isle and add line striping indicating that handicap spaces. Access from the accessible isle to the ORAR is required.
- To address access to the float dock, a transition plate would have to be installed between the edge of the ramp and the removable beach mat leading to the ramp. This would eliminate the large vertical gap (exceeding ½ inch) between the two surfaces.

8. Long Term Site Improvements.
    - A long term goal would include fine grading and compaction of the existing boat ramp to improve the eroding gravel and adding an accessible ORAR leading down to the boat ramp from the parking area.

Pembroke ADA Accessibility
Survey and Recommendations
Little Sandy Park
Woodbine Avenue

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at Little Sandy Park in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

2. Specific Site.
   Little Sandy Park is a small public area providing access from Woodbine Avenue to a beach/swimming area on Little Sandy Pond.

Figure 68: Little Sandy Park, Pembroke, MA

3. Name and Location of Site.
   Size and Ownership.
   The Park property comprises of a Town road right of way approximately 20 feet wide and 150 feet long at the intersection of Woodbine and Shepard Avenue. The Town of Pembroke owns no other property in this immediate area.

4. Existing Condition of Site.
   Existing Uses.
   Primary (developed) uses.
   Little Sandy Park comprises of an unimproved sand strip, approximately 32 feet wide, connecting the paved portion of Woodbine Avenue to Little Sandy Pond. A single portable toilet is placed at the northeast side of the sandy area. A small equipment building is located approximately 20 feet from the paved portion of Woodbine Avenue. No on-street parking is indicated in the vicinity of the Park. Three picnic tables and two wooden benches are located on the northern side of the sandy area. The benches sit parallel with a black vinyl chain link fence that separates the sandy beach area from the adjacent neighbor's property. The distance from the paved street to the water is approximately 105 feet. There is a floating dock with a ramp connecting to the beach. The dock is 5 feet wide, parallel with the southern property line and extends approximately 50 feet out into the pond.

Secondary (informal) Uses.
Informal uses may include swimming, fishing, picnicking, and boating.

Nature of Development.
Parking for Little Sandy Park is on-street with spaces for perhaps 3 vehicles. No parking stalls are marked; no handicapped spaces are indicated. The restroom facility provided is not ADA compliant. No emergency telephone is provided.

Surrounding Land Uses (including linkages to other parks).
Little Sandy Pond runs along the northwest edge of the property. The remainder of surrounding land consists of residential use.

5. Conditions of Site.
   Approach, Parking and Signage.
   The Park is well marked from the street. Parking is not well defined and the swimming area is accessed by steep unimproved paths.

   Entrance and Access to Primary Uses.
   - Directional signage from street to primary uses: NONE
   - Access to picnic tables and swimming area: There are no outdoor recreation access routes (ORAR) within the entire site. In order for there to be access to the picnic tables and swimming areas, they need to be along an ORAR.
   - Restroom Facilities: portable toilet, not ADA compliant.
   - Emergency Communication Equipment: NONE

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.

   Lack of accessible surfacing. In order for a pathway to be considered an ORAR, the surfacing has to be accessible. Acceptable surfacing material include a beach mat, concrete, asphalt, and crushed stone, packed soil and soil stabilizer. The only available surfacing is sand, which is not considered an accessible surface.

   There is no accessible parking. Space constraints on the street may preclude delineating ADA compliant parking.

7. Short Term Site Improvements.
   - Short term site improvements for accessibility would include running a removable beach mat from the paved street to the normal recreation water level of the pond.
   - The current portable toilet on site is not ADA compliant. It is recommended to update this to an ADA compliant portable restroom and provide an ORAR, whether it is a met or one of the other acceptable surfaces, to the compliant restroom.
   - An option for short term improvements to address the accessible parking space would include paving one space with room for an isle and add line striping indicating that handicap space. Access from the accessible isle to the ORAR is required.

8. Long Term Site Improvements.
   Long term options include acquisition of property and providing a larger paved area for a designated parking lot, paving a path from the parking to the restroom facility and creating

an ORAR along the northern perimeter where the tables can then be accessed from. Also, addition an accessible picnic table is recommended.

Pembroke ADA Accessibility
Survey and Recommendations
Town Landing
Wampatuck Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at the Town Landing in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

2. Specific Site.
   Town Landing is a mall developed public area on the east shore of Oldham Pond, accessed from a paved parking area or diagonal off-street parking on the west side of Wampatuck Street.

Figure 69: Town Landing Beach Area

3. Name and Location of Site.
   Size and Ownership.
   One parcel land owned by the Town of Pembroke and occupying 0.75 acres comprises the Town Landing. The site is in a residential neighborhood with no undeveloped parcels nearby.

4. Existing Condition of Site.
   Existing Conditions.
   Primary (developed) Uses.
   Town Landing contains paved parking, a small boat launch ramp and adjacent float dock, roughly 21,300 square feet of sandy area with two float docks for swimming, a children's play area, 4 picnic tables and a restroom building. Access from the parking area to the sandy area is through a gate. Access to the play area and swimming floats is across approximately 100 feet of loose sand.

   Secondary (informal) Uses.
   Informal uses are not formally identified but may include picnicking and fishing.

   Nature of Development.

Parking for Town Landing is provided in an at grade paved lot containing marked spaces for 18 vehicles and one marked handicapped space. Off-street parking along Wampatuck Street is provided in 19 marked diagonal spaces; access from Wampatuck Street is through a gate with a 4-inch curb. No sign indicates the handicapped space. A single restroom is provided in a storage building located in the northeast corner of the sandy area. The restroom is not accessible by wheelchair and contains no ADA compliant fixtures. No emergency telephone is provided.

Surrounding Land Uses (including linkages to other parks).
The surrounding land consists of residential uses.

5. Conditions of Site.

Approach, parking and signage.
The park is visible, but not well marked from the street. The parking area is paved and contains marked parking spaces. One handicapped parking space is marked, but no signs indicate its location nor is the gate to the Sandy area included. The pathway to the gate is flat. The parking area slopes to the water at approximately 4 degrees. The sandy area is generally flat between the gate and the play area. The slope to the water is approximately 4 degrees and ends at a 4-inch wide concrete wall along the water. The top of the wall extends approximately 4-inches above the sand; the distance from the top of the wall to the water is approximately 18 inches. The water is approximately 3 inches dep at the base of the wall.

Entrance and Access to Primary Uses.

- Directional signage to primary uses: NONE
- Access to picnic tables, grill, playground and benches: There are no outdoor recreation access routes (ORAR) within the entire site. In order for there to be access to the picnic tables, play area of swimming floats, they need to be along an ORAR. The boat ramp and adjacent float are along the paved surface of the parking area.

Restroom Facilities.

- There is a single restroom in the concrete storage building. Access to the restroom is from the sandy area and involves a 4-inch step to a 14 inch wide apron along the side of the building.

Figure 70: Town Landing Picnic Area

Emergency Communication Equipment: NONE

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.

   Lack of Accessible Surfacing. In order for a pathway to be considered an ORAR, the surfacing has to be accessible. Acceptable surfacing material include a beach mat, concrete, asphalt, and crushed stone, packed soil and soil stabilizer. The only available surfacing is sand, which is not considered an accessible surface.

   Inaccessible Float Docks. The float docks designated for swimming are currently inaccessible due to the top of the concrete wall being raised above the surface of the sand.

7. Short Term Site Improvements.
   - A short-term improvement would include placement of a removable beach mat from the gate to the play areas and placement of another mat perpendicular to the first mat that leads down to one of the float docks. Sand beneath the mat would need to be smoothed and should have a running slope no greater than 10 percent and a cross slope no greater than 5 percent. The running slope and cross slope is recommended, but not required for removable mats.

   - If the mat ran to the edge of the float, the transition between the mat and the float would need to be modified to assure that all height differences were 1 inch or less and that the float was modified to be ADA compliant. This includes adding detectable warning strips along the edges of the float dock, addition a transition plate from the sand to the top of wall/beginning of the ramp to the dock, addition a transition plate from the ramp to the top of the floating dock and adding handrails on both sides of the ramps coming off the dock and into the water.

   - The surface of the play area should receive additional mulch/wood chips to meet the fall height requirements of the play equipment and should extend to the edge of the play equipment safety zones (usually 6 feet from edge). It is recommended that a concrete curb be added around the limits of the play surfacing to contain the wood fiber mulch.

- Provide additional bathroom facilities; for example, an ADA compliant porta-potty until modifications can be made to the existing facilities.

8. Long Term Improvements.
    - Provide a paved ORAR from the entry gate to the playground and bathroom facility.
    - Update the bathroom facility to be ADA compliant.
    - Install poured-in-place rubber safety surfacing at the play area in place of the

Pembroke ADA Accessibility
Survey and Recommendations
Luddam's Ford Park
West Elm Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at the Luddam's Ford Park in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

Figure 71: Luddam's Ford Park, Pembroke, MA

2. Specific Site.
   Luddam's Ford Park is small sparsely developed public area accessed from an at-grade parking area on the west side of West Elm Street.

3. Name and Location of Site.
   Size and Ownership.
   Several parcels of undeveloped land comprise the Park and surrounding area. The Park property comprises of approximately 34.0 acres on two parcels, one of which is owned by the Town of Pembroke (33.59 acres) and the other is owned by Eastern Edison Co (0.41 acres). The Park itself is along the south side of the Indian Head River. The Town of Hanover has a park of the same name along the north side of the river. The river is dammed and forms a pond between the two parks. The Town of Pembroke property on which the Park is located extends to the east side of Elm Street, but is not developed. The property to the west of the park is owned by the Wildlands Trust of Plymouth and is called the Tucker Preserve; it contains 78.58 acres of both marsh land and wooded areas. The Tucker Preserve is accessed by a trail through the western portion of Luddam's Ford Park.

4. Existing Condition of Site.

Existing Uses

Primary (developed) Uses.

Luddam's Ford Park contains several picnic tables, a trailhead, a dam site and a pond. These features are set in a grass area with scattered trees that make up roughly a quarter of the Park property. The rest of the property is wooded. Access from the parking area to the grass portion of the park is through a line of large boulders placed roughly 40 inches apart. Access to the dam, pond, and trailhead is across the grassy area.

Secondary (informal) Uses.

Informal uses and not formally identified may include fishing in the pond and river and picnicking. Direct access to the pond at the right abutment of the dam is provided by a narrow dirt path.

Nature of Development.

Parking for Luddam's Ford Park is provided along the access road and in an at grade gravel lot of roughly 10,500 square feet and containing space for approximately 30 vehicles. No parking stalls are marked; no handicapped spaces are indicated. No restroom facilities are provided. No emergency telephone is provided.

Surrounding Land Uses (including linkages to other parks).

The Town of Hanover sits north of the site on the other side of the Indian Head River Reservoir. Tucker Preserve is to the west and the remainder of the surrounding land consists of mixed residential and agricultural uses.

Figure 72: Luddam's Ford Park Picnic Area

5. Conditions of Site.

Approach, parking and signage.

The Park is not well marked from the street. The parking area is not paved and contains no marking of parking spaces. The grassy area is accessed through gaps in the line of boulders and contains no developed pathway.

Entrance and Access to Primary Uses.
Directional signage to primary uses: NONE

Access to Picnic Tables, Trailhead, and Fishing: There are no outdoor recreation access routes (ORAR) within the entire site. In order for there to be access to the picnic tables, trailhead, and benches, they need to be along an ORAR.

Restroom Facilities: NONE

Emergency Communication Equipment: NONE

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.
   - ***Lack of accessible surfacing***. In order for a pathway to be considered an ORAR, the surfacing has to be accessible. Acceptable surfacing material include a beach mat, concrete, asphalt, and crushed stone, packed soil and soil stabilizer. The only available surfacing is sand, which is not considered an accessible surface.
   - ***Lack of accessible parking spaces***.

7. Short Term Site Improvements.
   - Provide a stone dust pathway from the parking area to the trail head. Move the one accessible picnic table on site to a location that is accessible from the stone dust pathway.
   - An option for short term improvements to address the accessible parking space would including paving two spaces with room for an isle and add line striping indicating that handicap space. Access from the accessible isle to the ORAR is required.

8. Long Term Site Improvements.
   - Provide an ORAR from the stone dust path down to an accessible fishing/viewing area.

Pembroke ADA Accessibility
Survey and Recommendations
Tubb's Meadow Preserve
Access at Monroe Street and Mill Street
Revised August 30, 2018

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at Tubb's Meadow Preserve in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

2. Specific Site.
   Tubb's Meadow Preserve is a large undeveloped area with access form Monroe Street and Mill Street for hiking along dirt roads.

Figure 73: Tubb's Meadow Preserve, Pembroke, MA

3. Name and Location of Site.
   Size and Ownership.
   The Preserve property comprises of three parcels with an area of 137.53 acres, the largest of which occurs west of Monroe Street and east of Center Street. Two smaller parcels occur just northwest of the intersection of Center Street and Mill Street. These parcels and 4 adjacent parcels to the southwest are owned by the Town of Pembroke.

4. Existing Conditions of the Site.
   Existing Uses.
   Primary (developed) Uses.
   Tubb's Meadow Preserve comprises of a pond, abandoned cranberry bogs, trails and woodland in the drainage of Tubb's Meadow Brook. The property is crisscrossed with dirt roads suitable for hiking. Two trailheads are marked with gates and kiosks. No information is posted at the kiosks.

   Secondary (informal) Uses.

Informal uses may include dog walking, mountain biking, fishing in the pond and bird watching.

Nature of Development.
Dirt parking areas at two access points provide parking for Tubb's Meadow Preserve. The parking area off Monroe Street is about 3,900 square feet and has space for approximately 20 cars. The parking area off Mill Street is about 1,400 feet and has space for approximately 6 cars. No marked parking stalls or signage is present at either access; no handicapped spaces are indicated. The dirt road surface is compacted and its width is adequate for access.

Surrounding Land Uses (including linkages to other parks).
The surrounding land use is a mix of residential, agricultural and natural wildlife.

5. Conditions of Site.
   Approach, Parking and Signage.
   The Preserve is not well marked from the street. No trail signs were found. One trials was blocked by a log near the trailhead, and the alternative trail was not suitable for wheelchair access due to its slope.

   Entrance and Access to Primary Uses.
   - Directional signage street to primary uses: NONE
   - Restroom facilities: NONE
   - Emergency communication equipment: NONE

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.
   - There is a log across one of the pathways near the Monroe Street trailhead that exceeds the 2 inch maximum vertical height requirement.
   - The slope on the other pathway that goes around the pathway with the log exceeds the 10 percent maximum slope requirement. The section of this pathway that slopes down to an old look out deck ranges in slope from 8.7 percent to 10.6 percent with a distance of 60 feet. The section of the pathway that ascends that ascends up to the main path ranges in slopes from 10.3 percent to 13.5 percent with a distance of 45 feet. The ADA requirement states that there must be a rest interval every 30 feet for slopes from 8.33 percent to 10 percent and there must be rest intervals every 10 feet for slopes greater than 10 percent.

7. Short Term Site Improvements.
   Remove the log blocking the main pathway.

8. Long Term Site Improvements.
   Slightly regrade the slopes on the second pathway to meet the ADA requirements.

Pembroke ADA Accessibility
Survey and Recommendations
Herring Run Park
211 Barker Street

1. Purpose and Scope of this Memorandum.
   This memorandum summarizes a site survey performed July 5, 2018 to evaluate the condition of ADA mandated access at the Herring Run Park in Pembroke, Massachusetts. After a description of the site and site uses, recommended improvements are provided in Section 7.

2. Specific Site.
   Herring Run Historical Park is a small, sparsely developed public area accessed from an at-grade gravel parking area on the northwest side of Route 14.

Figure 74: Herring Run Historic Landmark

3. Name and Location of Site.
   Size and Ownership.
   Several parcels of conservation land comprise the Park and surrounding area. The Park occupies 49.57 acres on two parcels, both of which are owned by the Town of Pembroke. The site contains two branches of Herring Brook and lower Little Pudding Brook. Surrounding areas are owned by the Town and the Wildland Conservancy of Plymouth and include large undeveloped parcels containing marsh lands and wooded areas held for land conservation.

4. Existing Condition of Site.
   Existing Conditions.
   Primary (developed) Uses.

   Herring Run Park contains two historical displays, several picnic tables, a grill, an old mill site, and two fish ladders. These areas are set in grass with scattered trees. There is a small open lawn area to the north of the parking with two granite benches and a historical

structure. The remaining section of the park is on the other side of two brooks that eventually converge into one running from the southeast corner to north of the parking area. Access from the parking area to the larger side of the park requires pedestrians to cross two brooks. Passage over the first brook is provided by either a flush concrete bridge with wood rails or a wood deck bridge with two step ups on either side. Both bridges lead to the grassy median between the two brooks. Access over the second brook is provided by another wood deck bridge with two step ups on either side or a gravel path leading over the culvert in the southeast corner of the park.

Figure 75: Herring Run Pedestrian Crossing

Secondary (informal) Uses.
Informal uses are not formally identified but may include picnicking and observing herring in season.

Nature of Development.
Parking for Herring Run Park is provided in an at grade lot of roughly 3,200 square feet and containing space for approximately 20 vehicles. No parking stalls are marked; a single handicapped space is indicated by a sign but with no surface markings. No restroom facilities are provided. No emergency telephone is provided.

Surrounding Land Uses (including linkages to other parks).
Willow Brook Farm Preserve sites to the north of Herring Run Park and Mark Preserve sits to the south. The remainder of the surrounding land consists of mixed residential and agricultural uses.

5. Conditions of Site.

Approach, Parking and Signage.
The Park is not well marked from the street. The parking area is not paved and contains no marking of parking spaces. A single sign indicating handicapped parking is in the western end of the parking area near the concrete decked bridge. The pathway to the bridge has a variable slope from 2 to 10 degrees with a cross-slope of 2 to 5 degrees. The area accessed by the concrete bridge is grass and contains no developed pathway.

The concrete bridge is 10 feet long and is 98 inches wide. It has a slope of 3.5 degrees toward the grassy area and has no cross-slope. The bridge has wooded railings that are 48 inches high.

Entrance and Access to Primary Uses.

- Directional signage to primary uses: NONE
- Access to picnic tables, grill, and benches: There are no outdoor recreation access routes (ORAR) within the entire site. In order for there to be access to the picnic tables, grill and benches. They need to be along an ORAR.
- Restrooms facilities: NONE
- Emergency Communication Equipment: NONE

6. Barriers That Limit Access to Existing Uses.
   Description of each barrier and nature of limitation.
   Lack of accessible surfacing. In order for a pathway to be considered an ORAR, the surfacing has to be accessible. Acceptable surfacing material include: concrete, asphalt, crushed stone, packed soil and soil stabilizer. The only pathways are informal open lawn, which is not considered an accessible surface.
   Lack of accessible parking.

7. Short Term Site Improvements.
   There is currently a sign indicating a "designated accessible route", but the route is not accessible. The town is required to make this an accessible route because it is designated as one. A short-term solution to this would be to add a stone dust pathway from the parking area to the concrete bridge and form the concrete bridge to the gravel path over the culvert. The stone dust path should extend to the grill area where there is an annual fish fry.

   An option for short term improvements to address the accessible parking space would include paving two spaces with room form an isle and add line striping indicating that handicap space. Access from the accessible isle to the ORAR is required.

8. Long Term Site Improvements.
   Long term options include extending the ORAR up to the Indian Rock, along the woodland edge to meet the brook, then follow the brook past the house and back to the culvert to create a perimeter path that allows access to all amenities. Adding benches with companion seating along the brook/loop path would enhance the amenities available to all users.


Figure 76: Proposed Long Term Site Improvements

Section 9: GOALS AND OBJECTIVES

The following goals and objectives were developed through an analysis of growth and development, natural resources, various forms of community input and consideration of the goals from the 2005 OSRP. Through discussion with the Open Space Committee, public feedback collected through three community surveys (2005, 2014, and 2017), and two public meetings in the winter of 2017, the refined goals articulate the needs and desires of Pembroke's community.

Goal 1:

Pembroke's abundant water resources are clean and sustainably managed.

- Increase the availability of water-based recreation.
- Protect the town's groundwater and aquifers.
- Manage quantity and quality of groundwater and surface water to protect the town's water resources.
- Promote town-wide water saving techniques.
- Protect and monitor Pembroke's streams, rivers, ponds and wetlands.
- Prioritize remaining parcels along waterways for protection when they become available.
- Support the acquisition of land that will provide for water-based recreation.
- Support the acquisition of land that will increase drinking water supply.
- Develop water-based recreational facilities, including swimming areas, spray parks, boating facilities, fishing areas, etc.

Goal 2:

Future development is consistent with and protects Pembroke's environmental, historic, and cultural resources.

- Prioritize areas of environmental, historic, and cultural significance for protection.

- Explore smart growth strategies to focus growth in developed areas and away from sensitive resources.
- Increase public awareness of existing historic resources and the threats thereto.
- Invest in racially, economically, and age diverse neighborhoods given their projected increase in participation in outdoor recreation.
- Encourage establishment of programming endowments.

Goal 3:

An interconnected network of forest, riparian and wildlife habitats enhance Pembroke's ecological integrity and sustain a resilient landscape.

- Protect and improve Pembroke's threatened habitats and wildlife corridors.
- Extend and connect protected areas to create continuous corridors.
- Educate the public about the value of healthy ecosystems and their services to natural and human communities.
- Monitor and manage invasive species in ecologically supportive ways.

Goal 4:

The citizens of Pembroke enjoy better access and increased recreational use of town open space.

- Increase the availability of all types of trails for recreation.
- Support the acquisition of land and development of new open spaces that can provide a trail network.
- Fill in gaps of existing trail networks.
- Invest in recreation and conservation areas that are within a short walk or bike ride to a large portion of a Pembroke's population.
- Increase access to open spaces in Pembroke.
- Promote the acquisition and development of neighborhood parks where none currently exist.
- Develop amenities supported by neighborhood parks, such as playgrounds, off-leash dog parks, and community gardens.
- Work with community development organizations to improve pedestrian connectivity and walking access to local parks.
- Educate the public about the existence importance, and possible uses of town open space.
- Improve maintenance of the town's recreation areas.

- Improve connectivity of and access to recreational resources.
- Study and plan for bicycle use in Pembroke.
- Develop parks and open spaces that offer amenities that go above and beyond ADA requirements for people with disabilities.
- Ensure that any existing or new trails are fully accessible to people with disabilities.
- Provide neighborhood-oriented opportunities for recreation and gardening by creating informal playing fields, expanding community garden locations, maintaining and improving existing playgrounds.
- The citizens of Pembroke commit to consider the needs of underserved demographic groups – senior citizens and teenagers in park and open space designs.

Goal 5:

Planning and management for Pembroke's extensive open space and recreation lands is more efficient and coordinated with an accessible database.

- Research the acquisition history and deeds for all municipal and conservation areas and identify those parcels that have affirmative Town Meeting Votes stipulating that the land is for either conservation or recreation use, and deeds echoing that particular purpose for acquisition. Fix any errors by recording a corrective deed with the authorizing Town Meeting Vote as an adjunct to the deed.
- Create an accessible data repository for Pembroke's open space and recreation lands.
- Monitor and manage open space lands in Pembroke.
- Provide adequate staffing for the management of open space and recreation lands.
- Improve inter-departmental and inter-town communication regarding open space.
- Identify any shortfall between what the community has today and what it would like in the future for both open space resources and recreational opportunities.

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Section 10: SEVEN YEAR ACTION PLAN

In social and political landscapes, as in nature, no action is singular in its effect. In many cases the OSRP goals and actions will accomplish multiple benefits. Implemented in concert they will complement and strengthen each other.

While the scope of an Open Space and Recreation Plan is restricted to the tools with which it evaluates and interacts within a given town, it is important to build awareness and alliances outside of that realm. Addressing all political and social opportunities (and impediments) to creating healthy and sustainable communities requires a community scale effort, and a true participatory democracy. This is no small task, however, recent interest in the Water Street 40B proposal and response to the 2017 public survey indicate that some Pembroke citizens are seeking to participate in influencing the direction of the town's growth.

It is the intention of this document to inspire and support the efforts of Pembroke's citizens to organize around a common vision to protect the town's special character, resources, and quality of life. The following actions suggest ways to begin this effort. Ultimately it is up to the citizens of Pembroke to ensure such efforts are accomplished.

The following seven-year action plan seeks to achieve five ambitious goals. The plan also identifies potential responsible parties and funding options for each action. This should be considered a working document, one which changes and adapts to the social, political, and economic climate of the town, and fundamentally reflects the will of Pembroke's citizens.

Goal 1. Pembroke's abundant water resources are clean and sustainably managed			
Action Item	Responsible Parties	Potential Funding Source	Timeline
A. Protect the town's groundwater and aquifers			
1. Explore options to create a centralized sewage treatment facility for properties within wellhead protection zones	WATER. BOH, BOS, PB	MADEP	Year 1 and 2
2. Ensure sustainable withdrawal from the aquifer	CON COM, BOS, BOH	MADEP	Years 1 through 7
i. Determine safe yield practices	WATER	Town Budget	Year 1 and 2
ii. Review and update the agreements with Brockton, Abington and Rockland to ensure withdrawal doesn't threaten hydrologic systems	Pembroke, Brockton, Abington and Rockland	Town Budget	Year 1 through 3
iii. Monitor drawdown of the aquifer especially in periods of drought	WATER	Town Budget	Years 1 through 7
3. Promote water conservation efforts	WATER, NSRWA, PWA	Town Budget	Years 1 through 7
i. Detect and repair leaks in the town's water infrastructure	WATER	Town Budget	Years 1 through 7
ii. Ban lawn watering during prolonged drought	WATER	Town Budget	Years 1 through 7
iii. Further educate residents about water saving measures	WATER, PB, BOH, CON COM	Town Budget	Years 1 through 7
4. Support the acquisition of land that will increase drinking water supply protection.	CON COM, BOS, WATER, PB	MADEP	Years 1 through 7
B. Protect the town's surface waters			
1. Continue to monitor septic systems for leaks and failures	BOH, PWA, WATER	Town Budget	Years 1 through 7
i. Require proof of Title 5 septic compliance as part of obtaining a building permit for any work on an existing nonconforming building or lot within the wellhead protection zones.	ZBA, BOH, BLDG.	Town Budget	Years 1 through 7
ii. Identify any clusters of failing systems and explore possibilities to establish a neighborhood treatment system	BOH, PB, CON COM	Town Budget	Year 1 through 3
2. Reduce erosion, sedimentation, and other sources of contamination and eutrophication from surface runoff into water bodies	CON COM, PB	Town Budget	Years 1 through 7

i. Continue to reduce the impact of stormwater on local water bodies via the NPDES General Permit for MS4s and the Stormwater Permitting Authority.	CON COM, PB, BOH	Town Budget	Years 1 through 7
ii. Implement erosion and sedimentation bylaws	PB, CON COM, BOS	Town Budget	Year 1 and 2
iii. Educate residents regarding organic lawn care practices, with emphasis on wellhead protection zones	CON COM, PB, WATER, BOH	Town Budget, MADEP, Mass Audubon	Years 1 through 7
iv. Advocate for organic land care practices on all town owned properties, included recreation and sports fields, focusing emphasis on wellhead protection zones	CON COM, BOH, BOS, WATER, REC, DPW	Town Budget	Years 1 through 7
v. Identify streambanks that show evidence of erosion and sedimentation and seek restoration design and construction	CON COM, DPW	Town Budget	Years 1 through 7
3. Prioritize protecting undeveloped lands along rivers, streams, ponds and wetlands through acquisition, conservation easements, and vernal pool certification.	CON COM, PB, BOS	Town Budget	Years 1 through 7
C. Support the acquisition of land that will provide for water-based recreational facilities.			
1. Prioritize protecting undeveloped lands along rivers, streams, and ponds through acquisition and/or conservation easements to provide for water-based recreation.	OSC, CON COM, BOS	Town Budget	Years 1 through 7

Goal 2. Future development is consistent with and protects Pembroke's environmental, historic, and cultural resources.			
Action Item	Responsible Parties	Funding Source	Timeline
A. Prioritize areas of environmental, historic and cultural significance for protection	*PB, CON COM, BOS, HIST*		*Years 1 through 7*
1. Adopt hierarchy for prioritizing parcels for protection	*PB, CON COM, BOS*	*Town Budget*	*Year 1 and 2*
2. Employ various methods of open space protection, including acquisition, conservation easements, chapter 61 enrollment, and vernal pool certification	*CON COM, PB, BOS*	*Town Budget*	*Years 1 through 7*
B. Explore smart growth strategies to focus growth in developed areas and away from sensitive resources	*PB, CON COM, BOS*		*Years 1 through 7*
1. Create subcommittee to research and identify appropriate smart growth strategies for Pembroke	*OCPC, Town Planner, DPW, CON COM*	*Town Budget*	*Year 1 and 2*
i. Incorporate public input into process to ensure strategies support community's needs	*PB, BOS, CON COM*	*Town Budget*	*Years 1 through 7*
ii. Explore the possibility of providing a dog park as a way to meet the needs of dog owners while reducing the negative impact of dog use at other open spaces.	*PB, CON COM, OSC*	*Town Budget*	*Years 1 through 4*
iii. Preserve the rural character of Pembroke by implementing thoughtful development strategies including providing more affordable housing options in town per the Housing Production Plan.	*PB, CON COM*	*Town Budget*	*Years 1 through 7*
C. Increase public awareness of existing historic resources and the threats thereto	*HIST. BOS*		*Years 1 through 7*
1. Collaborate with the Historic Society to offer regular guided historic tours through Pembroke	*OSC, HIST*	*Town Budget*	*Years 1 through 7*
2. Increase signs and marketing pertaining to historical sites	*HIST*	*Town Budget*	*Year 1 and 2*
3. Protect clusters of unprotected historic sites vulnerable to development in northeast, northwest, and Bryantville areas.	*HIST. PB*	*Town Budget*	Years 1 through 7

Goal 3: An interconnected network of forest, riparian and wildlife habitats enhance Pembroke's ecological integrity and sustain a resilient landscape.			
Action Item	Responsible Parties	Funding Source	Timeline
A. Protect and improve Pembroke's threatened habitats and wildlife corridors	*CON COM, PB*		*Years 1 through 7*
1. Assess wildlife movement where roadways and infrastructure intersect water bodies and corridors	*CON COM, PB, DPW*	*Town Budget, Mass Audubon*	*Year 1 and 2*
i. Identify impediments to wildlife corridors	*CON COM*	*Town Budget*	*Years 1 through 3*
ii. Conduct culvert assessments to determine compatibility with MA Stream Crossing Standards	*CON COM, DPW*	*Town Budget*	*Years 1 and 2*
iii. Improve species migration through culverts by updating crossing to MA Stream Crossing Standards	*DPW, CON COM*	*Town Budget*	*Years 3 and 4*
iv. Evaluate the impacts on water quality from runoff	*DPW, PB, CON COM, BOH*	*Town Budget*	*Years 1 through 7*
2. Prioritize and protect key habitats areas as designated by BioMap2	*CON COM, PB*	*Town Budget*	*Years 1 and 2*
i. Collaborate with neighboring communities to connect protected open space areas between towns, specifically Duxbury to the east and Hanover to the north.	*CON COM, PB*	*Town Budget*	*Years 1 through 7*
3. Support the certification of potential vernal pools identified by the Natural Heritage and Endangered Species Act	*CON COM*	*Town Budget*	*Years 1 through 7*
i. Adopt local bylaw to increase the protection of certified vernal pools	*CON COM, PB, BOS*	*Town Budget*	*Year 1 and 2*
ii. Adopt local wetlands bylaw	*CON COM, PB, BOS*	*Town Budget*	*Years 1 through 3*
4. Restore cranberry bogs to their natural forms	*CON COM*	*Town Budget*	*Years 1 through 7*
i. Explore funding and restoration partnership with various organizations	*CON COM*	*Town Budget*	*Years 1 through 7*
B. Extend and connect protected areas to create continuous corridors			*Years 1 through 7*
1. Identify gaps between protected habitat areas	*CON COM*	*Town Budget*	*Years 1 and 2*
i. Prioritize those lands that close the gaps between existing protected lands	*CON COM*	*Town Budget*	*Years 1 through 3*
ii. Prioritize those lands that extend the boundaries of existing protected lands	*CON COM*	*Town Budget*	*Years 1 through 3*

C. Educate the public about the value of healthy ecosystems and services they provide to natural and human communities	*CON COM, PB*		*Years 1 through 7*
1. Collaborate with local and regional organizations to facilitate public awareness of ecological functions:	*PWA, WT, NSRWA*	*Town Budget*	*Years 1 through 7*
i. Lead guided walks through diverse habitats	*CON COM, OSC*	*Town Budget*	*Years 1 through 7*
ii. Explore joint protection efforts with multiple partners	*CON COM, BOS*	*Town Budget*	*Years 1 through 7*
iii. Post maps on town website of key wildlife areas	*CON COM*	*Town Budget*	*Year 1 and 2*
2. Collaborate with local school systems to incorporate local ecological studies into curriculum	*CON COM, OSC*	*Town Budget*	*Years 1 through 7*
i. Identify diverse natural communities suitable for field studies	*CON COM, OSC*	*Town Budget*	*Year 1 through 3*
ii. Research and develop strategies for preservation and use of open space and recreation areas.	*CPC, CON COM, REC*	*DCR Land and Town Budget PARC Grant Programs*	*Year 1 through 3*
iii. Increase community appreciation of the Town's natural resources through education and outreach	*CON COM, AGRI, REC*	*Watershed protection, CPA*	*Years 1 through 7*
D. Monitor and manage invasive species in ecologically supportive ways			*Years 1 through 7*
1. Assess the effectiveness of past management practices	*CON COM, PB*	*Town Budget*	*Year 1 and 2*
2. Develop management plans for specific invasive species that account for their sources and dispersal methods	*CON COM*	*Town Budget*	*Year 3 and 4*
3. Disseminate information about current invasive species and their threats	*CON COM*	*Town Budget*	*Year 3 and 4*
4. Disseminate information about native alternatives for popularly planted invasive species	*CON COM*	*Town Budget*	*Year 3 and 4*
i. Monitor and explore treatment options for invasive plants and pests when they threaten sensitive or important resources.	*CON COM, OSC, DPW*	*Town Budget*	
ii. Explore alternative invasive species management practices instead of persistent pesticide application and deep excavation	*CON COM, DPW, PB*	*Town Budget*	*Year 2 and 3*

Goal 4. The citizens of Pembroke enjoy better access and increased recreational use of town open space.			
Action Item	Responsible Parties	Funding Source	Timeline
A. Increase access and usability of recreational facilities and trails for users with mobility, sight, hearing, and other impairments, in compliance with ADA standards and following the lead of other organizations such as Mass Audubon and Trustees of the Reservations, and also nearby communities that have implemented similar initiatives.			
1. Assess inadequate parking, right of ways, trail head maintenance, and other barriers to general public access.	*CON COM, OSC, DPW*	*Town Budget*	*Years 1 and 2*
2. Develop implementation plan to improve access to various areas, prioritizing "low hanging fruit" areas which require least cost or effort to improve access.	*CON COM, OSC, DPW*	*Town Budget*	*Years 1 through 3*
3. Analyze the need and ability of the Town to support additional active recreation facilities.	*BOS, OSC, PB*	*Town Budget*	*Years 1 through 7*
4. Explore ways to better provide recreational services to populations that are underserved, especially teens and those over 50 years of age.	*PB, OSC, REC, BOS*	*Town Budget*	*Years 1 through 7*
B. Educate the public about the existence, importance, and possible uses of town open space			
1. Create Pembroke open space webpage with open space and recreation information (benefits, history, locations, etc.), trail maps, and progress of the OSRP	*OSC, CON COM*	*Town Budget*	*Years 1 and 2*
2. Incorporate individual site trail maps into a comprehensive trail system map	*OSC, CON COM*	*Town Budget*	*Years 1 through 3*
3. Make printed maps of the town's open space resources more widely available	*OSC, CON COM*	*Town Budget*	*Years 1 and 2*
i. Explore incorporating open space and recreation areas into Town of Pembroke map which is widely available throughout Pembroke.	*OSC, CON COM, PB*	*Town Budget*	*Years 1 through 3*
ii. Seek ways to distribute trail maps and other open space-related information to the public through kiosks, social media, apps, websites, local media outlets	*OSC, CON COM, BOS*	*Town Budget*	*Years 1 through 7*
4. Increase signs at trailheads and on roads leading to trailheads	*REC, OSC, CON COM*	*Town Budget*	*Years 1 through 4*
C. Improve maintenance of the town's recreation areas			
1. Create property management manuals for all individual conservation and recreation areas requiring ongoing maintenance	*CON COM, OSC*	*Town Budget*	*Years 1 through 4*

i. Identifying one time improvements as well as ongoing maintenance needs of each area	OSC, CON COM	Town Budget	Years 1 and 2
ii. Example: repair the kiosk and gate at the entrance of Tubb's Meadow	DPW, CON COM	Town Budget	Years 1 and 2
2. Organize trail adoption programs for ongoing maintenance (possible partnerships: scouts, sports teams, businesses, neighborhood associations, faith groups)	OSC, CON COM	Town Budget	Years 1 through 7
i. Organize regular volunteer trail maintenance days.	REC, OSC, DPW	Town Budget	Years 1 through 7
ii. Explore options for enforcing trail user compliance, particularly with regard to illegal trail cutting and dog-walking.	REC, OSC, CON COM	Town Budget	Years 1 through 3
iii. Create "Friends of" groups for parks, playgrounds, and natural areas to help with management and to keep to town informed of specific needs.	REC, OSC, DPW	Town Budget	Years 1 through 7
iv. Continue regular maintenance of the Town's recreation fields.	REC, DPW	Town Budget	Years 1 through 7
v. Continue to restore field edges, maintain stonewalls along field edges, and retain meadow habitat and scenic views.	REC, OSC,	Town Budget	Years 1 through 7
3. Promote the acquisition and development of neighborhood parks where none currently exist	PB, BOS, OSC	Town Budget	Years 1 through 7
4. Develop amenities supported by neighborhood parks, such as playgrounds, off-leash dog parks, and community gardens.	PB, CON COM, OSC	Town Budget	Years 1 through 7
D. Connect existing trail systems for enhanced recreational use.			
1. Connect trails from behind high school to community center to Herring Run	BOS, OSC	Town Budget	Years 1 through 7
2. Connect Tubb's Meadow trail to Veteran Memorial Forest	BOS, OSC	Town Budget	Years 1 through 7
3. Support a traffic and sidewalk plan that provides and improves sidewalks and bike paths that connect to recreational facilities, schools, the Town Center, public transportation and conservation trails.	PB, CON COM, BOA	Town Budget	Years 1 through 7
i. Establish visible trailhead areas	OSC, CON COM	Town Budget	Years 1 through 7
ii. Identify other gaps in the trail systems to prioritize areas for protection	OSC, CON COM, BOS	Town Budget	Years 1 through 7
iii. Ensure than any existing or new trails are fully accessible to people with disabilities.	OSC, CON COM, BOX	Town Budget	Years 1 through 7
iv. Support the acquisition of land and development of new open spaces that can provide a trails network.	CPC, CON COM, OSC	Town Budget	Years 1 through 7

Goal 5. Planning and management for Pembroke's extensive open space and recreation lands is more efficient and coordinated with an accessible database.			
Action Item	Responsible Parties	Funding Source	Timeline
A. Create an accessible electronic data repository for Pembroke's open space and recreation lands	*PB, CON COM, BOA*		
1. *Archive and digitize existing documents related to open space and recreation within and around Pembroke, including, protected, semi-protected and threatened resource parcels*	*Town Planner, Town Assessor, Con Com, OSC, third party consultant if needed*	*Town Budget*	*Years 1 through 7*
2. *Collect and record data related to open space and recreation lands, including:*	*CON COM, OSC, BOA*	*Town Budget*	*Years 1 through 7*
i. *Newly acquired lands*	*CON COM, OSC, BOA*	*Town Budget*	*Years 1 through 7*
ii. *Parcels of conservation concern and their ownership status*	*CON COM, OSC, BOA*	*Town Budget*	*Years 1 through 7*
iii. *Continue to survey and mark conservation land property boundaries.*	*CON COM, OSC, BOA*	*Town Budget*	*Years 1 through 7*
iv. *Continue to identify and resolve encroachments on conservation land.*	*CON COM, OSC, BOA, PB*	*Town Budget*	*Years 1 through 7*
3. *Work with owners on preservation options: Host educational workshops, understand owners objectives, develop plan for responding to Chapter 61 conversions*	*AGRI, CON COM, PB*	*Land Trust Organizations*	*Years 1 through 7*
4. *Update list of farmlands – Chapter 61 list*	*AGRI, BOA*	*GIS*	*Years 1 through 7*
B. Monitor and manage open space lands in Pembroke			
1. *Monitor and evaluate conditions and management practices of existing open spaces in Pembroke*	*OSC, BOS, CON COM,*	*GIS*	*Years 1 through 7*
2. *Compile standardized management practices (SMPs) for open space properties*	*OSC, CON COM*	*GIS*	*Years 1 through 7*
C. Provide adequate staffing for the planning and management of open space and recreation lands			
1. *Seek town funding for creating a land steward position to monitor and support OSRP actions*	*CON COM, BOS, OSC*	*Town meeting vote*	*Year 2 - 3*

2. *Designate a staff member from each town department or board that would communicate with the Open Space Committee*	*BOS*	*Town Budget*	*Year 1 - 2*
D. Improve inter-departmental and inter-town communication and coordination regarding common goals for open space, recreation, and other related topics.			
1. *Hold biennial meetings with representatives from all departments and boards that discuss current open space issues and implementation strategies*	*BOS*	*Town Budget*	*Year 1*
2. *Host an Open Spaces and Recreation Summit with participation from the Conservation Commission, Recreation Commission, Planning Board, Board of Selectmen and associated staff, and others as deemed appropriate to coordinate projects.*	*BOS*	*Town Budget*	
3. *Develop a program with Board of Assessors and Conservation Commission to promote chapter lands for eligible property owners*	*BOA, CON COM,*	*Town Budget*	*Years 1 through 7*
4. *Contact neighboring open space committee representatives to form alliances around connected resources (like habitat and water). This inter-town committee would meet twice annually.*	*BOS*	*Town Budget*	*Year 1 - 2*

AGRI – Agricultural Commission
BLDG – Building Inspector
BOA – Board of Assessors
BOH – Board of Health
BOS – Board of Selectmen
CON COM – Conservation Commission
DPW – Dept. of Public Works
HIST – Historical Committee
OSC – Open Space Committee
PB – Planning Board
PWA – Pembroke Water Authority
REC – Recreation Department
WATER – Water Department
WT – Wildlands Trust

GOAL 1 - Pembroke's abundant water resources are clean and sustainably managed:

Building a town-wide or neighborhood scale wastewater treatment plant to reduce dependence on private septic systems has been discussed and considered for many years. Of particular concern is the southwest portion of town where the water supply wells are located and water quality of multiple ponds is compromised. The cost of installing even a neighborhood scale treatment plant is believed to be prohibitively high, and there is also a worry that by establishing wastewater infrastructure, there could be an increase in development pressure to the areas on sewer.

Further research is still needed with regard to sewage treatment alternatives. The status of the Comprehensive Waste Treatment Plan, which was in the submittal stage at the completion of the previous OSRP is still unknown or unavailable at this time.

To ensure the high quality of Pembroke's many water resources, continued efforts to regularly monitor the health of the waters for contaminants and nutrient levels is key. This should be done in collaboration with organizations already engaged in these activities including the Pembroke Watershed Association (PWA), and the North and South River Watershed Alliance (NSRWA).

More research is needed to determine safe yield practices for aquifer withdrawal. It is not clear whether Pembroke's current practices meet safe yield standards. Furthermore, the withdrawal of Pembroke waters by neighboring communities is widely believed to be having a negative impact on the local waterbodies. Specifically there have been concerns around reduced water levels in surrounding ponds resulting from high rates of withdrawals from Silver Lake. The terms of uncompensated withdrawals by the neighboring communities is antiquated and needs to be revisited and revised to better protect the valued water resources of Pembroke.

GOAL 2 - Future development is consistent with and protects Pembroke's environmental, historic, and cultural resources.

Resources to acquire properties for permanent protection are limited, so it is useful to have a clear and standard means to evaluate and prioritize properties for protection. The plan proposes a decision hierarchy to be applied to multiple parcels to gauge their priority in relation to other potential properties. This potential template may require further alterations based on the agreed upon values and priorities established by the town.

The first step is to determine what resources are present and/or potentially impacted by changes to the site. Examples of resources include:

- Core habitat areas as identified by NHESP

- water resources such as streams, aquifers, or vernal pools
- cultural resources like historic structures
- recreation areas
- areas within the wellhead protection zones
- areas of scenic importance
- prime agricultural soils

Next is a determination of whether or not the property in question is already developed. An undeveloped site is generally given higher priority as it holds greater conservation value as an undisturbed environment. In some cases, this is not a black or white scenario, such as with developed lands that have been abandoned, or productive agriculture land that has been disturbed from its natural state, but is not technically developed. If a property is developed, an assessment of threats to existing resources by its current use should be made. If the threat is determined to be high, some means of protection should be employed to protect the resources. An example of this might be to obtain a conservation easement for woodlands and water resources that abut a cluster development.

If a site is found to be undeveloped, it is then assessed to see whether it is subject to any regulatory or legal mechanism for protection. If the site is undeveloped and unprotected property, then the next step is to look at the existing regulations that might limit future development of the site. Specifically, refer to zoning restrictions that can apply to that property which might protect the parcel from development through regulations. If the risk of being developed, considering zoning, is found to be high, then the parcel is deemed to have the highest priority for protection.

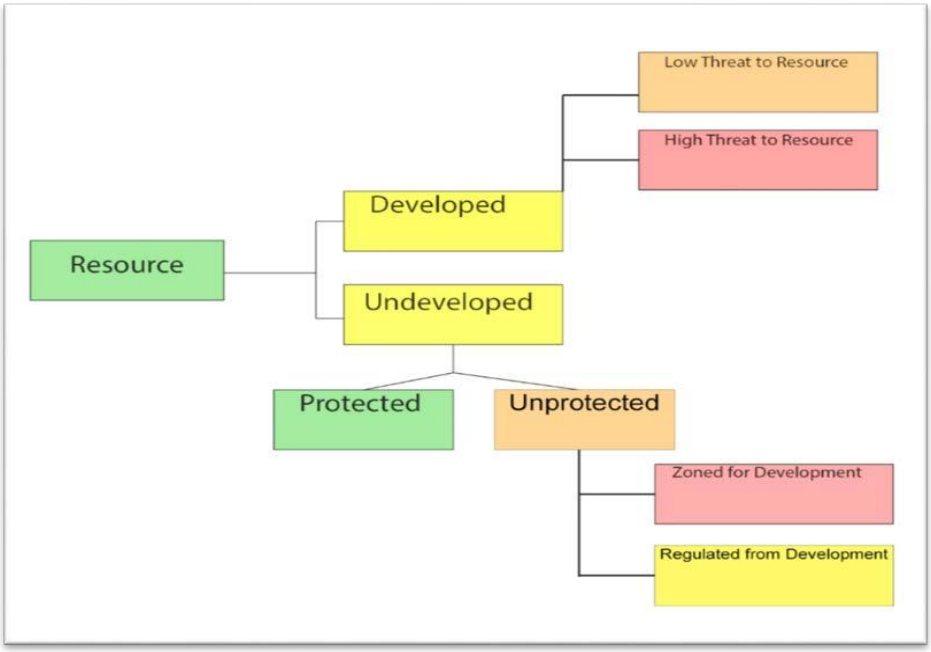

Figure 77: Protection Prioritization Decision Hierarchy

Responses to the 2017 open space survey overwhelmingly express the need for safe, walkable communities. Concern was also expressed in the survey about sprawling development encroaching on ecologically sensitive areas and causing the character of the town to be lost.

Smart Growth directs and concentrates future development away from sensitive and at-risk resources such as core habitat and water supply areas, and seeks to increase the density of areas that best support development. This policy would necessitate changing the current zoning regulations to focus development in specific locations, possibly with an existing infrastructure that could accommodate denser development.

The Old Colony Planning Council's 2011 report "Old Colony Region Priority Development and Priority Protection Areas" addressed the concept of directing growth through proposed priority development areas (PDAs) and priority protection areas (PPAs) for the region. The areas recommended in the 2011 report provide a strong starting point, and require further analysis to ensure that they are adequate areas to site more dense development.

Some approaches that have helped towns around New England redirect and reshape development to best meet their needs include:

- Adoption of Chapter 43D (Local Expedited Permitting)
- Transfer of Development Rights (TDR)
- Traditional Neighborhood Development (TND)
- Low Impact Development (LID)

A further description of these strategies and a resource list is included in appendix C.

GOAL 3 - An interconnected network of forest, riparian and wildlife habitats enhance Pembroke's ecological integrity and sustain a resilient landscape.

As climate change disrupts seasonal norms and inflicts further stress upon natural systems species migration (as a form of adaptation) is likely to result. Ensuring the ability of plant and animals to safely move across regions is necessary to ensure their future survival. This can be done through creating corridors of connected open space both of dry land and uninterrupted water ways. The most effective corridors provide multiple alternative pathways creating a network for uninterrupted passage. For corridors to function in the long term across the landscape, it will be necessary for these interconnected nodes to cross town boundaries and extend throughout the region. Through the creation of corridors, Pembroke can also combat the distorting effects of landscape fragmentation which lowers species richness, alters microclimate, and reduces ecological function (Beck, 2013).

Further steps can be taken to revitalize natural areas once they have been protected from future development. Ecological restoration can assist in the return of natural functions within a system. In Southeastern Massachusetts the cultivation of cranberries has left the distinct

remnants of canals and irrigation ditches cut into the landscape. Some of the bogs in Pembroke have been left to return wild with little human intervention. However, some human intervention could help to strengthen the ecological integrity of these systems, creating resilient systems that function naturally and provide ecosystem services such as flood water mitigation, stormwater runoff filtration and infiltration, as well as improve hydrologic flows.

Integrating local natural history education into schools and community activities can inspire residents, connecting them more intimately with where they live. As people understand more clearly the history of the landscape they call home, there comes a more fervent commitment to care for that place and protect it from harm. The story of the Mill Creek Neighborhood in Philadelphia and the work done by Anne Spirn, her student team, and teachers and students from Sultzberger Middle School illustrate how an understanding of local ecology and natural history can empower communities, especially children (Spirn). Through an incorporation of ecology and natural history into the public school curriculum, schools can lead efforts to steward and protect natural communities and threatened habitat areas.

GOAL 4 - The citizens of Pembroke enjoy better access and increased recreational use of town open space.

Ensuring adequate access to Pembroke's open spaces allows citizens to make better use of these areas. Making these areas more widely publicized will not only increase their use, but will by default make them safer, as more people interacting with these spaces will mean a higher level of public observation which can help to deter some of the less desired use of these spaces.

Maintenance of these spaces is important to keep them accessible, safe, and inviting. Enlisting the help of local groups to adopt trails or sponsor areas for regular maintenance can strengthen a community's sense of ownership and pride over its open space.

Opportunities exist to further connect trail systems to create a more cohesive trail network throughout the town. Creating a trail from the High School through the town center area behind the rec center and up to Herring Run would provide residents with access to wooded recreational walking opportunities in the town center and create more connections between protected open spaces around the town increasing general accessibility.

GOAL 5 - Planning and management for Pembroke's extensive open space and recreation lands is more efficient and coordinated with an accessible database.

Although Pembroke has made some significant strides in protecting its open spaces, very few actions have been accomplished since the 2005 OSRP update was written. This is likely due to the fact that the majority of Conservation Commission and Open Space Committee members are volunteers with busy lives. There also seems to be fluctuation in membership and interest within these two groups. Creating a paid part time position to oversee the majority of these

actions would help to ensure that they are carried out, and that progress is recorded. As part of the position, compiling and organizing data related to open space in its various forms would create an efficient way for information to be accessed and used internally and interdepartmentally.

Potential Funding Sources

Land and Water Conservation Fund.
The Land and Water Conservation Fund (LWCF) was authorized by the federal Land and Water Act in 1965 with the intention of preserving, protecting, and assuring the availability of close-to-home outdoor recreation areas and conservation land for all current and future citizens of the United States. By establishing a steady source of funding through offshore oil and gas receipts, Congress ensured continued state and federal investment in outdoor recreation. Congress distributes the funds to the states on an annual basis. The LWCF program has two components, the federal program and the stateside program. The federal program funds the acquisition of land and water conservation areas by federal agencies, such as the National Park Service (NPS), the Forest Service, and the Fish and Wildlife Service. The funds are directly appropriated to these agencies by Congress. The stateside program funding is awarded to each state and territory by formula. States awards grants through a competitive process to communities or state agencies for the acquisition of land, the development of new parks, renovations to existing parks, and the development of trails. The LWCF grant program requires a 50% contribution from the awardee. To remain eligible for these funds, each state must complete a Statewide Comprehensive Outdoor Recreation Plan (SCORP) every five years.

The Executive Office of Energy and Environmental Affairs' (EEA) Division of Conservation Services (DCS) administers the LWCF program on behalf of the NPS for the Commonwealth of Massachusetts. The Secretary of EEA is appointed by the Governor to act as the State Liaison Officer for the grant program and the Director of EEA's DCS is the Alternate State Liaison Officer. Liaison officers are authorized to represent and act for the state to the Director of NPS on all LWCF matters. Accepting and administering funds from the NPS on approved LWCF projects is also under their purview. Any municipality in the Commonwealth with an up-to-date Open Space and Recreation Plan is eligible to apply for LWCF grants. The Departments of Fish and Game and Conservation and Recreation are also eligible applicants. Massachusetts' two federally recognized tribes, the Mashpee Wampanoags and the Wampanoag Tribe of Gay Head – Aquinnah, may also apply for LWCF grants.

Parkland Acquisitions and Renovations for Communities (PARC) Grant Program.
The PARC Grant Program was established in 1977. It is a municipal grant program that funds the acquisition of parkland, the renovation of existing parks, and the development of new parks. Grants are awarded through an annual competitive grant round. The grant reimburses anywhere between 52 and 70 percent of the total project cost up to that year's grant award maximum, which has been $400,000 for the past number of years. Land funded through this program must be open to all residents for active recreation and remains protected in perpetuity.

Local Acquisitions for Natural Diversity (LAND) Grant Program.
The LAND Grant Program was established in 1961. It is a municipal grant program for conservation commissions to acquire conservation land. Grants are awarded through an annual competitive grant round. The grant reimburses anywhere between 52 and 70 percent of the total project cost up to that year's grant award maximum, which has been $400,000 for the past number of years. Land funded through this program must be open to all residents for appropriate passive recreational use and remains protected in perpetuity.

Gateway City Parks Grant Program.
The Gateway City Parks Grant Program funds the creation or restoration of significant urban parks and trails in the 26 Gateway Cities, often projects that would otherwise be difficult to build. Gateway Cities are midsize urban centers that anchor regional economies around the state. Priority is given to projects that support broader urban revitalization efforts; are ineligible for other funding sources; address critical park infrastructure needs; have strong support from city leaders; engage local businesses, neighbors and others in park financing, programming and stewardship; or are accessible to Environmental Justice populations.

Landscape Partnership Grant Program.
The Landscape Partnership Grant Program protects large blocks of conservation land. Local, state, and/or federal agencies partner with non-profit groups on projects that will protect at least 500 acres of land. A 50 percent match is required from the grantees. Land acquired through this grant program must allow for appropriate public access for passive recreation. The land is protected in perpetuity.

Conservation Partnership Grant Program.
The Conservation Partnership Grant Program is for non -profit organizations to acquire land for conservation or recreation use. The grant can be used to acquire the fee interest in land or a conservation restriction, as well as to help fund the due diligence associated with a gift of land. The grantee must award a permanent conservation restriction to a state or local government agency or another land trust. Appropriate public access must be provided.

Drinking Water Supply Protection (DWSP) Grant Program.
The DWSP Grant Program provides financial assistance to public water systems and municipal water departments for the purchase of land or interests in land for the protection of existing public drinking water supplies and the protection of planned future public drinking water supplies. The grants are awarded on an annual basis and reimburse 50% of the total project cost, up to that year's grant award maximum. Protection is permanent and appropriate public access must be provided.

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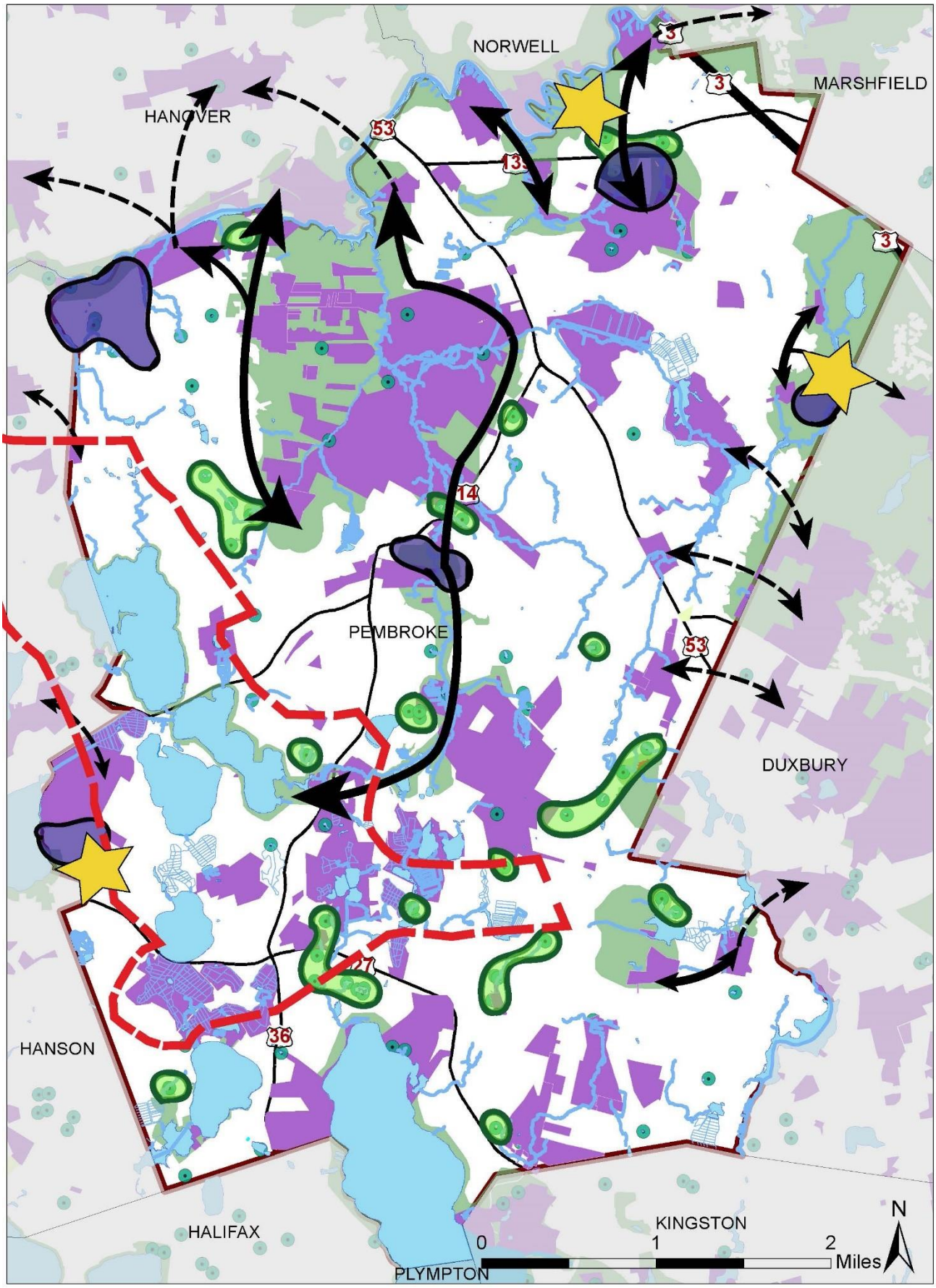
NORWELL
MARSHFIELD
HANOVER
PEMBROKE
DUXBURY
HANSON
HALIFAX
KINGSTON
PLYMPTON
53
3
14
36
0
1
2
Miles
N

7 Year Action Map

	Explore the creation of a centralized sewer system for the Wellhead Protection District to better protect surface waters and the underlying aquifer from potential contamination by dense development and concentrated spatiallly concentrated septic systems.
	Connect protected open space parcels within core habitat in Pembroke through acquisition, easements, and/or vernal pool certification to create larger contiguous areas of undeveloped core habitat areas to promote healthy plant and wildlife populations and to further enhance natural coridors.
	Collaborate with neighboring communities to link protected open space areas across town borders to create larger, contiguous habitat areas and corridors.
	Prioritize the protection of undeveloped parcels along river, streams, ponds and wetlands through acquisition, easements, and/or vernal pool certification to further enhance Pembroke's valuable water resources.
	Priortize the protection of clustered historic sites not already protected through town ownership or through historic district location.
	Support the certification of potential vernal pools identified by the Natural Heritage and Endangered Species Project, prioritizing those sites abutting protected open space, aggregates of potential pools, and those within unprotected core habitat areas.

	Protected Open Space
	NHESP Identified Core Habitat
	NHESP Identified Potential Vernal Pool

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Pierce, J "Restoring Historical Cranberry Bogs Improves Aquatic Life in the Eel River" United States Environmental Protection Agency, Office of Water. Accessed March 20, 2017

Spirn, Anne. "Restoring Mill Creek: Landscape Literacy, Environmental Justice and City Planning and Design" *Landscape Research* Vol. 30 No. 3, 2005. pp. 395-413

Appendix

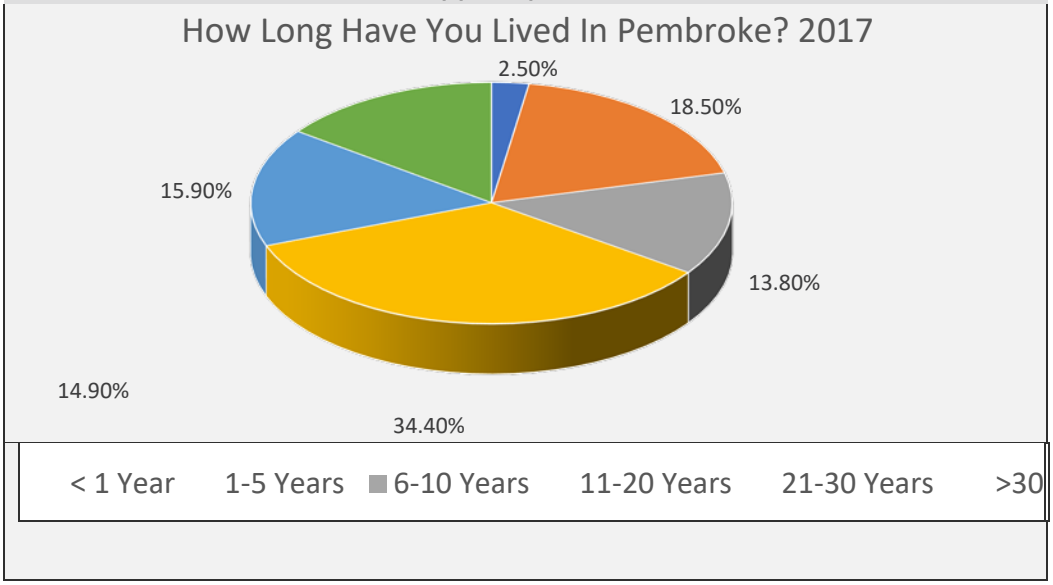
- 2017 OSRP Community Survey
- BioMap2: Pembroke
- Smart Growth Resources
- Eel River Wetland Restoration
- Borage Pond Restoration

2017 Pembroke Open Space Survey Responses

Question 1

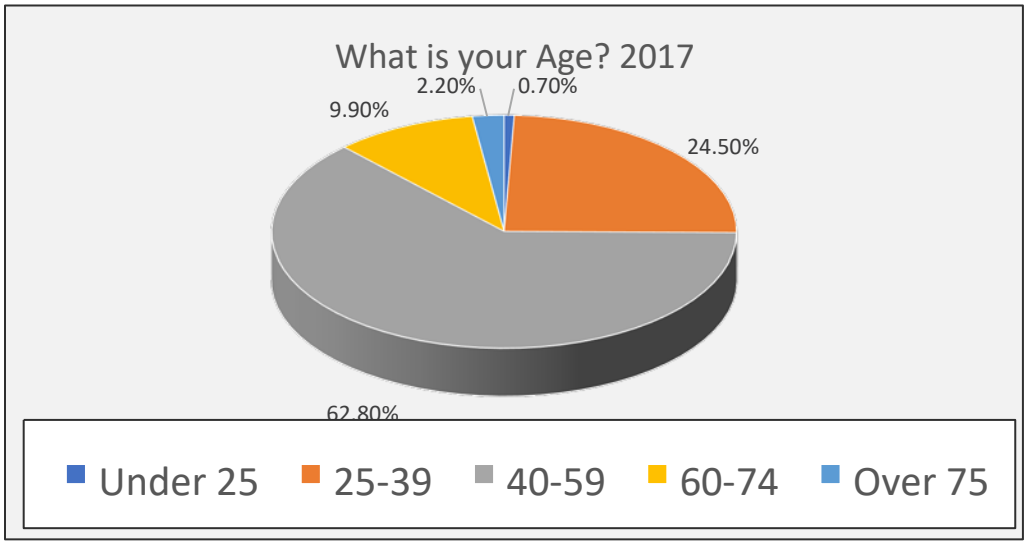
How long have you lived in Pembroke?

Answer Options	Response Percent	Response Count
Less Than a Year	2.5%	7
One to Five Years	18.5%	51
Six to Ten Years	13.8%	38
Eleven to Twenty	34.4%	95
Twenty One to Thirty	15.9%	44
More Than Thirty	14.9%	41
answered question		276
skipped question		1



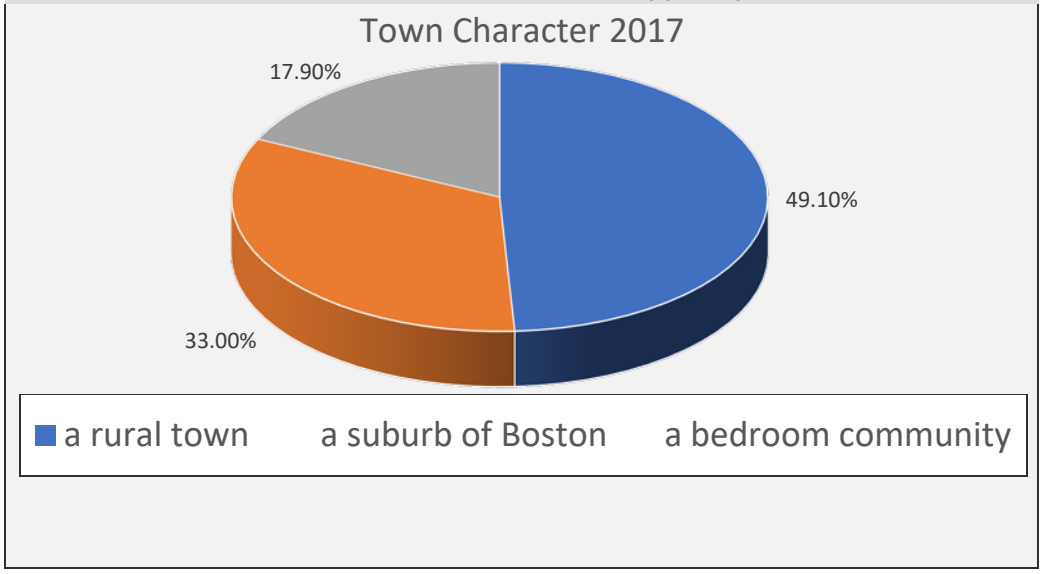
Question 2

What is your age?		
Answer Options	Response Percent	Response Count
Under 25	0.7%	2
25-39	24.5%	67
40-59	62.8%	172
60-74	9.9%	27
Over 75	2.2%	6
	answered question	274
	skipped question	3



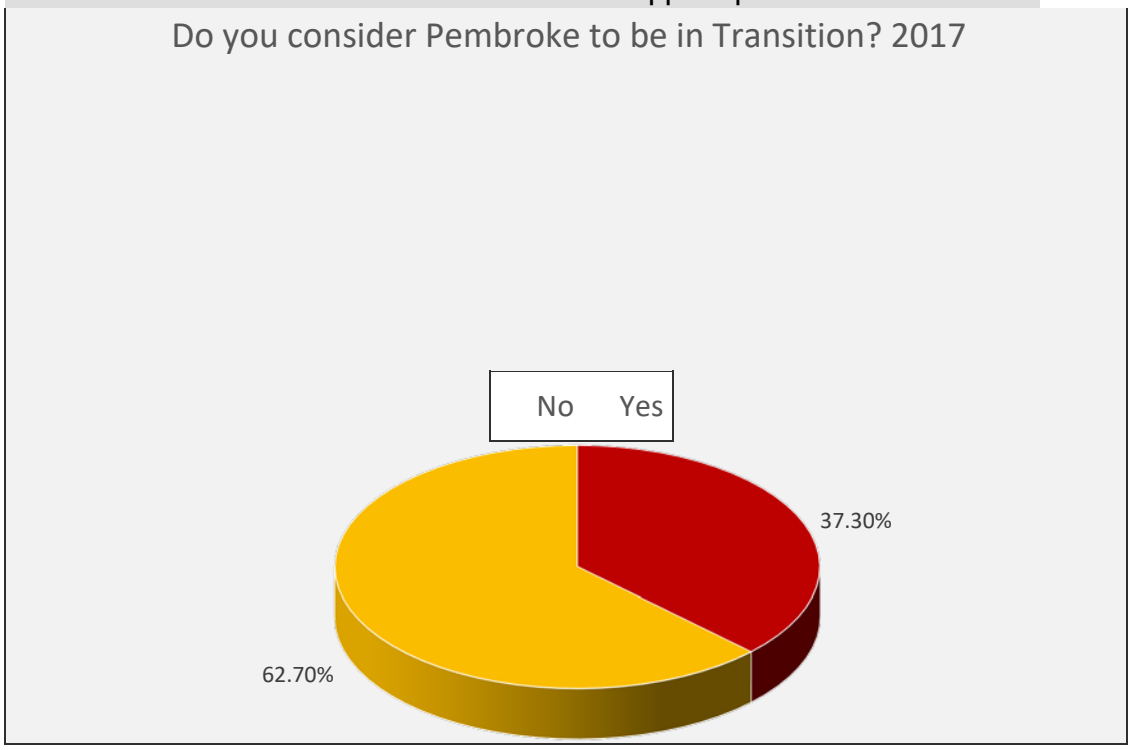
Question 3

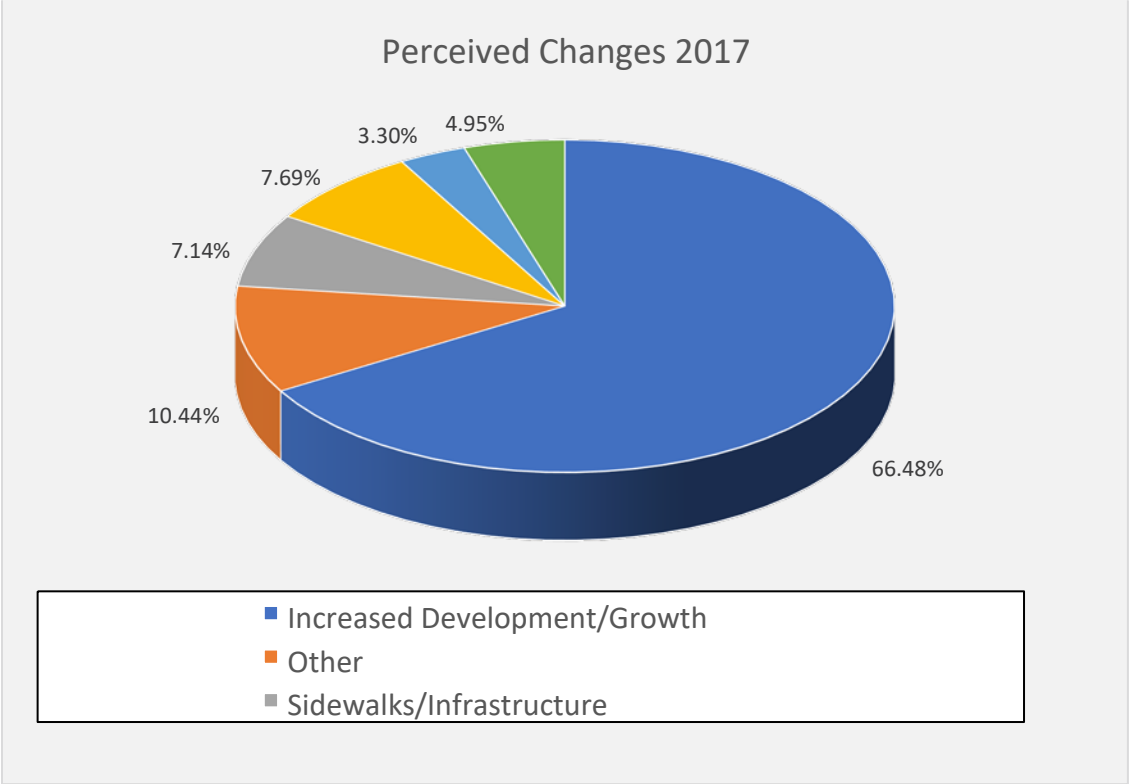
Do you consider Pembroke to be... ?		
Answer Options	Response Percent	Response Count
a rural town	49.1%	134
a suburb of Boston	33.0%	90
a bedroom community	17.9%	49
answered question		273
skipped question		4

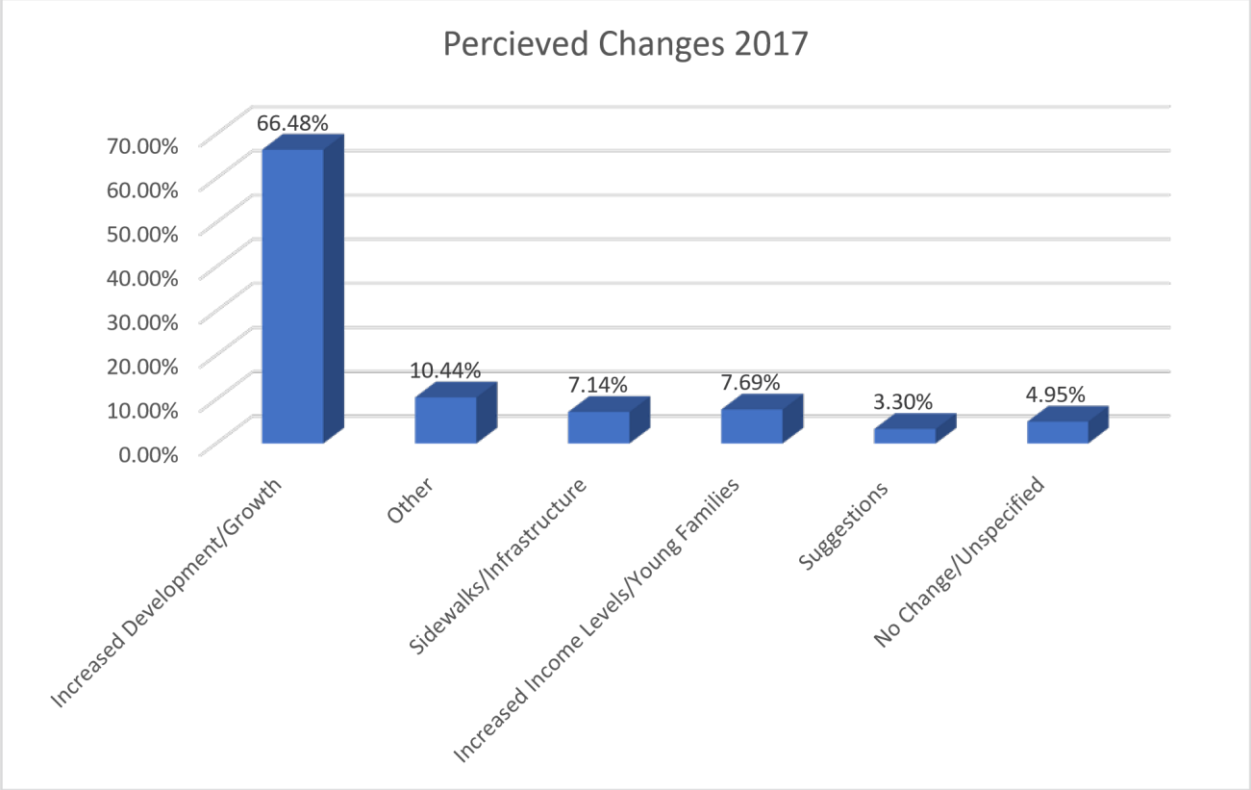


Question 4

Do you consider Pembroke to be a Town in Transition		
Answer Options	Response Percent	Response Count
No	37.3%	100
Yes	62.7%	168
If Yes, please describe the changes you perceive		159
answered question		268
skipped question		9







Open Responses:

Increased Development/Growth
More (too much) housing and commercial added every year.

Older folks retiring, selling. New generation moving in, buying.
The town has gone through a major growth spurt since I have moved here.
Population growing too much development growth
Many new homes being built;
More school age children so larger class sizes
More retail
Influx of new residential & commercial development
Over crowding
Homes being built in the last 15 years are substantial. Homes are not being built for under 500k. More family oriented.
Growing larger
Over. Development
When we moved here it was more rural. Have noticed more and more commercial construction- which worries me as we moved here to get away from that.
Too much new housing going in too fast
Too many new homes
More developments (housing)
Growing from a small town to a big/small town more commercial building, more housing, Industry, multifamily housing
Concern about the recent increase congregate type housing replacing so much of the woodlands. I fear that there will be more of this, which will change the rural town still has some rural qualities, but losing them
Since we moved here 45 years ago Pembroke has changed from definitely rural to not quite suburbia. New businesses and more traffic.
Growing along with surrounding areas
It is rapidly losing vegetation and free land to more and more buildings. I used to love to rake drives through the town to look at the forested land and now there is really no where I need Pembroke to do this.
Too many condos and corporate building
There looks to be a bunch of construction happening on Oak Street,...and I seem to be more and more interested in how the town works.
Population growth causing increased staffing of emergency services.
New housing
An emphasis on acquiring open space yet developing commercial businesses on Rtes 53 and 139.
Not good changes...too much building.
The town is growing,
More business has come into Pembroke. Too many apartment/condo complexes. Increased population being developed quickly
Becoming more modern/city-like. Building
Growth a little too much development and condos. Nice to keep woods and farm land
A growing population that requires changes to be able to accommodate them.
First time home buyers moving in...
Traffic/vehicle speed are becoming issues. Concerned about appearance of center/community building/area beginning to look tacky.
22 years ago when I moved here, Pembroke was a rural town. As Boston has grown and spread, Pembroke has as well. Lots of development

Increased traffic: major road repairs, increased need for traffic planning/lights/routing. Changing from farms & bogs to more densely populated.
Changing from rural to suburban Too much development.
Too much development, Modernizing, developing.
More development forcing a larger infrastructure over-development and loss of trees and nature
Increased development! Our own high school, increased traffic
More modern dining and shopping
A lot of building
I grew up on the Pembroke line in Hanover. Since that time, and since moving here, it seems Pembroke has been building...a lot. Roads are congested, the town has its own high school now (yes, some time, but still evidence of change) and larger developments. More neighborhoods being built.
Too many new buildings/houses. I like the small town feel. Unfortunately new developments are ruining the town.
More people moving into Pembroke
Growing and developing
Too many housing developments being built
Becoming overgrown
Getting bigger and requiring action to keep it from becoming overdeveloped. The
Building of houses between existing houses. It's sad.
Yes I see more fast food places, more stores, condos going up since we moved here.
Population growth, like mad.
There's a lot more traffic than he used to be in a lot more houses than they used to be on the streets cannot carry that load can't carry that load.
More developments
Too many houses being built, not enough business to support the needed tax structure; too much natural habitat being destroyed.
I see higher density development,
Building up
Getting to populated
More condos, More stores going in. A lot of new building, especially condos.
Too many multi dwellings going in business districts too big taxes rising and services insufficient
A lot of building and changes going on. We picked Pembroke because it was a more open spaced rural town.
It's been in transition for 40 yrs! Too many condos, need to slow down.
From a small town to a medium town
Population growth yet fewer children and growing senior population.
Growing from a rural community to suburb
New construction or tear downs to rebuild is growing.
It’s getting busy in this town since I've moved here.
Less rural and more suburban.
People moving in.
It's unfortunately transitioning from a rural community to a much more congested place to live. The traffic is terrible, and all the old farms have been

bought and built into sub developments. Happy the selectmen put a moratorium on multi-unit structures, wish it was longer than a year.
More building though I wish they wouldn't like it quiet
Too much construction
Younger, More, wealthy people in town.
Changing demographics and increasing commercial areas
young families... up and coming place to live a lot of construction happening now from a rural town to a more suburban feel
Growing town, desirable community. More affordable then some surrounding towns
New sidewalks and over development
It is getting built up more and more and losing the country charm it once had.

Suggestions
Move to develop a more family friendly town
Fix community center

We need a town manager, a DPW commissioner that cares about our roads and town commissioners that care about the community. There are too many neighborhoods being subjected to constant construction traffic. Would like more for kids and families and more fitness trails, etc

It has potential if we expand industrial park, connect Oak Street directly to the 14/53 intersection and use that land for more retail/office and industrial. It also eliminates the need for a light at Pleasant St/Rt 53. That would give much easier access from Rt 3 to downtown Pembroke and open up more commerce in the downtown area.
I hope to see more improvements in the center. Recreation Building especially.

No Change/Unspecified
There is no transition (the town is stuck in the 1950s)
No
It seems it is
ever evolving
A transition to what?
ALL OF SOUTH SHORE IS IN TRANSITION
It would be nice if it were though.
I hope it becomes a more desirable town to live in.

With the reduced availability of land, and limited amount of commercial property, the Town is faced with some major decisions regarding the future path of re-development to try and keep taxes down but invest in infrastructure and schools more effectively.

Sidewalks/Infrastructure
The sidewalks near the town center. And info I've heard about recent developments prior to moving here
Needing upgrades to town facilities and slowly getting them. Sidewalks
more sidewalks and better access to schools and town buildings
Well they are redoing sidewalks, and hopefully dredging the ponds fort longevity sake. So it's improving.
With the recent renovation of town center and the addition of sidewalks. The town is slowly turning from a rural town to connected community.

services need to be updated to meet the needs of our growing population
sidewalks,more street lights The sidewalks are being put in and
affluence coming in
More young families moving in. Creating a need for more family oriented space
It was a sleepy town with lots of summer housing; now more families are moving in.
Updating PD & FD to support the growth of the town. The need for more traffic control

Other
Less like New Braintree and more like Hanson/Abington.
I worry that it could become a town in transition if we are not very careful with our development.
The school system has developed over the years
I believe the town is very up and coming with a bright future.
I don't like the increase in over doses and I don't like the increase of crime due to lower class citizens.
Sidewalks necessary due to loss of safety in doing pedestrian/biking activities.
No need for sidewalks at the expense of trees
Updating roadways and utilities, dredging ponds as needed
I appreciate the improvements our Town is always striving to make, thus making us a town in transition.
Balancing the changing demographics and related demands. Basic needs versus extras.
School system needs development
People are moving down here thinking it's a big town when in reality it's a small town in the woods

We hope it's a town in transition. The roads are in terrible condition and the town buildings are lacking in renovations and curb appeal. The long-time residents of Pembroke seem to really be resistant to change and making the appropriate steps to beautify the town. In comparison to the surrounding towns Pembroke really falls behind. My husband and I are considering a move unless the appropriate changes are put in place soon. Mixed ethnicity.

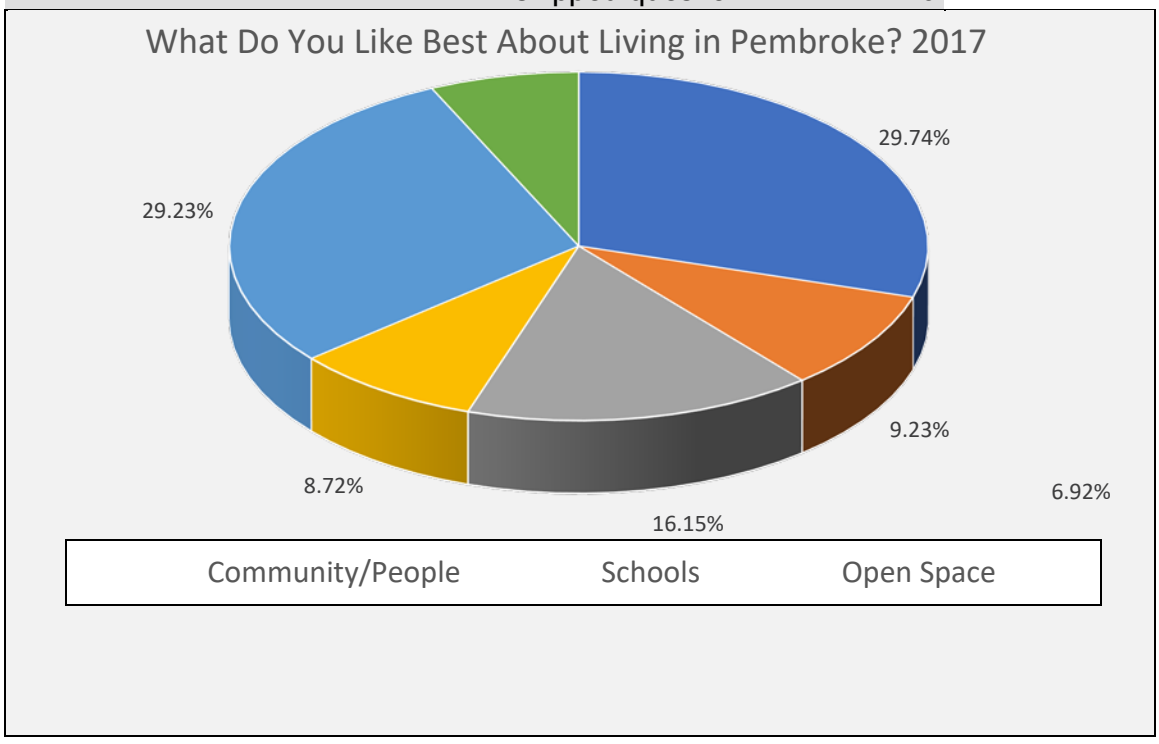
Increased Income Levels/Young Families
I would say the average home income is going up.
Much more name recognition. There has been a huge influx of white collar families that have moved here since we bought our home in 1997. Traffic has increased substantial along Route 139. Desirable businesses have opened their doors here and done well.
I feel it's an up and coming town. 5 years ago homes were cheaper in Pembroke, it's getting expensive now. I believe it will be a town that's hard to get into for less than $400 soon enough.

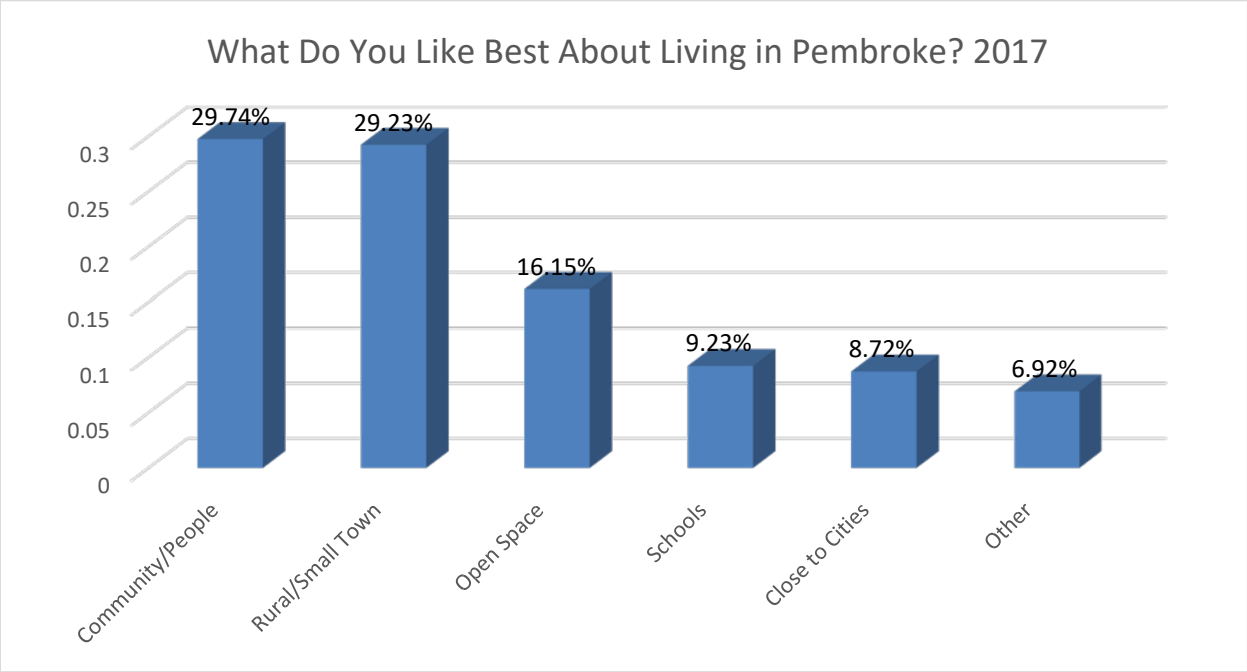
As in the general population there is an obvious economic disparity between the wealthy and the lower middle class that I see growing here as well.
Higher priced homes and young families moving here that want a progressive town and a better sense of community
More young families moving in

I believe the school system is improving according to statistics and that there is an increase in younger upper middle class families. More young families are moving in. More upscale neighborhoods
I think the population is growing with a lot of younger people.
Young families are taking the place of the presiding elderly community.
It is changing with the recent growth 10-15 yrs and number of new families

Question 5

What do you like best about living in Pembroke?	
Answer Options	Response Count
	258
answered question	258
skipped question	19





Open Responses:

Community/People sense of community; people

helping others in need

The people! Very committed to helping the community
The people.
Nice people.
Community
spirit.
The people.
Have had good experiences with helpful fire and police as well.
Small community
The events the town puts on in the town center. Very family friendly community friends,
It's a comfortable, low crime, friendly town. I especially appreciate the consideration and support provided to our senior residents
The people
Sense of community;
The families.
Even with all the growth this town has had, the people for the most part are very caring and kind.
I like the people, most.
In general people are friendly, there are still some locally-owned businesses able to do well,
The people.
Community activities on the green & elsewhere . . . People. . . Wonderful neighbors and friends
Nice mix of people
The people
Pembroke is a small and tight knit community.
Also great communication from the town via Facebook, website, etc.

I like the close knit community
It has a great small town community. We love the town events like the fish fry and the trunk or treat.
Nice community,
Low crime nice
people.
Economic diversity, nice people, My neighborhood. I love my neighbors. Not snobby despite
median household income is 95k, lots of volunteers and I feel at home here The kind
community.
It's (mostly) quiet. There's also a sense of community, which I value.
Wonderful people.
That's it's not all rich people and a diverse community and
solid police dept.
People
The sense of community
Safe, quiet Family
oriented
community
Community
I like our neighborhood because he's quiet and very safe compare to a big city.
Strong community aspect
Nice community with everything we need
Small, friendly and safe. Great location & the people
community spirit and pride in high school sports and clubs
friends we have made
People. Great sense of pride and willing to help anyway possible.
Can be quiet at times.
The people.
Relatively quiet, laid back, low crime
That it has a diverse range of people.
The friendly people, and the relaxed lifestyle
It's pretty quiet,
Diversity of residents, my own neighborhood
Quiet nature of the town.
Some nice people we've met.
The people
It's a middle class community. Crime rate is low.
The community
Strong sense of community dark and quiet
at night. Good neighbors. It is quiet and safe
and people are generally friendly and caring.
Other Residents/youth sports programs
The town comes together in times of need. People are outgoing and will help a neighbor in need.
Involved community
The feeling of community. It's a blessing and a curse.
The people
Quiet community with lots of wooded areas
Great community of people, involved families.
My neighborhood.
It's peaceful, beautiful and friendly.
The community, the activities and ways to stay involved.
Community and people, specifically young families joining town.

The sense of community is amazing. I have always said that the people of Pembroke are the "salt of the earth!"
Quiet, everyone knows each other for the most part. Nice community, people are very friendly.
Sense of community
Great family focus and high level of community commitment small
community,
The young families and community feel.
Fish fry and other unique traditions
The people in the community
Quiet, beauty, safe
Sense of community Small
community feeling.
It is welcoming and safe.
Community The
community
great people
community
Quiet, safe, not over populated,
Good place for children
Quiet, safe, friendly
The people are genuine and mke a great community The
people are great, it's a nice community.
Close knit community.
A nice community
The support structure I have in pembroke is second to none.
The small town events: Christmas tree lighting, The grand old fish fry, the town birthday a few years back, parades,
Sense of community
The people Good
people.....
The kind people
The sense of community that we've formed (ie how we rally around our "Titans") The
events in town.
and close knit community.
Friendly people,
Friendly people
People
The neighborhood feel, safety for our kids,

Schools
Schools
School system has great teachers and the performing arts at PHS are wonderful. I like events like parades and tree lightin
Library is nice.
My children received a very good education.
schools
good schools, excellent music department
Good schools the schools are pretty good
School sizes. Great school system with
great schools Nice schools schools and
teachers
I love the schools and appreciate the direction that they seem to be going in since the split from Silver Lake
Good schools for the kids (although getting more dangerous) Excellent school system with an awesome

find arts program. good schools... Good schools The schools, school system the excellent school system great schools and good schools.
schools great
schools
Good schools
I like all of the teachers I've met. The school systems small class sizes for my kids Great schools. great schools, Schools good schools like that I can send my kids to the same school I went to as a kid.
good schools, The
school system
good schools

Prox. To Boston/Cities Close to highways, and Boston. but still proximate to Boston, beaches, cape, Plymouth proximity to my job
distance between Boston and the Cape
Close to Boston and Cape Cod access to Boston.
It's proximity to other places.
Distance to Boston & cape cod and it's just close enough to Boston.
The commuter rail to Boston
the proximity to Boston, the Cape and beaches and convenient location. but access to Boston or Cape Cod isn't too far away.
You can commute to Boston, Plymouth, Brockton, Taunton, or the Cape for work, Location to Boston and cape.
close to Boston and Cape Cod.
proximity to the ocean.
yet close to Boston
It's in the middle of everything, beaches, plymouth, weymouth etc.
proximity to ocean, boston, cape near highways. near ocean
I like that there are many public transportation oppertunities into Boston and like that it is close to the ocean
Location to Boston and Cape, proximity to Boston pluses of being able to work and play in the beautiful city of Boston easy commute to boston proximity to Boston & beaches
Proximity to Cape and City Close to the beach and Boston.
Close to lots of places beaches & Boston
still accessible to the city..boston f2f close to highway and Boston
Location - relatively close to Boston & the Cape, close to the ocean.

Open Space
clean air, quiet, trails open spaces still exist. there is still some room for wildlife.
Open space, hiking trails, large swaths of undeveloped land
Ponds
Trails and ponds are beautiful
Walking trails and open land;
Open space

Walking trails, swimming in ponds ponds,
woods, bogs, (walking trails) ponds;
Open space.
The places to walk.
Open spaces for walking
I think it is equally important we have walking trails lots
of trees, nature, beauty
I enjoy the open space and pray it does not change. Great
library Great sports fields Town Landing/Boat area The
conservation areas!
in nature but close to highways
The rural open spaces like Willowbrook and Herring Run
Green space, nature preserves
Woods and water
The ponds
By the beach, Walking
paths plenty of outdoor
areas.
The nature, hiking trails, and proximity to cool spots including the beach
Quiet, open spaces, the cranberry bogs (almost all gone, now),
great parks and walking trails and beaches at the ponds.
to be able to walk my dog on its many open spaces. Also love to take my kids swimming at the ponds
Several conservation areas.
The ponds
The lakes and forest areas.
and there is some fantastic open space
Open space and that we have places to walk/hike that are not a mowed grass field like s town park would be. great
wildlife and natural ponds and rivers with protected wetlands.
Its open spaces
I moved to Pembroke because of the Wildlife. I deliberately chose my home down on the North River for that very reason
Farms, open space.
open spaces
I like the open spaces and amount of trees.
Being near the ponds and water and open
spaces great open space The lakes and
forests beauty of the land Trees and farms.
Also love all the ponds and water
I love all the trees and space between houses
like to take walks in the nature trails the trees
and nature all around amount of open space.
Open space and walking trails
places to hike, bike and walk. beautiful ponds. scenic horse farms. peace and quiet
Open space remaining open space. Ponds. Land conservation.
conservation areas the
good outdoors.
The trails
Open spaces, ponds, open
space

Rural Quality/Small Town lots
of country feel
Small town feel,

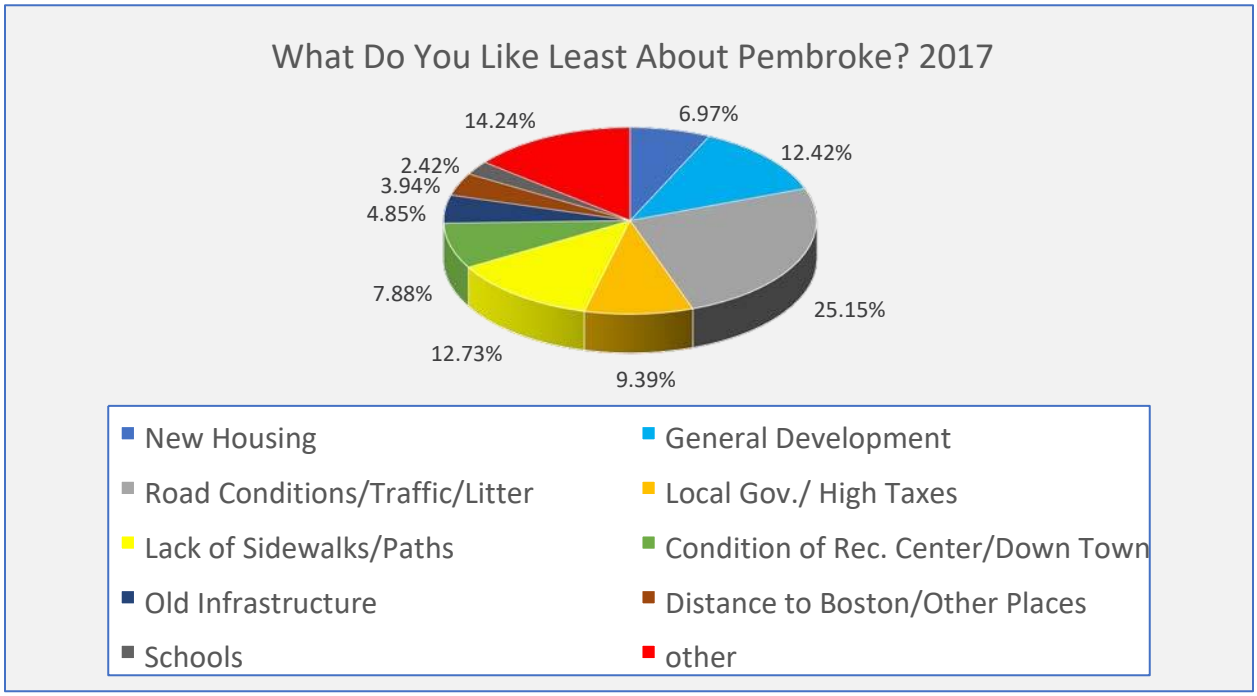
Small town with activities for kids, safe
It was the quiet, rural area but this atmosphere is rapidly disappearing.
10 Being quiet & all the tree 2/16/2017 7:59 PM
It's not an over-developed town like nearby towns such as Hanover which have virtually removed every piece of . . .
Small town feel
Was rural
Quiet and peaceful. Enjoy the areas/places available to walk. Happy that the center was renovated
small town feel
Rural feel
Quiet living but close to everything
and small town feel quiet,
quiet
Small town feel but
still a small twon
The rural feel to the town
Being away from the city, all the trees
Farming community
1 acre lot regulation
The farms, the space, the feeling of being more rural but having shopping conveniences so close
It's a fairly quiet town, with a lot of family oriented activities, and everything is really close. Small town, and how quite it is.
The quiet rural feeling yet close to most amenities.
I liked the ruralness,but that's gone. the trees and the historic preservation
aspect of town buildings and spaces
I love the small town feel. Typical acre lot size. Town "center" (minus the ugly monstrous CVS)
The pseudo-country lifestyle. Small town feel involved families, small town feel. There is not a lot of traffic except in a few main areas.
I like the feeling of a tranquil setting, quiet back roads and farms
Small Town Living
I love that it isn't overdeveloped. It keeps the small town charm country
town
It's scenic, peaceful and quiet,
It's a great little town
Quaint features
Everything i need close by. Overall town atmosphere
The small town atmosphere
I love what remains of the rural characteristics.
The small town atmosphere charm still exists but sometimes feels like it's fading Quiet.
Private. Lots of space to have my mini farm!
The quiet and the small town feel, activities on town green etc
Feels rural but close to everything. and small town feel.
beautiful surroundings, , quiet atmosphere
Small town feel
It's a quiet little town
Small town feel The
small town feel.
It's quiet and away from the city
Far enough away from suburban Boston to keep the small town appeal.
Small town feel.
The undeveloped tracts of land that gives it a country feel.
Small town feel
It's a quiet town. However there is a lot of activities around town and in neighboring towns.

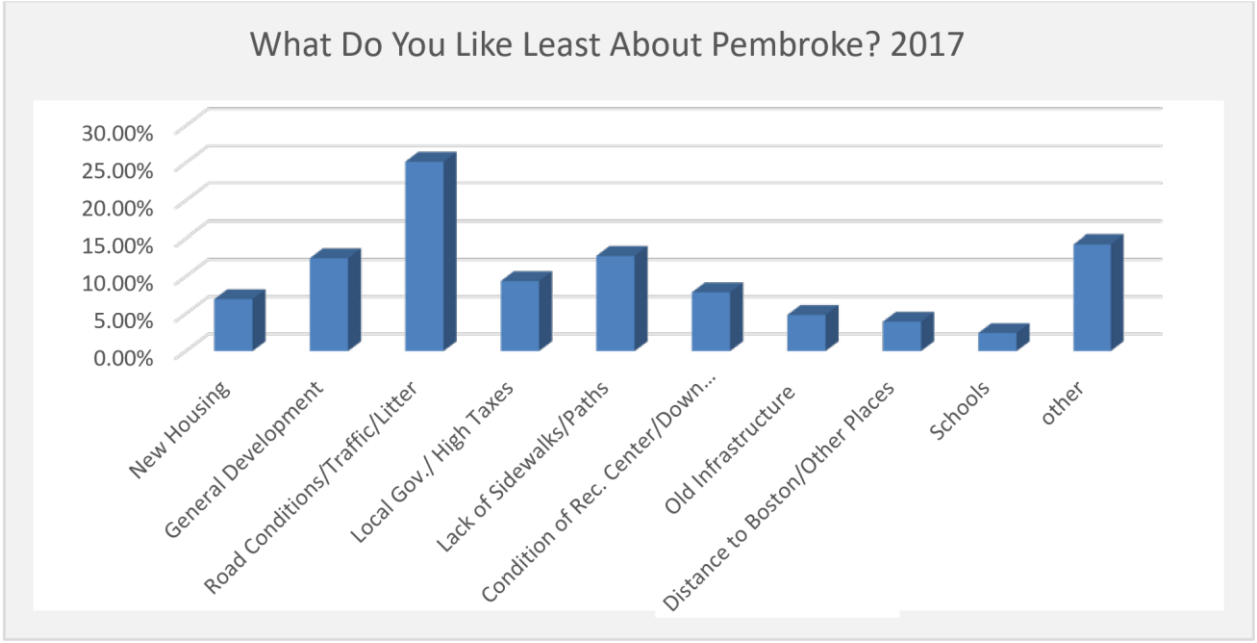
Large yards/houses
Small town feel
semi-rural
Country feel but still near highways.
Small town, affordable,
Ruralness
The small town
Very accessible, historic and scenic
Small town for now
I like the small town feel.
My neighborhood has rural charm,
I like the combination of rural and residential, blue-collar and white-collar I
like small town feeling where community is key.
Quiet rural neighborhood
The history and small community feel Rural
nature. Larger lots.
That it feels like the country yet has amenities of the city.
The small town atmosphere where u can still shoot a firearm on ur property
Small town feel
Small, affordable Be a
small quaint town rural
nature large, 1 acre lots,
or more.
Quiet small town.
I like the rural feel to it without it being in the middle of nowhere small town feel
The 'rural' feel - lots of space in a rural community yet close to many amenities
and conveniences. Small town feel.
the "small town" feel
it's low key Small
town feel, quiet,
wooded small town
feel
Rural feel,
The quaintness of the town and the country feel. still
has a small town feel.
Rural, but with easy access to stores and transportation.
I love the small town feel,
I love the natural, country environment and the prevalence of historic/antique properties and structures
The small town feel with many conveniences small-town feel, quaint
small town feel, still close to everything I
like the rural atmosphere.
Has a nice small town feel
It's quiet and it feels like a small town.
It's small town feel
The small town feel
Rural character, small town feel. Quiet, feels safe.
The rural feel
It's country
Farmland, woods, scenery, small town feel, small
town feel
Safe, quiet
Quiet town.

other
Christmas tree lighting.
stores
It's History, Homey friendly town.
Too many condos
My yard. The library
It gives me the enjoyments of life without going anywhere. Balancing this are good restaurants and convenience to shopping The familiarity.
More land for price.
Everything you need is close.
Cost of living.
but with plenty of shops and amenities in close proximity I like that's it not cookie cutter neighborhoods or subdivisions.
Quiet but accessible.
Proximity to everything.
Lack of traffic lights.
It's convenient, Location - close to everything and location Plus the closeness to Rt 3.
youth sports leagues pyh pyb pyc IT'S MY HOME
The wildlife.
It's location.
Cost of housing size of lots space Proximity
old historical homes

Question 6

What do you like least about living in Pembroke?	
Answer Options	Response Count
	249
answered question	249
skipped question	28





Open Responses:

New Housing New

residential development

too much expensive housing happening too fast

Too many condos being built

all of the new apartment and condo complexes being built, too many neighborhoods going up
Apartment buildings. Large developments. Lack of affordable housing (specifically rentals),
affordable housing complexes
Too many housing projects popping up.
The condo/apartment buildings going up everywhere. The tree cutting everywhere
More residential building.
The houses being built. The fact that a builder is tearing down acres and acres of forest and ruining
neighbors lawns
Too many McMansions being built, too many condos going in
Over populating the town
Influx of condo/apartment buildings
Too much population growth in too short a time.
Not liking changes and build ups of condos and lower income housing
Proposed 40B project on Water Street
The construction and town houses being built everywhere expansion/population
growth is infringing on the niceties
The constant knocking down of woods for more houses
I am worried about all of the open space that is being developed with the chapter 40b loophole. The
news condo developments seeming to pop up everywhere. They are too congested and tax the
infrastructure.
Too many new condo developments.

New Gen Devel.
building up to be like every other town in the us
New developments
I think the Center looks awful.
Unrestricted growth along Rt. 53, tacky signs history of the
town is being tore down. Nothing modern is nice.
The growth and development. We have enough.
It's becoming built up, losing the rural feel we moved here for The
development The number of trees being cut down.
Growth and overbuilding.
the amount of building that is happening.
Building Boom
The development of all the land
We don't like that it seems that builders are building on any and ALL open land.
Too much development
Some areas are underdeveloped and a little trashy.
ugly developments,
near stop and shop/Lowes neighborhoods around the ponds are over developed The
clearing of trees for new buildings.
The over development of the town.
Building up
How it's building up too fast.
The way it is being built out.
Construction and the fact it's growing
All the development always a push to
build something.
Recent over development
Our area is being over run by developement developments are popping up all over
the place ruining the rural quiet feel of the town.

The threat of overdeveloping and having rt 53 turn into Hanovers rte 53- crowded, abandoned businesses
The fact that there is so much construction off condos, and businesses

Over development in areas
Lack of major industry (local jobs)
That we are losing our charm with more and more condos, office space and becoming less and less family friendly.
and loosely regulated construction of buildings constant developement
The constant construction and new builds.
It's getting too built up, everywhere you drive there are new developments going in. Slow down!
Pembroke is being built up, we are losing the open spaces where wildlife live and our families can enjoy.
Starting to lose small town feel due to development Getting
too big, every available space is being built up.
All the new retail

Road Conditions/Traffic/Litter
The road conditions year round are poor
Roads are terrible The roads!
The roads are awful to drive on.*] The
roads!
The roads are in bad shape!!
The condition of the roads
The roads in general could use some repairs poor
roads
Widening roads Ahh
the road work...
horribly paved roads
Terrible condition of the roads.
crumbling roads
The roads at the moment.
The roads!!!!
the horrible road surfaces street
conditions
The deplorable condition of Cross Street
Road conditions and the roads. They
are horrible. Roads in bad shape, the
roads need repaired
The roads are pretty rough
Some of the main roads are frankly in awful condition at the moment The
few access roads are all congested and in terrible condition.
The roads are in such horrible shape, all over town.
Traffic lights and road conditions
The potholes-DPW refusing to fix the road, I do not know why????
The crappy roads. Roads/infrastructure the roads are terrible
roads....poorly plowed,not maintained well
Roads,
The potholes
The road itself is almost undrivable now with the uneven asphalt
badly maintained roads the roads.
The roads are poorly kept with high taxes.
The current condition of Centre Street
The roads are horrible. The roads on rt.
14.

The terrible roads
Road conditions, fast
traffic, rude drivers
speed of vehicles on roadways, especially Rt. 14. Dangerous
Traffic in center
How fast people drive Traffic
in center.
pick-up trucks with loud exhaust, lack of vehicle speed enforcement
the new rotary, more traffic how fast people drive
People speeding in my neighborhood and dumping trash along the roads. people
coming up Mattakeesett from the center zoom on when they don't have the ROW All the
new traffic lights
The left on 53 needs a street light. I see a lot of accidents there
Increased traffic,
I dislike the traffic lights in the center. I dislike the lack of a traffic light at 53 and Elm.
drivers tailgating traffic near where I live
How fast people drive on my street.
The traffic at the center,
Increasing traffic
The busy roads
Traffic
Population growth is causing unmanageable traffic problems on all the main roads.
Traffic is worsening. No light at Pleasant Street and Rt. 53.
Traffic has been getting worse
Additional traffic during peak hours
New construction of needless projects and greedy builders who want to destroy this town's ambiance
traffic along 139, and the new traffic lights in the center, and planned for Pleasant street.
Also the lights downtown could be the worst I have seen anywhere with 3 lights within feet of each other
Route 14 is getting so busy on the weekends and "rush hour", especially through the center of town.
traffic has become quite an issue
Pembroke seems to need some safety issues addressed with traffic
Traffic in the center of town route 3 traffic going in and out of
boston traffic
The speeding traffic on all our roads. speeding
traffic
people littering on the lawns
I hate the litter problem
Issues with trash/litter/large items getting disposed of on side roads

Local Government/High Taxes Shortsighted
leadership
Ineffective government.
Sometimes I feel that our town planning is short sighted. They see a quick monetary gain and loose the interest of the towns long term goals
corrupt selectman and corrupt town officials and useless police. higher taxes than Duxbury How
slowly it takes for the town to make changes for the better.
Feel as though the people who run this town are for themselves only. They are crooked.
No money in town for schools, traffic lights, sidewalks, police or fire dept,
Town hall politics
Needs to be run more professional.
I hate how the DPW does not clean the streets I don't like how the Board of Selectman turns a blind eye to the problem

The waste in town government
small mindedness when it comes to zoning and preservation
The poor decisions being made by the zoning board managed
by town leadership.
The workers at the town hall
A lot of conflicting priorities for budget resources: fire station, police station, school turf project, community center
I don't like that the town bought the parcel of land on the corner of 14&53 and didn't tell the residents it was for the future fire station
It's need for an improved style of government
Lack of transparency among leadership (rarely share details of decision making) entrenched board of selectmen
The taxes are very high. Almost $4000.00 for a 1000 square foot house with no basement
Taxes and fees
High taxes
High Taxes High taxes high taxes
high taxes. tax rate that's gone up
5$ per 1000 High taxes
i think the taxes are high rates comparable to Duxbury without comparable standards of scenery, historic preservation of town buildings/center school system -taxes are high for what you get (or don't get)

Sidewalks/Paths
Lack of sidewalks
Not enough walking, running paths Not
enough sidewalks.
nice if there were more sidewalks
Not enough sidewalks.. No
sidewalks lack of sidewalks, Not
very walkable
Not enough side walks
Lack of sidewalks,
Sidewalks are being put on a street where there are no schools Lack
of sidewalks in town.
not having sidewalks that go from the schools to main roads.
Lack of sidewalks, especially joining our schools to neighborhoods...
I am concerned about safety when out walking.
Lack of sidewalks. I can't let my kids walk or ride their bikes to friends' houses
Currently, route 14 and the fact that we were promised sidewalks 11 years ago and they've still not been put in.
the lack of sidewalks in and around the schools,
Lack of sidewalks
No sidewalks near NPES/Oak St No
sidewalks or strong town center.
wish there will more sidewalks a more of a "town center".
Lack of sidewalks.
Lack of a real downtown area and limited sidewalks or paved trails. 2/6 and
the lack of sidewalks.
Not enough sidewalks near recreation areas, such as playgrounds
lack of sidewalks The lack of sidewalks.
No sidewalks!
No sidewalks!

No sidewalks, hard to get around without a car, pretty sleepy
Lack of sidewalks around the middle school and high school for kids that want to walk or ride bikes to school. sidewalks Lack of sidewalks!
No sidewalks.
I also do not understand the construction for sidewalks on Rt 14
lack of sidewalks, sidewalks
Limited sidewalks
Lack of sidewalks. Ability to walk without taking your life in your hands
No sidewalks to enjoy a stroll lack of sidewalks

Rec. Center/Town Center
rec building/community center in town is horribly run down
Com. Center is in dire need of an upgrade and is a waste of potentially useful public space.
Old Recreation Center/
The Rec center is disgusting and should be torn down,
The dilapidated Recreation Center building the Rec
Center.
the community center building,
Rec center building is an eyesore in need of major overhaul
the biggest eye sore is the Community Center community
center all in rough shap Too many lights in the center.
I think the buildings on main street could use some repairs
Town Hall needs updating-they are great spaces with so much potential.
The center of town is a nightmare, needs to be fixed. If you want to buy open space, buy the building housing dunkin donuts and make it open space
The center has such potential but the buildings are lacking in curb
No real town center,
The center of town needs to be modernized, incl police department.
It has an aging downtown with the community center but has a tremendous opportunity to define the town center
The center of town needs some revitalization, The fields at some of the schools are terrible and town needs some beautification.
Doesn't have a good community center.
The senior center needs to be updated to be accommodating like the other towns.
The run down buildings in town center
Lack of a great downtown area - would love to have a downtown like Plymouth or Cohasset It's
lack of a true town center.
lack of visual cohesiveness of PemCenter and
the lack of a really vibrant town center.

Old Infrastructure
The lack of modern facilities.
general infrastructure updates needed.
The outdated Public buildings (library - excepted) The volume of trash on the side of roads
Need more street lights
Older town infrastructure
I live on a pond and have a tight tank and would LOVE to have sewer septic
systems
Town is growing but infrastructure is not keeping up
Limited transit
I don't like how run down our town looks No
investment in town improvement.

infrastructure generally Lack
of transportation
and limited infrastructure (wide roads, sidewalks (not just 14
Litter, crumbling municipal buildings,
Lack of amenities and services

Schools
The schools cannot absorb the high number of students
Schools- middle & high. NPES is the best, if the rest of the system was as good as this school we would be all set
high school is not great I'm
unsure of the schools
Inconsistency amongst elementary schools. Feel schools are discjointed and could do better job sharing best practices
No vocational school
A lot of different school district
The schools seem further behind the time than they should be

Distance to Boston/Highways
How long it takes to get to the highways.
To try and go anywhere out of town is so difficult and time consuming.
far from boston
Long commute to Boston for work ??
Long commute to work
Commute to work on RT3 north in the morning
It's farther from Boston and not very convenient or affordable to get downtown. But I knew that, moving here...
The distance from Boston
Not coastal.
The commute to Boston is difficult. Driving is terrible and the commuter rail doesn't run a frequently as I'd like it to.
the commute into boston It's a
good drive to get anywhere
Distance from highways.

Other
The people
I find the drug/opiate issues to be a major concern in the south shore
The drug problem,,
The next door neighbor,
Resistance to change
Would like to see more recreation programs
Losing the home town feel Only Comcast
for cable. not sure
Not a lot of diversity
There is not a whole lot to do for teenagers
lack of diversity, and lack of a willingness to change with the growing
The degeneration of our ponds. Huge recreational, aesthetic, natural resources...turning into smelly swamps all the drunk drivers and drug users. every street is full of liquor bottles in the street.
not enough for kids besides sports

The increase in lower income Makes me want to move to snobby areas. Maybe they were right.
Dirt bikes and the sense of divide that occurs once past the Center heading towards Halifax.
Would like to see lands up for sale bought by the town in order to stop this for more parks
Not much to do
Lack of neighborhood unity
Mentality that this is still a town that has 10k residents and is a small town.
People who do not want our town to progress lack of programs I see in
surrounding towns. no open and safe space for ATVs/dirt bikes
That there isn't a skate park or street hockey area for the kids neighbors in the Wampatuck area,
it looks like the ghetto it's disgusting, it needs to be fixed up or segrated by fences.
beautiful town but the litter makes it look like a ghetto (ghettos are actually LESS littered). I
I was surprised that so many residence have a distrust and lack of sympathy for people who don't look like them.
The lack of diveristy (racial, religious, socio-economic
I do wish we had stronger community pride.
People think it's better to live in a more upscale local town. That bugs me I don't want us to be viewed that way.
Still an expensive south shore community.
I dislike all the political signs
the idea that it's "hick-ville" and the people and "low budget"
Losing small town charm
Would like more for kids, skate park, pool, clean ponds, more facilities at ponds, parking, bathrooms etc.
Comcast exclusive TV so no price competition from Verizon
The fact that once the town puts land into Conservation status it neglects is
Lack of racial diversity
Taking away more open space and limiting that open space to its use. lack
of down town stores
I would like to see more small shops.
Needs more restaurants Not
enough restaurants.
lack of restaurants
the lack of actual GOOD restaurants Lack
of restaurants and things to do.

Question 7

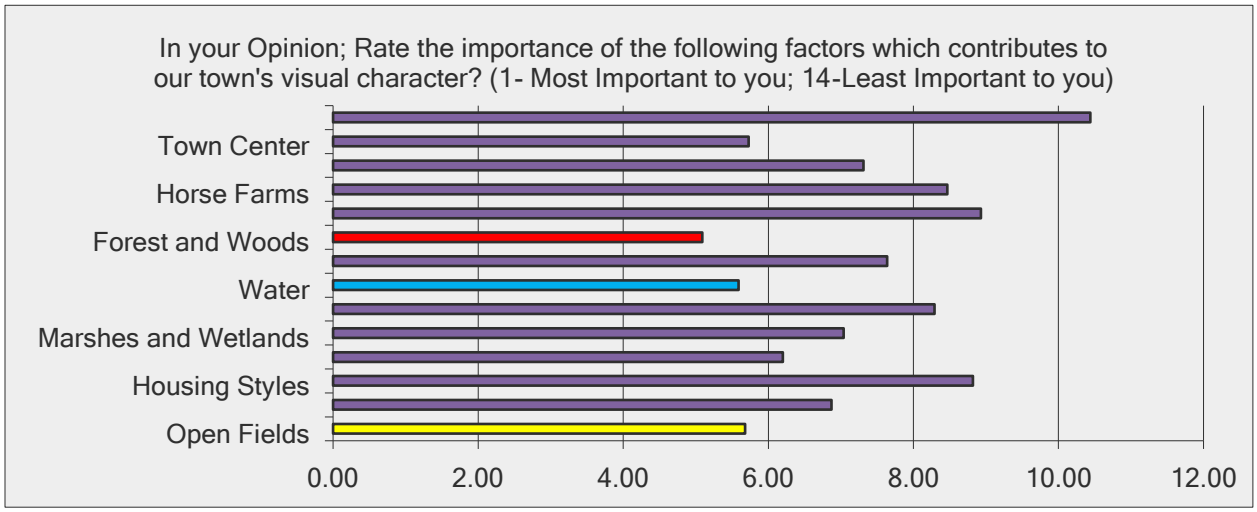
In your Opinion; Rate the importance of the following factors which contributes to our town's visual character? (1-Most Important to you; 14-Least Important to you)

Answer Options	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Response Average

															Catague nt
Open Fields	27	21	23	26	33	17	16	18	10	8	10	11	3	6	5.686
Farmland	15	16	22	21	17	21	25	17	12	16	12	15	14	7	6.87
Housing Styles	10	14	18	7	8	15	17	13	17	16	11	15	30	40	8.826
Treed Streets	16	23	19	24	17	22	19	24	19	12	5	11	5	5	2.207
Marshes and Wetlands	18	16	16	17	20	17	20	14	18	15	19	13	15	6	0.048
Cranberry Bogs	3	6	14	16	20	18	18	15	23	18	24	21	18	11	2.295
Water	33	33	17	20	16	22	15	8	14	16	10	9	9	1	5.597
Views	9	10	19	12	17	18	19	26	22	21	13	16	13	10	7.645
Forest and Woods	33	40	29	23	15	18	17	13	12	9	3	6	7	6	5.098
Stone Walls	1	7	9	13	16	12	18	20	21	27	31	19	25	14	8.93

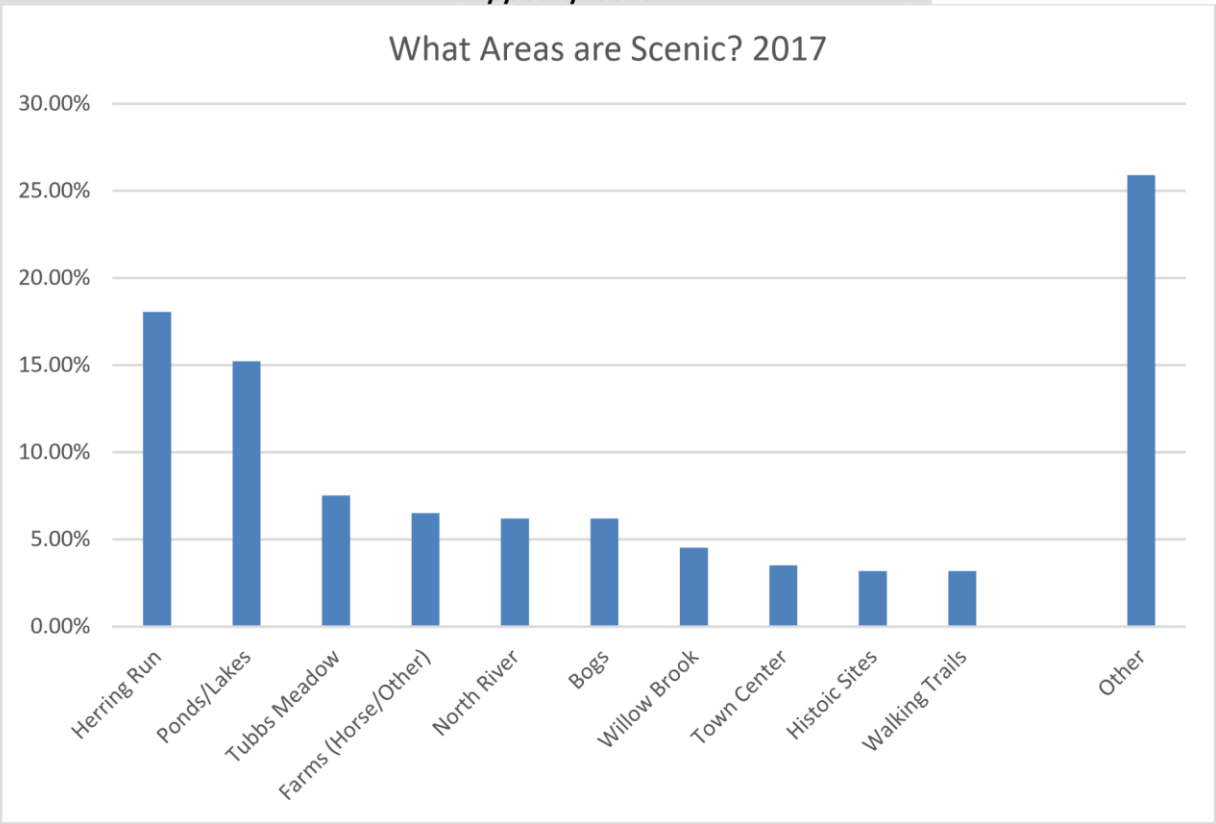
															nt
Open Fields															229
Farmland															230
Housing Styles															231
Treed Streets															221
Marshes and Wetlands															224
Cranberry Bogs															225
Water															223
Views															225
Forest and Woods															231
Stone Walls															233

Horse Farms	4	11	17	17	12	13	18	21	20	21	18	29	20	18	8.4774	239
Historic Sites	7	14	27	20	23	20	10	18	15	25	20	19	12	7	7.3155	237
Town Center	67	26	17	18	12	10	14	8	10	12	19	12	14	12	5.7310	251
Cemeteries	7	11	6	10	12	5	10	11	11	11	15	24	35	85	10.44	253
answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	answered question	268	268
skipped question																	9



Question 8

What areas around town do You consider to be scenic?	
Answer Options	Response Count
	237
answered question	237
skipped question	40



Open Responses:

Ponds/Lakes

75

(Cranberry) Bogs

37 North River
37 Horse Farms
39 Herring Run
108 Town Green
8

Willow Brook

27

Tubbs Meadow

45 Town Center
21 Rivers

8

Other Towns

1 Rt. 14 Parks and Forests/Barker St.

15 Open Fields

7 Walking Trails

19

Cedar Swamp

1

Farms

15 Indian Head River

8

Woodlands

11 Wetlands

7

Town Landing

4 Historic Areas

19 Center Cemetery

5

South and West

1

O.S. on West Elm

9 Ball Fields

3

Windswept (?) Bogs

1 Elm Street

2 Center Street

3

High Street

10 Oldham Street

1 Taylor Street

3

Community Center

1

North Pembroke

2 Furnitur e Store on 53

1

Parks/Preserves

9 Tree Lined Streets

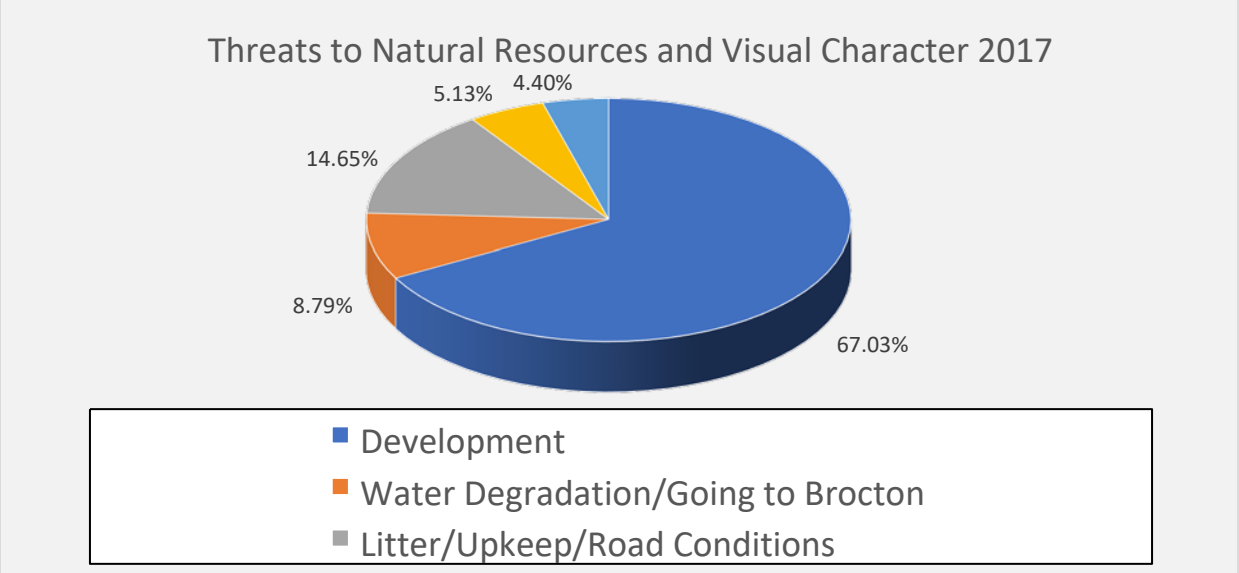
2 Dwelley St.

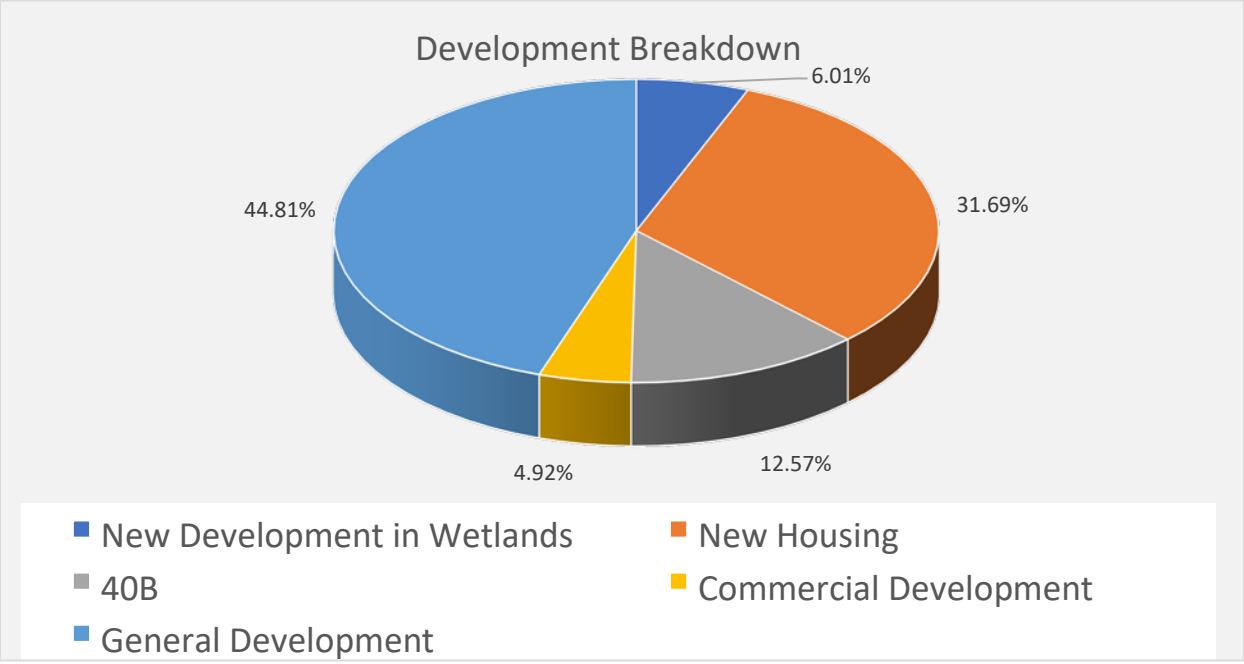
1

Bird Tower
1
Elm and Monroe St.
2
River Run
1
Back Streets
1
Luddham's Ford
6 Village
1
Mattakeeset Rd
3
Chandler Preserve
1
Streams
1
Misty Meadows
1
Wood(Wild)lands Trust Conser.
4
Tucker Preserve
4
Meadows
1
Church In Town Square
2
Meadow Brook
1
Halifax Side
1
Kenny Lane
1

Question 9

What do you perceive to be currently threatening Pembroke's Natural Resources and visual character?	
Answer Options	Response Count
	231
answered question	231
skipped question	46





Open Responses:

New Housing

New housing developments; removal of trees along streets
the density of housing around ponds
Loss of historic homes, residential developments
Too many multi-unit complexes too many
houses being built
The rapid growth of condo developments condos
Housing
Too much building and condos
Housing! Housing!
I do not think this town needs any more condo type developments.
Also, way too many apartment and condo complexes going up.
Please no large apartment complexes!!!!!
Too many condos,
Building. Tons of land is being cleared to throw up cookie cutter neighborhoods It
would be great if we could stop building private cul de sacs.
The many condos, apartments, commercial areas are threatening to turn Pembroke into Hanson
Condos, apartments,
Residential developments
The overwhelming growth of condos
Growth without proper planning to handle the extra people moving in
Housing developments
Building houses. Clearing of land. Stripping our forests.
New housing
Influx of condos and apartments
Condo developments and people that don't take care of their properties :(
Too much residential building. 2/
Cheap housing
Condos
I think developments with single family colonials take down too many trees
Too many housing developments
Over development of town houses and condos
housing development Water and condos
Townhouses!
Residential build out developers building housing developments on the little
open space we have left.
Housing Apartments
Unfortunately our lakes have need strangled by houses. We need more natural shore lines with walking trails
Over development of condos
The condos and ugly buildings going up all over town. Making it feel less small town and more like
a city.
There seem to be many condo developments going in.
Too many developments are going in. We really don't need anymore townhouse developments.
Building more houses apartment & condo complexes too much building, condos, construction
packing a lot of houses into small lots.
Too much new home construction.
Residential development and financial resources to maintain open space
Condos
The town approving too many homes too close together
Apartments condos and McMansion
All the darn condos
Condo developments

Condos and town house structures. The roundabout!
Apartment complexes and condo villages

40B
40B development,
Over building 40 b housing (not needed when there are so many affordable older homes)
We certainly do not need 60 housing units near the North River
Inappropriate Chapter 40B building
Proposed development on Water Street
Low income housing that can build on natural reserve.
Condo project off of Water St
Low income housing developments like Pembroke Woods
Housing 40B on Water Street
40 b proposed housing on Water St would be no better example of both.
The river marsh 40b project as the builder is using the 8 units for 40b to destroy the environment 40 b projects
40B development proposed off of Water Street Extension adjacent to the North River
40B for certain!!! We need to get an affordable housing plan done and approved by the state,
40B projects being potentially pushed into areas that they should not go
And now the 200 Center project!)
Adding of 40b projects along the north river. It hurts the view, the environment AND peoples homes
Oversized affordable housing developments on wetlands or parcels of land that do not support the required
40b housing that bypasses local restriction.
Large condo and/or 40B developments.
Lack of government planning. 40B.
Rotary addition and low income housing.
Housing development. To many 40b being built on wetlands and not enough noligable people of the damage being

Commercial Development
Industrial park Box
stores
tattoo parlors and pot dispensaries
Cutting down all the natural land to build, especially retail establishments
Too much corporate building
I do not want to see a taco bell or wendys in the town center
The commercial buildings and the center of town
Big box chain stores and fast food restaurants
Expanding commercial areas and excessive parking lots

General Development too
much building
Too much development/urban feel
Uncontrolled building (commercial & residential),
New streets , taking of open land
We should be using vacant properties before allowing the destruction of virgin lands
development excess growth
Development
Over Commercialization town
center is too commercial

Over construction
Just modernization in general
Commercial and residential development
Constant building projects, the new roundabout ??
Over building construction Too much building.
Overbuilding. Where will it end?People who do not live here developing every possible square inch
Too many multi-unit housing areas, expansion of commercial area in the center
Overpopulation and the need to "modernize" everthing areas will be too dense and we will definitely lose the small town feel.
New construction.
Building Boom Don't
over develop!
building on untouched land
Over building
OVER DEVELOPMENT
Development
onstruction.
developments new
developments Over
development stupid
development over
development
New construction and building
Too much building
The growth of the town itself
Development
Building developers.
Over development
Development
Allowing development anywhere there is land to build on.
Over development both residential and commercial
Any new building project building projects Over
building
Development
New housing developments
Construction
New developments for housing and businesses.
Buildings and townhouses
I'd be concerned about further development of open space that has managed to remain open since colonial times.
Increased building Reckless
over development We are
being over developed.
Too much new construction 2/6
Overbuilding
Too much new development
commercial and residential development, especially when it replaces open space and historic buildings
Overpopulation, development condo
and commercial development
Development
Lots of new construction going on right now in all different parts of town.

Overdevelopmen
Construction overbuilding
Development Growth
Overbuilding.
Too much building
Too much development
Construction
Construction on valley st
Development Overbuilding
Development
New Construction
Continuing building
building building
Development - condos & commercial construction
Developmen

Road Conditions
inconsistent signage along main thoroughfares,
Roads in disrepair road condition
Lack of maintenance to roads and trees/bushes on side of roads
the disrepair of the roads Roads repairs,
Streets in need of repair, The
condition of The roads town
roads are terrible
The roads
Unnecessary roundabouts roads - every street is full of potholes - every street over grown - 0 maintenance street programs.

Water Degradation
Ponds are becoming low that won't allow for outdoor activities soon
Motor boats on pond the weeds that are choking some ponds
(fanwart?) did repair of the pond areas water quality of Ponds
THE PONDS
Mud filling up ponds. Ponds are Pembroke.
Furnace Pond needs to be dredged before it becomes a swamp.
dirty/polluted ponds
Water supply needs improvement - the water is terrible, the ponds are gross and scumy!!! The whole town needs sewerage.
Bogs that have gone to pot. They look like giant weed growths.
Polluted ponds. water pollution
the ponds low water levels and problems with the ponds
Get rid of the aquatic invasive species that threaten our ponds (milfoil) so that we can use them more
Water pollution,

Water Going To Other Towns
Brockton using our pond water.
depletion/destruction of Silver Lake by Brockton water use....why isn't town taking action against Brockton
A huge threat is drought and the use of our water resources by other towns
Brockton’s unsustainable water withdrawals from Monponsett Pond

Brockton Water and Abington/Rockland. Water diverting to much water from the ponds ocktons
use of silver lake
Silver Lake worries me because it is so drained...

Tree Removal
Large cleared land on Oak street where all the trees were cut down and large rusted containers left on
the property
Whatever is going to happen on Route 36 where all thise trees are wrapped up...not sure if they are
coming down or
All of the trees that they took down in pembroke industrial park.
Removing trees to widen roads and sidewalks.
Oak street deforestisation cutting down trees
for parking lots, apartments
and the eye sore with all the cleared land across from Tomassi's by the oak street
Taking down trees along the street - corporate park cutting down trees,
The destruction of woodlands and building of large condo units or developments are perceived to be threatening the
The destruction of trees and open spaces is horrific all the trees that were cut down off 53 To many homes and
cutting down trees.
the cutting down of trees near industrial park n Pembroke

Litter/Upkeep
litter
trash that gets thrown on the site of the roads
Drunks breaking glass at beaches Other littering
Litter Littering.
Litter/vandalism,
Trash Chemicals from roads
Trash & litter
Litter
The lack of maintenance surrounding them.
unfortunate litter that seems like a growing problem. people
throwing trash out their windows onto streets and rivers. Trash,
littering
old buildings in disrepair
Run down/out dated houses
Lack of homeowner pride- clean yards/maintained houses etc Citizens
who do not take care of it
older buildings in need of renovations, drug paraphanalia in/near public beach areas Low
income homes falling apart, makes the town feel like a dump.
Lack of maintenance and investment in natural resources
Dilapidated homes with trash and junk in the yards, ramshackle cottages on the shores of the ponds,
Deferred maintenance on several dwellings, junk/trash in yards. Would love to see more lighted roads (street lamps), lack
of funding for upkeep, lack of citizen engagement
add a "Pembroke Pride Day" to create a town-wide effort to work togethe
Run down homes community center
Trash, small lots sizes, multi unit dwellings, loss of public access to trails and pathways because public properties are
Cleanliness inconsistent signage along main thoroughfares,
Roads in disrepair road
condition
Lack of maintenance to roads and trees/bushes on side of roads
the disrepair of the roads Roads repairs,

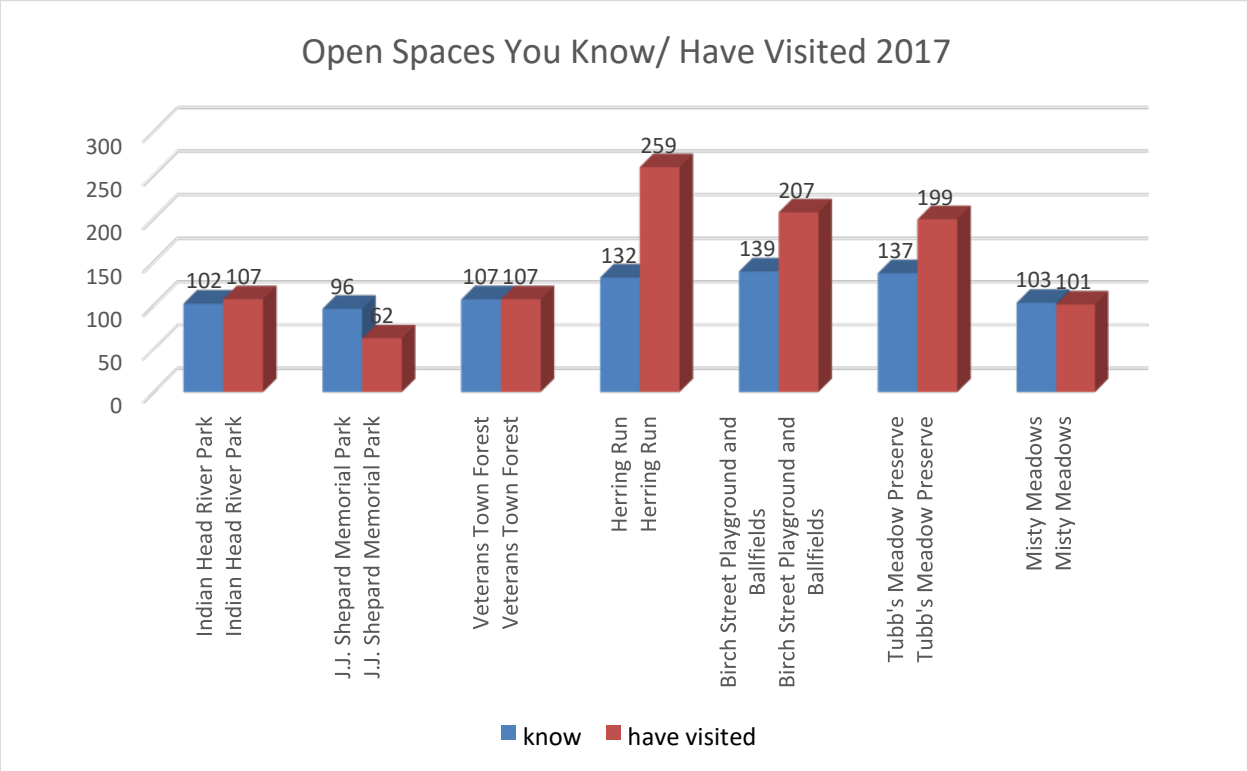
Streets in need of repair, The
condition of The roads town
roads are terrible
The roads
Unnecessary roundbouts roads - every street is full of potholes - every street over grown - 0 maintenance street programs.

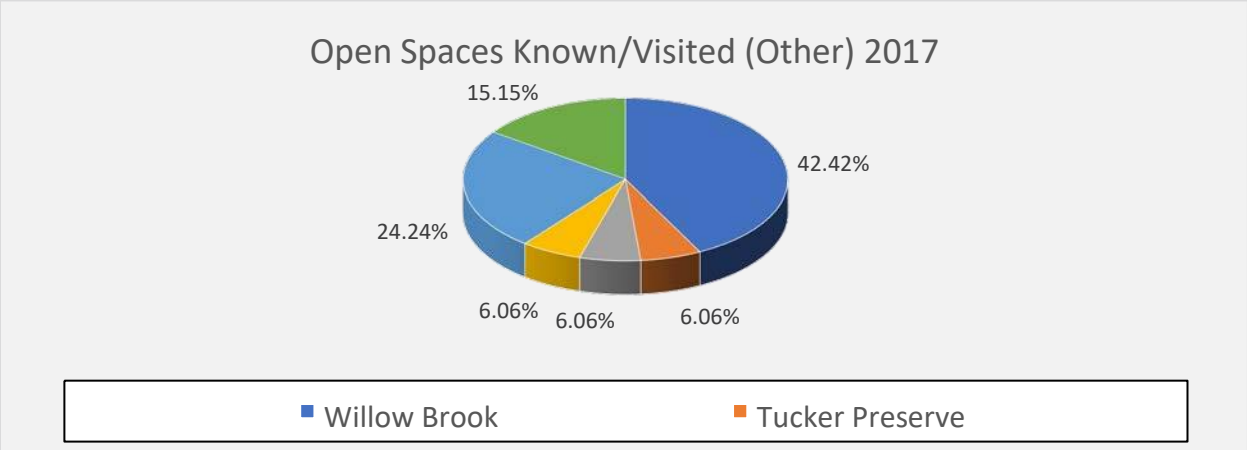
Other
lack of landscaping in the Center
Overgrown cranberry bogs lack
of rain,
Not concerned
Well, we are still in a drought. It would be great if people gave more consideration to water bans. the town officials poorly using our money.
People
Humans.
Town government does not seem to be making good decisions.
The town center
The fact that so many of the cranberry bogs are not being worked anymore.
climate change and a lack of education or our watersheds

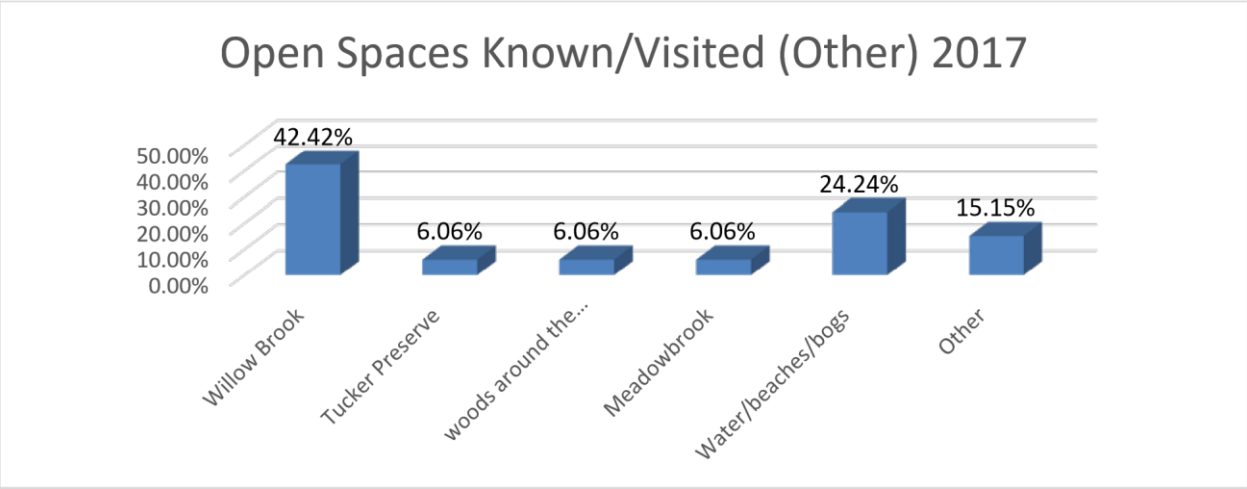
Question 10

Please check which of the following Open Space Areas you are aware of and which you have visited?

Answer Options	know about it	have visited	Response Count
Indian Head River Park	102	107	163
J.J. Shepard Memorial Park	96	62	135
Veterans Town Forest	107	107	171
Herring Run	132	259	272
Birch Street Playground and Ballfields	139	207	250
Tubb's Meadow Preserve	137	199	245
Misty Meadows	103	101	167
Other (please specify)			23
		answered question	274
		skipped question	3


Open Spaces You Know/ Have Visited 2017
300
250
200
150
100
50
0
102
107
96
62
107
107
132
259
139
207
137
199
103
101
Indian Head River Park
Indian Head River Park
J.J. Shepard Memorial Park
J.J. Shepard Memorial Park
Veterans Town Forest
Veterans Town Forest
Herring Run
Herring Run
Birch Street Playground and Ballfields
Birch Street Playground and Ballfields
Tubb's Meadow Preserve
Tubb's Meadow Preserve
Misty Meadows
Misty Meadows
know
have visited


Open Spaces Known/Visited (Other) 2017
15.15%
42.42%
24.24%
6.06%
6.06%
6.06%
Willow Brook
Tucker Preserve


Open Spaces Known/Visited (Other) 2017
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
42.42%
6.06%
6.06%
6.06%
24.24%
15.15%
Willow Brook
Tucker Preserve
woods around the...
Meadowbrook
Water/beaches/bogs
Other

Open Responses:

Willow Brook Willow

Brook Preserve

willow brook Willowbrook
Willow Brook Farm Preserve
Willow Brook Farm willowbrook
farm (wildlands trust)
Willow Brook
Willowbrook Preserve
Willow Brook
Willow Brook
Willowbrook
Willowbrook preserve
Willow brook farm
Willowbrook Preserve

Tucker Preserve Tucker
Preserve
Old West Elm Tucker Preserve,

woods around the High School woods
around the High School
open space/forest around schools off Learning Lane
Trails behind High School

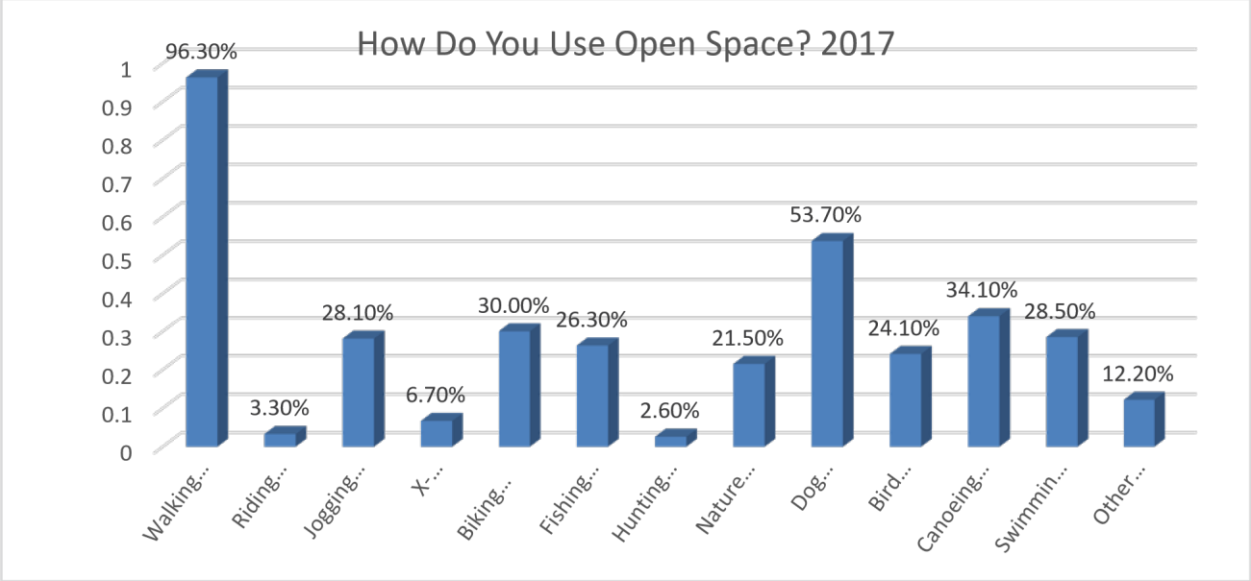
Meadowbrook
Meadowbrook Farm
Meadowbrook preserve

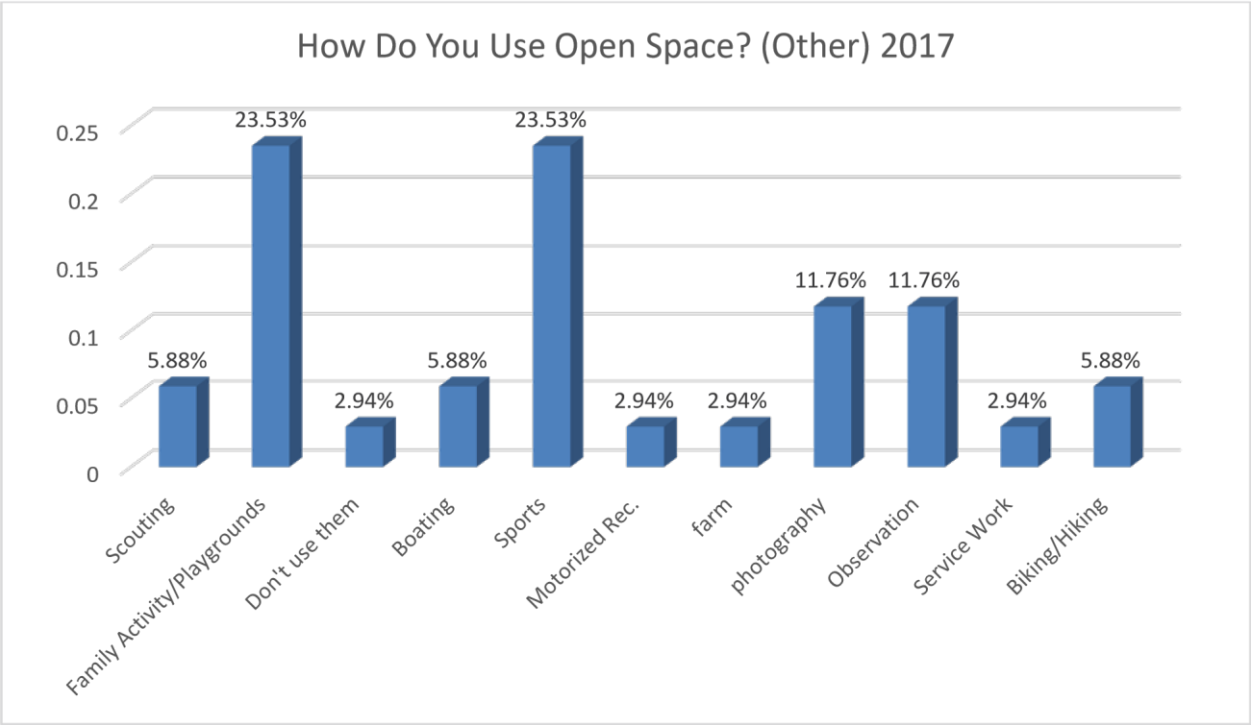
Water/beaches/bogs
Oldham Pond,
, Maquan Street Bogs, ,
Town landing
, stump pond on pleasant st.
North River marshlands
Luddham's ford The ponds and beaches love to go down quiet
back streets and canoe on ponds and n. river

Other
the un-named Town Forest behind my house
Washington St. behind former Animal Protection League building
Ballfields on mattakeesett, playground at community centrr
I've been to the walking trails but not sure of the names of them...they could be listed aboveml

Question 11

How do You use Open Space in Pembroke? Please check all that apply:		
Answer Options	Response Percent	Response Count
Walking	96.3%	260
Riding Horses	3.3%	9
Jogging	28.1%	76
X-Country Skiing	6.7%	18
Biking	30.0%	81
Fishing	26.3%	71
Hunting	2.6%	7
Nature Study	21.5%	58
Dog Walking	53.7%	145
Bird Watching	24.1%	65
Canoeing / Kayaking	34.1%	92
Swimming	28.5%	77
Other (please specify)	12.2%	33
		992
answered question		270
skipped question		7


How Do You Use Open Space? 2017
96.30%
3.30%
28.10%
6.70%
30.00%
26.30%
2.60%
21.50%
53.70%
24.10%
34.10%
28.50%
12.20%
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Walking...
Riding...
Jogging...
X-...
Biking...
Fishing...
Hunting...
Nature...
Dog...
Bird...
Canoeing...
Swimmin...
Other...


How Do You Use Open Space? (Other) 2017
5.88%
23.53%
2.94%
5.88%
23.53%
2.94%
2.94%
11.76%
11.76%
2.94%
5.88%
0.25
0.2
0.15
0.1
0.05
0
Scouting
Family Activity/Playgrounds
Don't use them
Boating
Sports
Motorized Rec.
farm
photography
Observation
Service Work
Biking/Hiking

Open Responses:

Scouting

Scouting in Pembroke

Girl/Boy Scout activities

Family Activity/Playgrounds Family play walking with my kids, playgrounds, getting them outside and active.
Playgrounds
Picnic Kids
play
playground
play!
family/friend gatherings

Don't use them
Don't use them

Boating
motor boat, paddle boat
Sailing

Sports
Sports Golf
skating/sledding
watching my son's sports.
Hobomock Fields for soccer, PHS trails for running
Hiking and snowshoeing
Hiking
Ice skating

Motorized Rec.
would like to be able to snowmobile and dirt bike.

farm
have 12 acre farm on a pond and that's enough

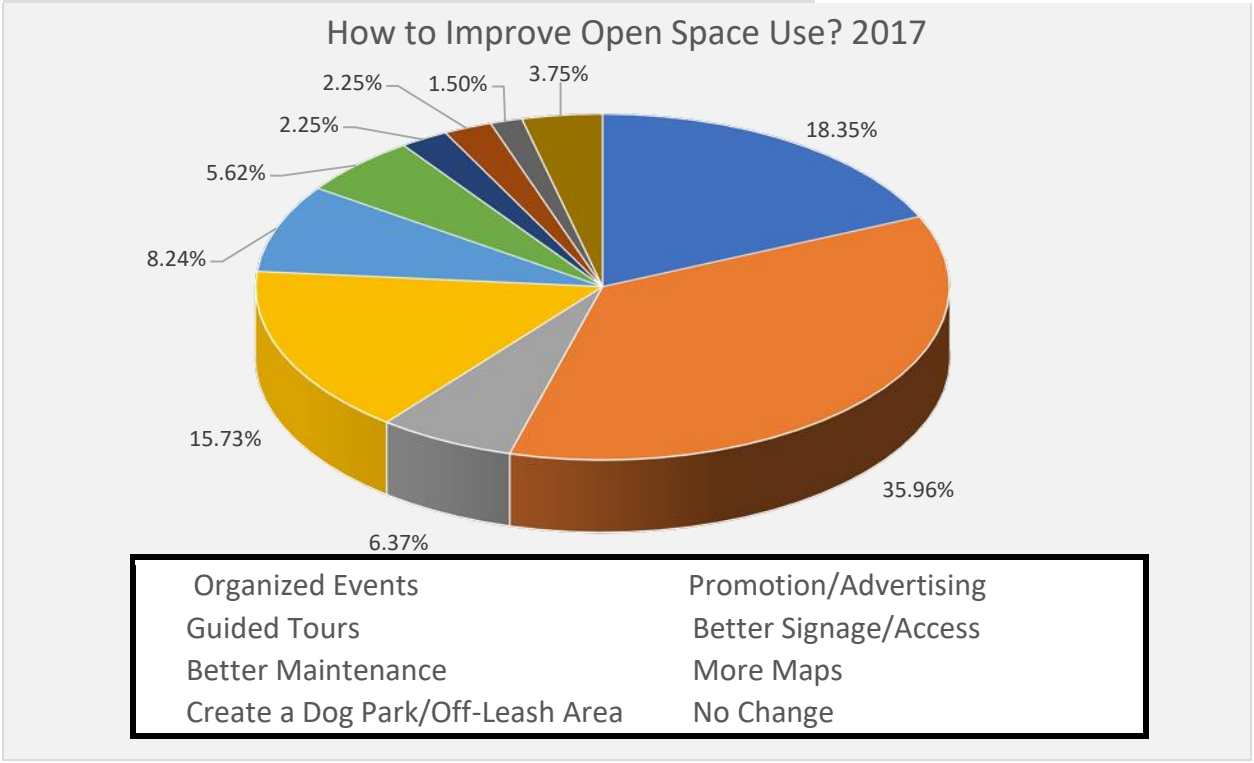
photography
photography Photograph
photography
Photography

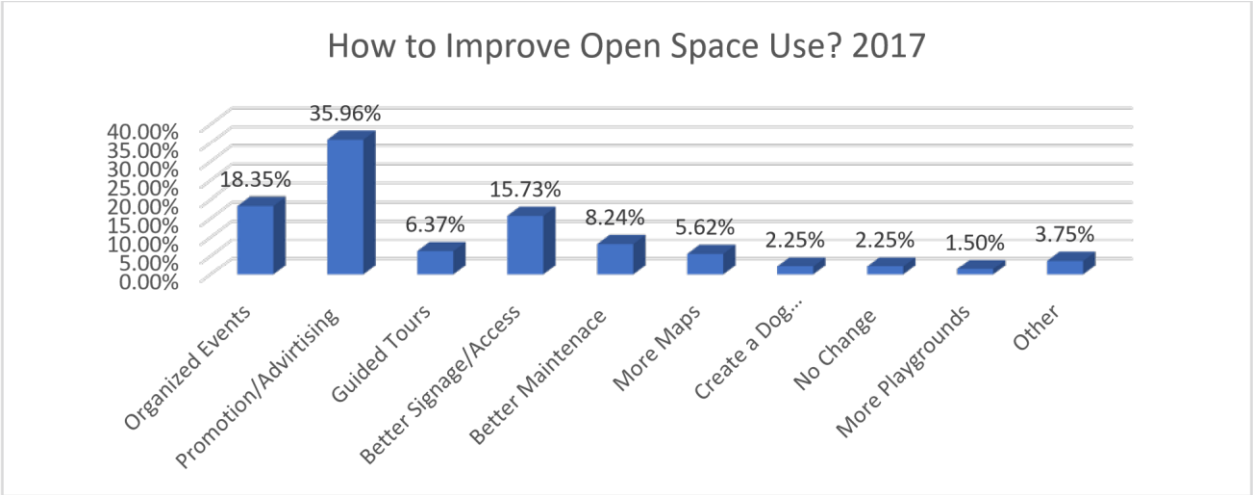
Observation
Just sit and enjoy the sights
Just enjoying having trees around instead of housing tracts where all the trees have been removed.
I use Pembroke open space between 3-7 times/week Enjoying the views and nature.

Service Work Cleaning
streams.

Biking/Hiking
i would love to bike but no sidewalks or bike trails. The paths that are in Hingham would be nice.
Hiking and snowshoeing Hiking

In your Opinion what could be done to get the Towns People to use the current Open Space areas more frequently?	
Answer Options	Response Count
	193
answered question	193
skipped question	84





Open Responses:

Hold Events more events for families, and the elderly and disabled, would encourage people to check them out

Host festivals or activities in areas outside of Pembroke center. host events at sites to attract visitors

Town-sponsored events, ., volunteer litter pick up, pet friendly events.
community clean up day Hold
different events there.
events,
Conduct more town events at them
Have events at them. Family days. Games, trivia, or scavenger hunts.
Recreational programs using the open spaces.
Some town sponsored events to make more people aware of what's around have
more events at the areas
, events,
Hold events at those locations-family friendly and low cost
Town events nearby the open space areas hold events at
them, clean-up days
Events,
Having community things like the herring run fish fry.
Events events
hold public events there
Hold events at open spaces
Have organized activities; special activities for different age groups Activities
Host events there. Offer
programs at the areas have
a nature day,
'Town Clean Up Days' that are sponsored by the town, not by concerned citizens
Maybe host events at these areas
More creative uses of open space in terms of events, enrichment for children, festivals/celebrations
utilize the Pembroke Recreation Department to schedule events host walking events.
Rec programs at different locations More outdoor space community activities start more
traditions such as the fish fry - teach people about our history and it's importance.
Hold community events in open spaces
Communication and fun events
Events
More fun family friendly activities like the fish fry.
More activities like family days, 5ks through these spaces, etc community
opt-outside day with info and activities
Town sponsored Events introducing people to parks and their appropriate use (including trash pickup and dog clean
Hold events at different areas. Activities or shows at the open spaces events.
Have more events at them like the Fish Fry at Herring Run, etc.
Walking clubs
An option to walk with a group.
Walking clubs/bird watching

Promotional Material
Increase awareness, promote wellness.
and marketing publicity
More advertising of these treasures
Publish where the spaces are, directions to get there, what they offer and parking availability.
Multimedia/Socialmedia showcases
More community outreach through Social Media, PACTV and newspaper - outlining the benefits, show photos, etc.
Facebook and website posts Pembroke connects is very popular
Design a website highlighting these Open Spaces. The link could be sent to everyone via broadcast emails publicity
Advertising
Create ads about them on the PACTV, create flyers for the library.

Advertise;
Publicize their existence
make a list and post it or give it out at the Fish Fry....make it family friendly...low impact exercise, chance to see
Inform residents of the location and existence of these sites advertise them. I had no idea half of them exist. I tend to go towards Plymouth and Hingham for nature walks.
Make everyone more aware of them, and what you can do ato each place. Also, have like an open house at each one
Use of Town email to feature them,
Make people more aware of the options,
Develop a web site including directions to all areas including trail maps and history of the areas.
. School field trips. If only we had a decent newspaper for articles .,, advertise
by putting pics and articles in paper.
Informing the public that these spaces exist for their use and enjoyment I think additional advertistment could help?
Advertising/putting up areas to sit and picnic.
Put more information about the different area. Maybe feature one of them once a week on the Facebook page, make people more aware of them
and make people aware they exist and what is available to do in each space Marketing,
post on a website for when people are searching for "things to do",
Advertise the less used, less familiar areas Social media!
Advertisement/more signs. Tell the kids in the elementary schools/cub and/or girl scouts.
Advertise more make people aware of them. ive never heard of the unchecked places.
Post information about them on the town website
Advertise
Advertise Advertise
photos on Pembroke connect, articles and photos in newspapers
More publicity about what it out there more publicity
More advertisement of it
More info. I saw this on Facebook and didn't know a couple places. Use social media more.
Refresher communication to let people know what's available
Social media Advertise!
Facebook marketing
Post on social media where they are featuring a different one every week. Ask residents to submit photos and stories
Raise awareness (I don't know where most of #10 is),
Awareness
Spread the word,
Promote on Facebook pages
Advertise them better. I have lived here 12 years and still don't know about all the spaces.
More publicity
Raise awareness of the great spaces we have
Let people know
Better advertisements of where they are located Publicity.
social media so people are aware of what's out there.
coordinate with Wildlands Trust to promote various areas more broadly
put notices in the town paper to remind people of these open spaces for use - put on social media sites some photos
People knowing and understanding what and where they are.
create a flier, put on face book
More information about the open space areas. Info added to the pembroke town website
popularize it. Have something that would cause people to go to the area. Make people aware.
Better publicized. The one playground in town was hard enough to find thanks to a random Facebook page.
Advertise more Advertisement,
Send information home with school kids in their backpacks so parents will know about these areas. More information about them. Should direct fundraisers like fun run etc through them to raise awareness Mail

out an informational pamphlet in the spring. list all open spaces on dog registration, get information on all public spaces out to families through school Education. I didn't even know about a couple you listed above.
More information on them...
Advertise it more,
have more information online about how to get
More Info
Advertise the local beaches
More notice as to where they are. Maybe posted at the Library (one of my favorite buildings)
Publicize them more, better
Advertising
Public awareness
Better advertisement
Have kids do service projects and publicize. Take a few minutes at town meeting to highlight an area and what is
Awareness of all of them Promote. Make it appealing.
Community publications. Notices on Facebook
open up other town held properties for passive recreation. Don't keep them secret
Possibly highlight a different area on social media every week or month
Information easily accessed on website remind them that it is there
Most of the above mentioned places I have never heard of and I don't know where they are.
I didn't know about areas mentioned above. Now that I know about them I will check them out.

Guided Information Walks
I think that we need to do a better job in organizing walks and guided walks as to what people can see or do within
historic tours Run tours informational activity
Maybe hold guided tours a few times a year.
Walking tours. Guided Tours
give history, offer walking tours Guided Walks love the idea of
the historic trolley and river tours that happened perhaps offer
guided tours
Perhaps have someone to lead nature walks
Promote walking tours, led by volunteers from various local civic organizations Interpretive
guides to introduce them.
Host tours
Guided walks and naturalist walks
Guided walks

Better Signage/Access Parking
more parking & better condition of parking area Mproved
access.
Sidewalks to get to these places, it's hard for a mom to pack kids/ dogs into the car for a 5 second ride,
A trail system that connects all the areas around town.
better parking More
parking!
Easy access
Maybe put signs out front that designate uses. For example: "This path is good for biking, walking, and baby strollers"
actual signs along roads to lead people to places
Make more accessible by bike
Better parking, better
access to ponds
Better signs
More sidewalks and a better town center would go a long way

Pave a walking trail, moms want to use them too and can't due to inability to use strollers.
Better parking availability, more well marked signage. Communication, signs posted
Make better parking lots for the parks; better signage. more location awareness and open invitation to use it, my guess is that some people are unaware of the offerings we have.
signage, welcoming entrances,
Have trail markers and historical signs
Add sidewalks to allow people to walk/bike to/from these open spaces
Perhaps better signage Adding benches
Make them more accessible by building sidewalks leading up to them Paved
biking trails, sidewalks around town to get to these areas. have benches,
have good parking facilities and/or safe sidewalks to get there
Better signage
Have parking. Lights
Make more defined walking trails.
better signage
better and bigger signs. clear, designated parking areas. designate spots on well traveled roads for pedestrian/bike
Paved trails would be great for biking and jogging.
Have more signage
Also, better signage to indicate trails and regulation of traffic in areas
Better signs and markings Parking.
Access by way of walking
Better signage, maintained parking areas
Improve design them for use as an outing activity, tarred bike and walking paths. Making them family friendly. People who want to use them, use them.nPlowing parking areas in winter would help for sure.
better signage

Better Maintenance maintained
trails
The walking trails have trash....need to be kept clean keep
spaces clean
Keep the trails and paths groomed
I also think the one entry point to the pond on mattakeeset street could use a little more attention Keep
them more clean!!!!!!!!,
Clean up the needles everywhere, pick up the other garbage (put more trash barrels in these spaces)
Maintain paths privide trash barrels get the ponds cleaner
Maintain is all better Tubs Meadow is always a mess at the entrances, which makes it not very
appealing cleaning and grooming the trails. Cleaned up and redesigned cleaning up the litter.
I'm afraid of ticks and that hogweed fix up the ponds and water spaces put some capital into it and make it more appealing. A little dirt path through woods is not going to attract more people more investment to make more useful
Have garbage and recycling receptacles and empty them on a regular basis upkeep.
Clean the ponds
Make them clean, safe, drug paraphernalia free and protected
If the paths were kept clear. I stopped going to the Elmer Street bogs because the paths are overgrow .

Maps
Map of open spaces
online book with maps;
trail maps
Maps in the library
Trail maps? I nature
trail maps available

maps. Provide
maps,
Mail me map
Is there a map detailing the areas? They could be made available at the town hall for pick up
maps). maps of area maps
Easier to read maps trail
maps at trail heads.

Dog Park/Off Leash Areas
Start a dog walking club We
need a dog park!
Create one space designated for off leash dog exploring Dog
park!
It would be nice to assign one area as a dog park where dogs could run unleashed. If
there was a dog park

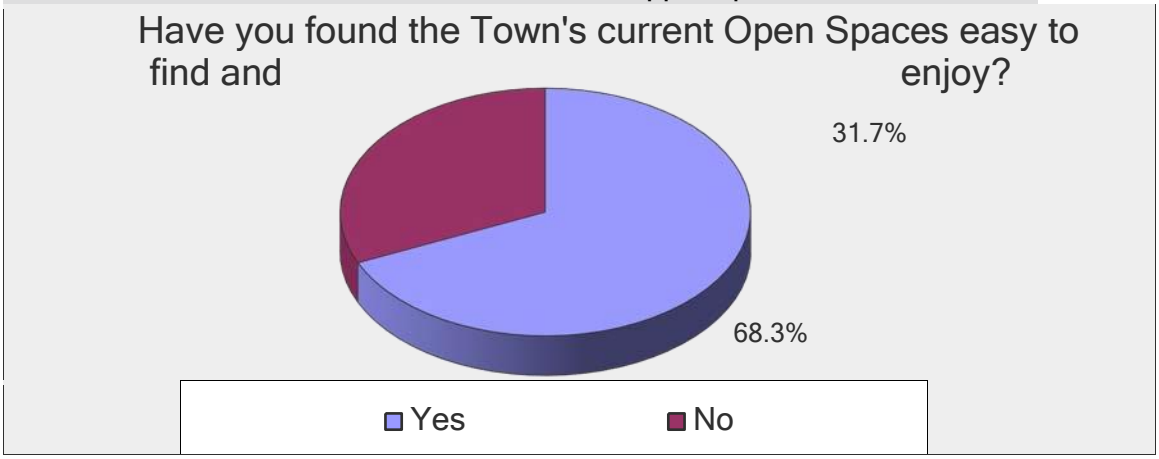
No change
Fine the way it is now...don't really want more people using open space. I don't want to step on any hypodermic needles
If they're interested, they'll be there and vice versa.
Not sure
I always see people on my walks. Maybe throw away their electronic devices? Haha. Jk. I don't know!
it is perfect the way it is ???

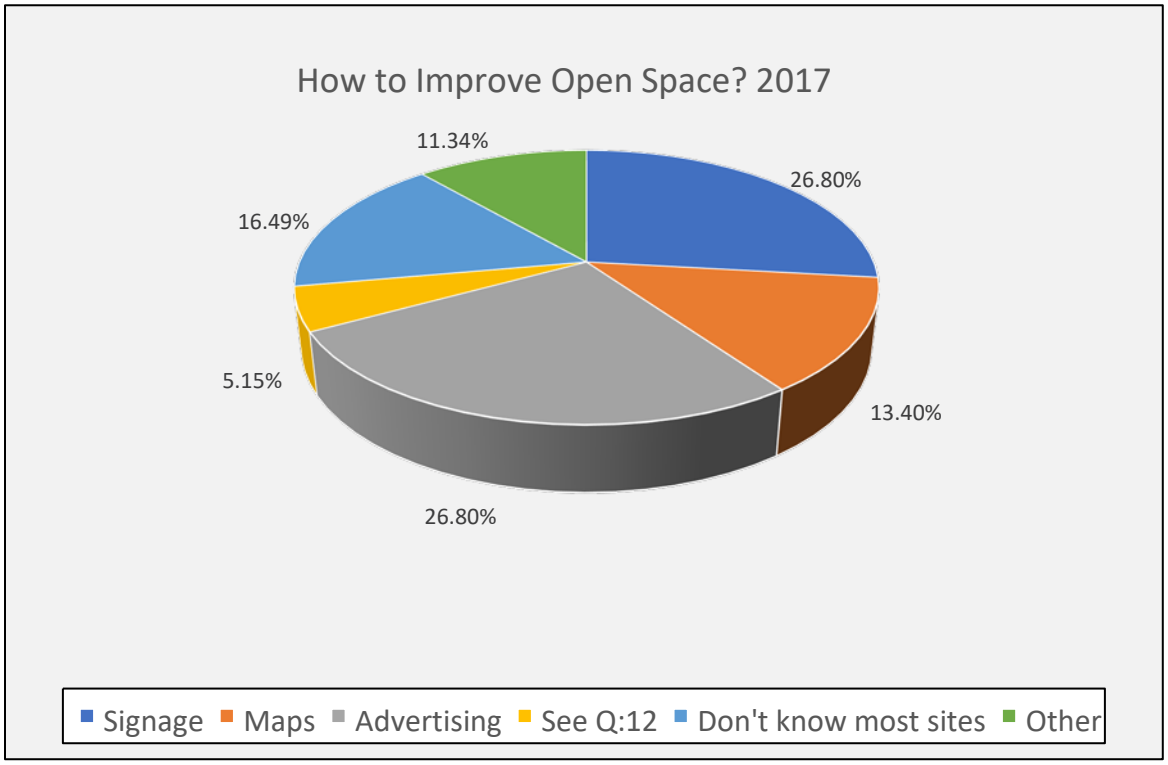
More Playgrounds
More seating. More playgrounds.
MOST IMPORTANT: A public playground to encourage young families to enjoy the wildlife that Pembroke has to offer!
would love to see a playground get put in at Indian head river
I think a playground at Indian Head River park would be great attraction

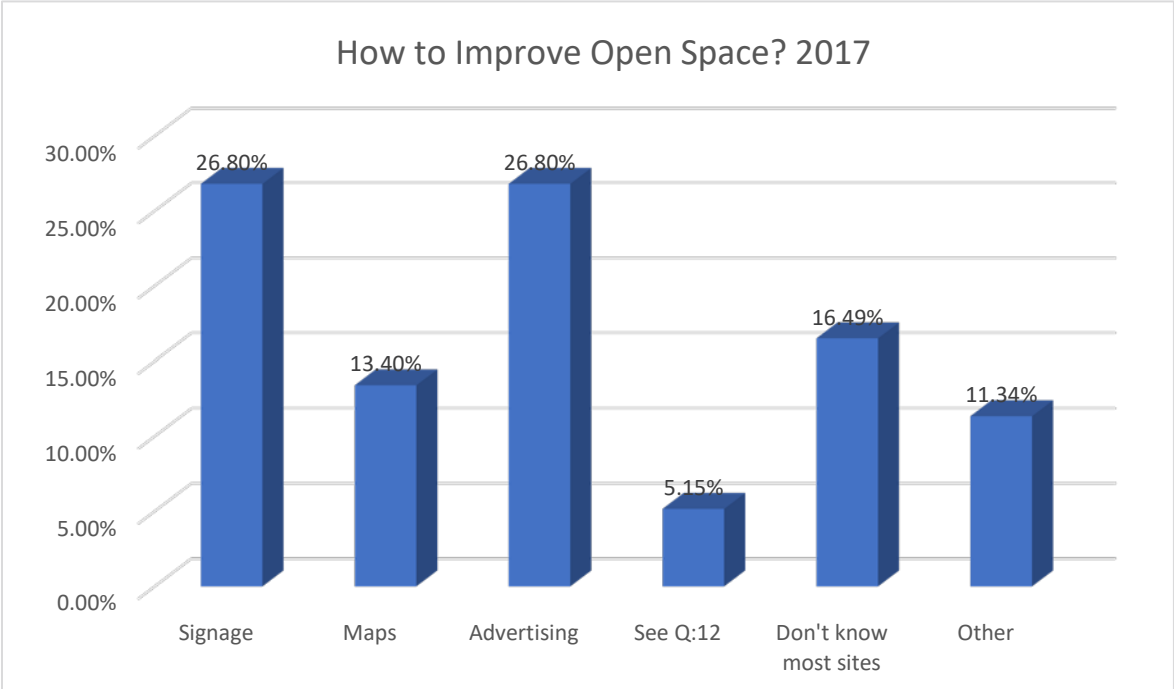
Other
Have it's become a profitable entity
enforce bans on motorized crafts on trails (that is very problematic in the paths near me), Build
more trails for mixed use including mountain biking.
stop building on the property
The town is lacking areas that draw people to just "hang out" (sit in a park with a book and a coffee, Make the town center a
Hide things there?
Bridge the gap between the new and old residents Outside
amenities like workout stations on trails.
Put a public pool in
Continue to allow people to use the lands

Question 13

Have you found the Town's current Open Spaces easy to find and enjoy?		
Answer Options	Response Percent	Response Count
Yes	68.3%	166
No	31.7%	77
If No, Please explain how you think the Town could better identify these areas?		87
answered question		243
skipped question		34







Open Responses:

Better Signage more

prominent signage.

Clearly posted signs throughout the town would help.

How about an outdoor sign of all parks? Place it at entrance of all parks
Signage needs to be much better. I only know about most of the areas because I have actively sought them out.

Signage, newsletter drive by some but don't see where to park; I have looked in the past and couldn't find useful information better signage see www.mbgraphics.biz
Only the ones visible from the street I have used. Maybe clearer signs
I only know of the ones I pass and are clearly visible and marked
Signs. And what is allowed or not allowed in those areas. Bike paths would be fantastic!
Willow brook could use a better sign better signage more signage
Signage and parking improvements
Signage
More signs
Better signage; more welcoming
better signage more signs and
parking
I've been here a long time so I know the spaces, but signage could be better
Add Signage and easier access with sidewalks
Signage
Not well marked
More signs
Need to improve signage. It's a big secret at this time.
Better signage

Accesible Maps

Maps, mailed, at library, and online More
maps.
or maps at the town hall?
Maps
A clear map of trails
Mass mailing a map to residents
Easily accessible maps and location details on town website
Where do you get maps and find where these spaces are Maps.
Mail me a map and tell me where to park we love new places
Signage and parking improvements maps, etc....
Publish a map to the community with the annual census

Better Communication/Advertising

lots more communication
newsletter
Is there some kind place that provides and promotes information and use of all of the open spaces in town?
Get the word out through schools, library, churches, etc.
More advertising
Advertisement. Small cost to the town for long term benefits.
Post on website
More advertising
Use social media. And let people know that you are on social media
Town Website, more events scheduled there
Awareness and events
Social media

Advertising Use social
media! provide more
information. Not well
advertised
Not enough advertising More
information on accessing
marketing
Better representation on the town site. It can be difficult to navigate.
Send out emails about what each place has to offer.
More info about those places,
Put it on the town website
Need more exposure
List all and the directions on town website
Help new residents to know they exist

See Question 12
See #12
Question 12
See my previous response
Please see above. My husband grew up here and he didn't know where half of the parks are! See
#12

Don't know most sites
We stumbled upon them.
Again, never was aware of them.
Haven't been aware of many of them
I have been to two that are nice but disnt know about others
I am not familiar with some of those listed above. Probably my fault for not being better informed.
I have never heard of most of the parks listed above and I enjoy visiting parks. I had to ask my
neighbors and nature lovers Not sure where they are.
I didn't know about a few of them listed
Not really. We mostly happened upon many of them over the years. But there are several listed above I've never heard of
It seems like you have to have local knowledge. I don't know what I don't know
I wouldn't have known about a lot of the areas if other people around town didn't tell me aobut them.
It might just be because I'm new to town...not that easy to figure out where they are/park
I didn't know we had as many as we do (thanks for question # 10!)
I didn't know of some of these listed here in the survey
No, when I first moved here the trail information was scattered across multiple organizations.

Other
We have enough - don't need to spend money on more.
Fairly easy. Can't make the rest of this survey work
I say this hesitantly. Easy to find, yes, not always easy to enjoy.
No, paved walking trails or trails with large roots eliminate young moms and their kids from enjoying the many I'm
not sure

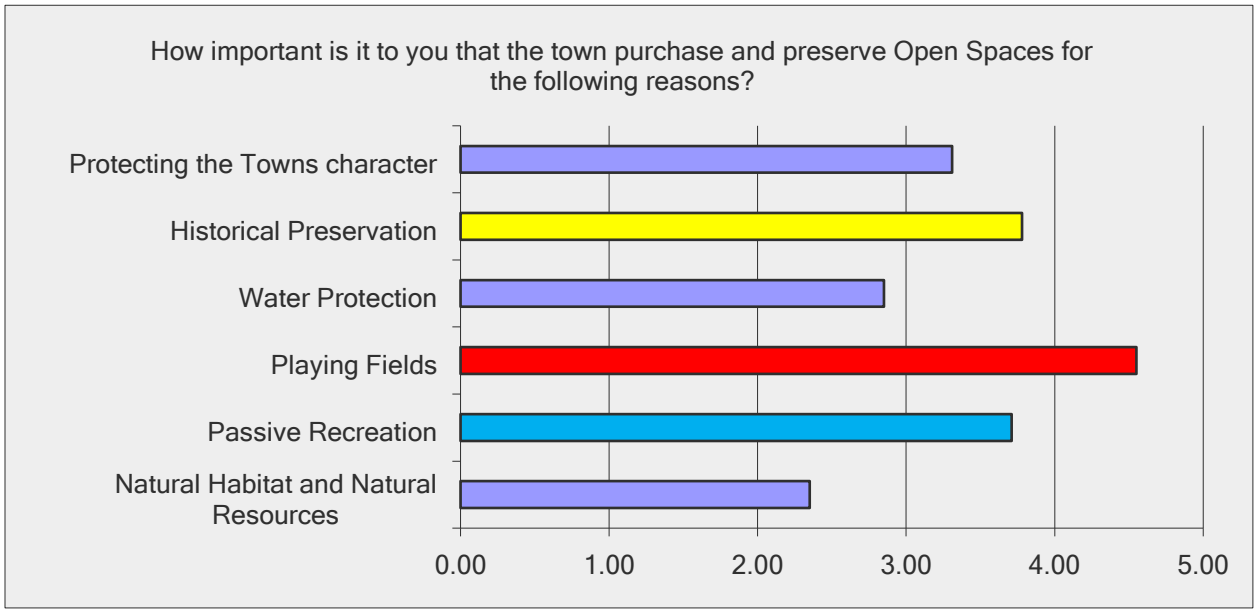
yes
I feel uneasy when I see so many people allow their dogs to run free without a leash.
sort of
Haven't heard much about them or there is little appeal. Yes
but only because I'm specifically looking for them

not cleaned, maintained or user friendly. Town Beach could be renovated. New snack bar, cleaner beach, new sand

Question 14

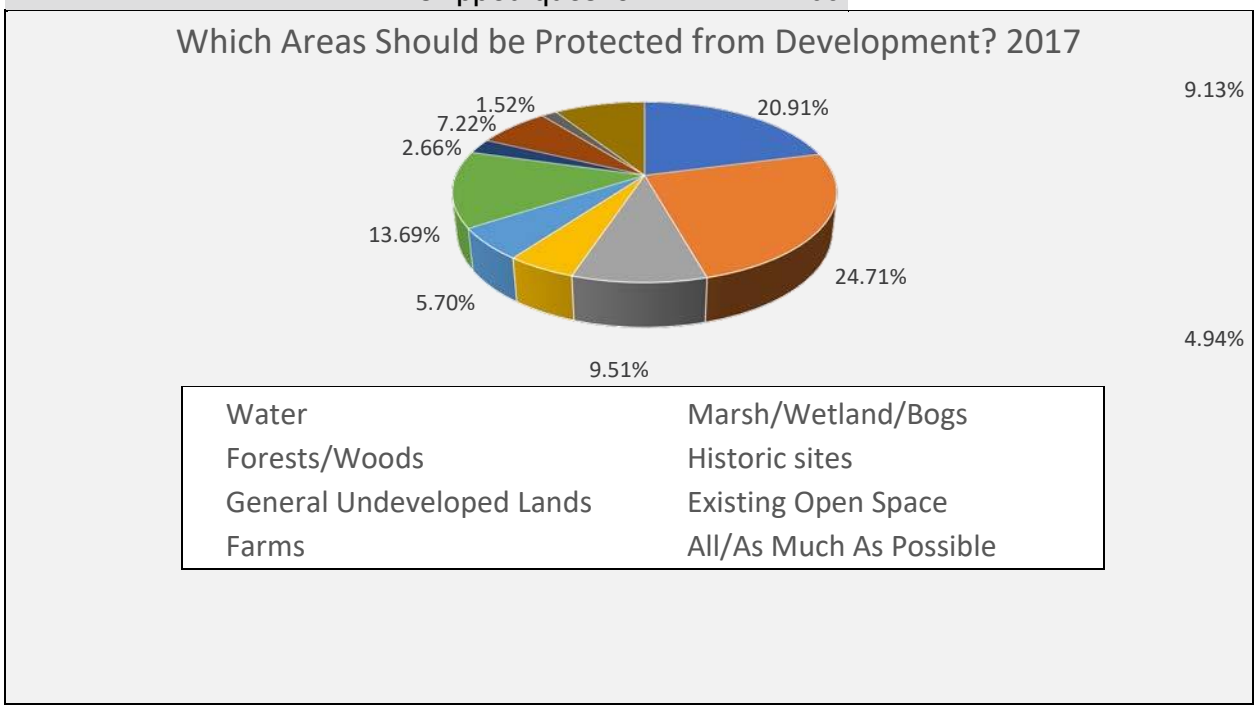
How important is it to you that the town purchase and preserve Open Spaces for the following reasons?

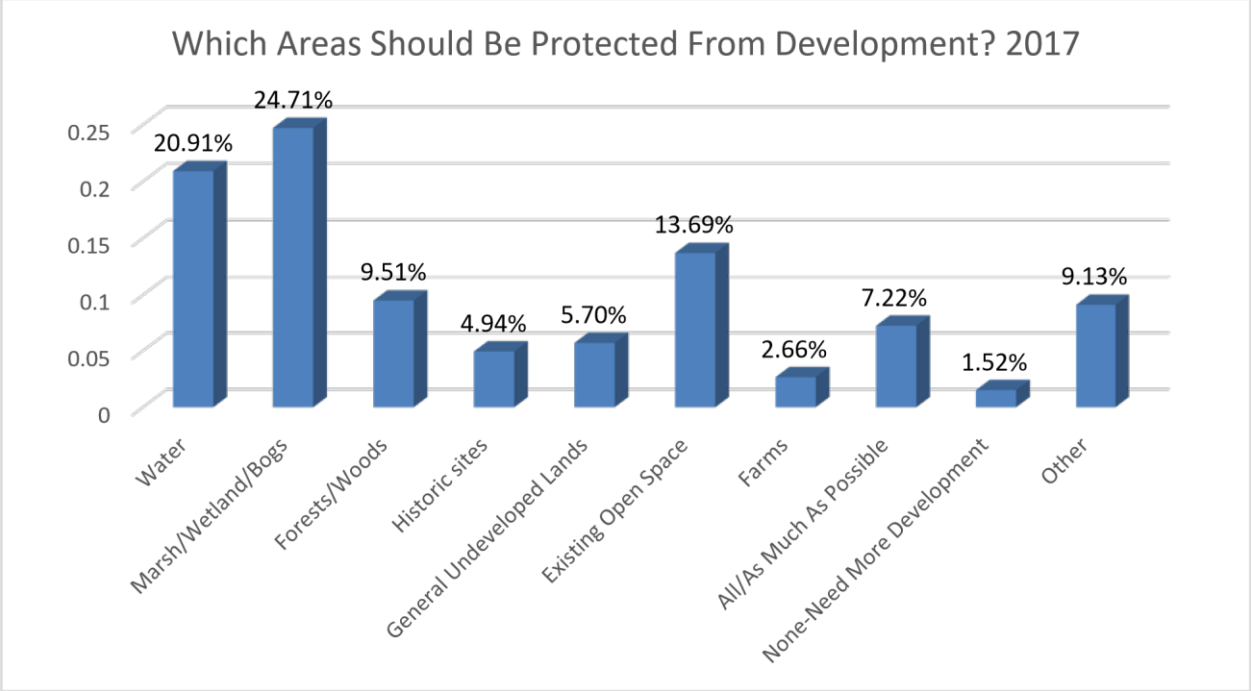
Answer Options	1	2	3	4	5	6	Rating Average	Response Count
Natural Habitat and Natural Resources	9	2.3 57	17	25	13	16	5	221
Passive Recreation	1 46	48	32	56	27		3.71	220
Playing Fields	1 17	25	24	45	99		4.595	229
Water Protection	5 52	46	33	24	16		2.85	227
Historical Preservation	1 27	49	56	46	28		3.678	222
Protecting the Towns character	5 31	41	50	30	35		3.31	242
answered question	0	2	5					
skipped question								21



Question 15

What areas of Pembroke do you feel should be protected from development and why?	
Answer Options	Response Count
	172
answered question	172
skipped question	105





Open Responses:

Water pond on

Hobomock

Any areas around our ponds
Water areas, need to keep animals safe water
areas
Near north river,
Environmentally sensitive areas around watershed areas including the ponds.
places near ponds The ponds, ponds
Any land around rivers and streams need protection for wildlife and vegetation
and ponds because it interferes with natural habitiat
Water Street in North Pembroke. It's our only access to the North River with multiple acres of wetlands and habitat to The North River area Water/rivers/ponds lakes because don't trust housing septic systems and it seems that surrounding towns are taking all our water ponds (not to clean the ponds for the selectman who live on them)..
areas around North River north
river
Anywhere along water
Ponds,
The North River due to it being a water way and to protect wildlife.
Streams, rivers, ponds should be unobstructed and allowed to follow natural courses to protect habitats and water quality
Areas near the ponds Any
watershed areas.
Wetlands
North River area because of its sensitive environmental issues
Areas along the North River the ponds and river areas lakes

The north river is nearly unparalleled for its current relatively low level of development. It is a rare resourse and crucial habitat
North River
The North River corridor,
I am partial to the North River area because that is where I live.
North River, lakes and ponds, streams and brooks, Herring fisheries and wildlife.
Land near north river
North river rivers,
and lakes. The river
the north river.
ponds
North River
The beautiful North River, we need to manage the type of development too.
Anything along the North River. More developments could ruin the scenic beauty.
along the lakes & rivers, north river.
Anything along a water way waterways.
The River because it's night sky and open for wild life habitats Along
rivers and ponds.
Public water areas.
Area along Indian Head and North River
The areas around the ponds
Anywhere near wetlands and waterways Major rescource and part of our ecosystem you cant replace.
any wetlands and any water ways

Marsh/wetlands/Bogs
The marsh and pond on Hobomock near Four Winds Sensitive
terrain in and around wetland/marsh areas.
wetlands
The land is all wetlands and marshes
Wetlands-area near north river/ water street Wetland
areas, natural areas should be kept that way and
wetlands--
Any area near wetlands, or that would require the removal of healthy trees, should be preserved for the health
Wetlands are essential to the well being of the environment wetlands,
Water Street in North Pembroke. It's our only access to the North River with multiple acres of wetlands and habitat to Wetlands feel the water Street area that is currently facing 40b development and the Tiny Brown Intrersection are at risk right now
Wetlands
and any other wet areas because of the water protection
Marshland
Land abutting wetlands. Can't list the million reasons why.
The marsh and natural protected water pools for wild life.
Wetlands,
The wetlands are important for biodiversity
All marsh, wetland due to animal habitats and keeping the current houses safe
Wetlands - disturbing natural habitats and increasing classroom size due to affordable housing vernal pools, wildlife, potential of damaging run off.
any wetlands
Proposed Housing 40B destroys the wetlands, natural habitat and historic neighborhood, increasing noise and traffice All marsh wetland
I heard about the recent proposal of 40B development along Water St.

Any wetlands
Any conservation land..
marshes, wetlands Wetland
areas.
Marshlands around north river.
conservation/wetlands areas wetlands,
Wetlands and sensitive habitats. We only have one Earth, these habitats are important to protect.
wetlands,
Wetlands--if they are drained and built on we damage habitat, water table health and biodiversit
Wetlands. Conservation land
Open space with wetlands to protect our water supply Wetlands mostly for animals
wetlands because they are precious and you can't always put the wildlife back once
wetlands to ensure the health and safety of the people and animals living here.
Definitely the bogs and marshes because they are what make Pembroke wetlands
Marshes/wetlands, to protect environment and
wetlands
Any environmentally sensitive areas (wetlands etc)
Anywhere near wetlands and waterways Major rescource and part of our ecosystem you cant replace.
any wetlands and any water ways
The bogs, because they are unique to the area and part of our heritage
any of the old bogs should stay open space of some sort. bogs.
cranberry bogs,
The bogs on Monroe street.
And, while many bogs have reverted to overgrowth, I was surprised to see that most aren't filled in bogs
Bogs and other natural resources
I feel some cranberry bogs that aren't currently being used could be built upon. It seems like valuable
land/space
Nature trails in old bogs are such a great resource for people who don't want to have to travel to other
town
cranberry bogs
Bogs
Bogs.
bogs bogs,

Forests/Woods
The woods around the bogs also should be saved All
forests
any current woodlands
Rest of Oak street - protect the trees and habitats Woodlands
along West Elm & Barker St...
The space off of Oak Street that was just cleared is a horrible eyesore.
Wooded areas
Forests
More of the forests!! The poor deer and even the turkeys are literally wandering around the town. So
sad
forest. forests are why a lot of people live this far away from the city
Wooded areas, like Taylor st forests
Trees and forests..because we need them!!
forests
don't like housing developments that encroach close to natural forests
Any land that is currently wooded
The woods along Pelham Street are lovely

Woodlands off the 53 and 14
Wooded areas, the woods.
Lush wooded areas forests.
Forest, woods
Forests. Cutting down is causing wildlife to roam into residential areas, hazard to them/us and

Historic sites
Luddams Ford area given its ties to American history natural
AND historical resource.
pembroke center
Any historical site
The herring run and other historical areas
Mattakeeset St due to historical significance. Taylor St for same reason
historical sites/homes. areas deemed "historical" because it's unlawful
to build on those areas.
historic neighborhood, and any
areas that are historical
Historic sites for obvious reasons. Also areas that will negatively affect traffic or our natural resouces to preserve our place in history we should protect historical locations and open spaces that bear significance
Barker street ,west elm street plain and valley street, center street. All old original stagecoach routes!

Herring Run
The Herring run, obviously.
Herring run, herring run
The herring run and other historical areas
Herring run Herring
Run, herring run.
Herring run- I love walking there

General Undeveloped Lands
All of the land that is currently not developed should stay that way
anything that is undeveloped should be protected, because once developed we can NEVER get back the natural resources
All of the remaining green spaces should be protected. We have already lost too much in my opinion.
any hikable land.
or has significant amount of area that is still natural, IE undeveloped
Environmentally sensitive areas,
Town has grown too fast over 30 years I've been here. Has ruined character of town. Need a plan!!!!
Are there areas of Pembroke that haven't been developed?
like to have land that isn't developed on every free inch. that's what keep our town quaint and country.
NO MORE TOWN HOUSES! Real houses for family's not townhouses. All theses townhouses make it feel like the city or Brocton
I think the town needs to halt development period. Current development is haphazard and not well thought out.
I think progress is important but development for development sake makes no sense.
40 b have enough condo's no need for more We have enough development now!
All areas towns is being built out

Existing Open Space open spaces that have
already been purchased current open spaces
provided already.

conservation land
All current open space
All open spaces
There should be a cease on development of open areas any of the already established nature based, recreational, family oriented areas.
closeness to open space, nature
preserve areas
Open spaces should be protected because they are beautiful and provide homes for nature.
Our current parks and nature areas should not be developed conservation land, tubbs meadow type places
What ever open spaces that are left Especially along Barker St wildlife reserve
Current open spaces
Tubbs Meadow, I frequent it with my children and there are many forms of wildlife living there.
existing open spaces
areas immediately abutting existing preserved space conservation land
All the walking trails, any
Wildlife Preserve.
Any conservation land.. Current open spaces
The present open spaces/parks need to be protected. nature reserves are not intended to be populated by residents just observed and observed
The current open area we have because it helps the small town vibe and benefits current residents
Tubbs Meadow .
Conservation land
Nature trails in old bogs are such a great resource for people who don't want to have to travel to other town
Tubbs Meadow, Luddam's Ford
willowbrook preserve, tubs meadow,
All of the current natural preserves all
existing town parks
All public lands
& open spaces
The surrounding area of Willow Brook Farm Preserve due to its protective habitat

Farms open space/ farms to maintain Pembroke character and fields and farms.
and farm land. horse farms old farm land should be preserved, as this the the history and character of the town. Horse farms - Farms

All/As Much As Possible Everywhere we can.
All of them! We really need more!
As much as possible,
All areas
As many areas as possible. We will quickly loose our small town, rural feel and charm if growth is not carefully
All
All
As many as possible.
As many open areas as possible to prevent South Shore from becoming as built up as North Shore
All of it.

Everywhere. We're big enough for now
Most. We already have plenty of residential and commercial structures.
Any areas that are not under development and available for protection! We've already overdeveloped this town.
All of it!
So all areas should be protected.
All. We have already lost a lot of forestry and open spaces and cannot afford to lose more.
Well, if it were up to me I'd stop all building in town. But that's not realistic.
All of them - we have enough rampant development. Slow it down for a while and make these parcels off limits
Any areas which are important to wildlife.

None-Need More Development
None - we need more tax base. We have enough open space.
Development is a great thing. Adapting to the changing human nature brings people to start changing for the good.
None!! too much wasted land on preservastion crap! We
need more development to grow.

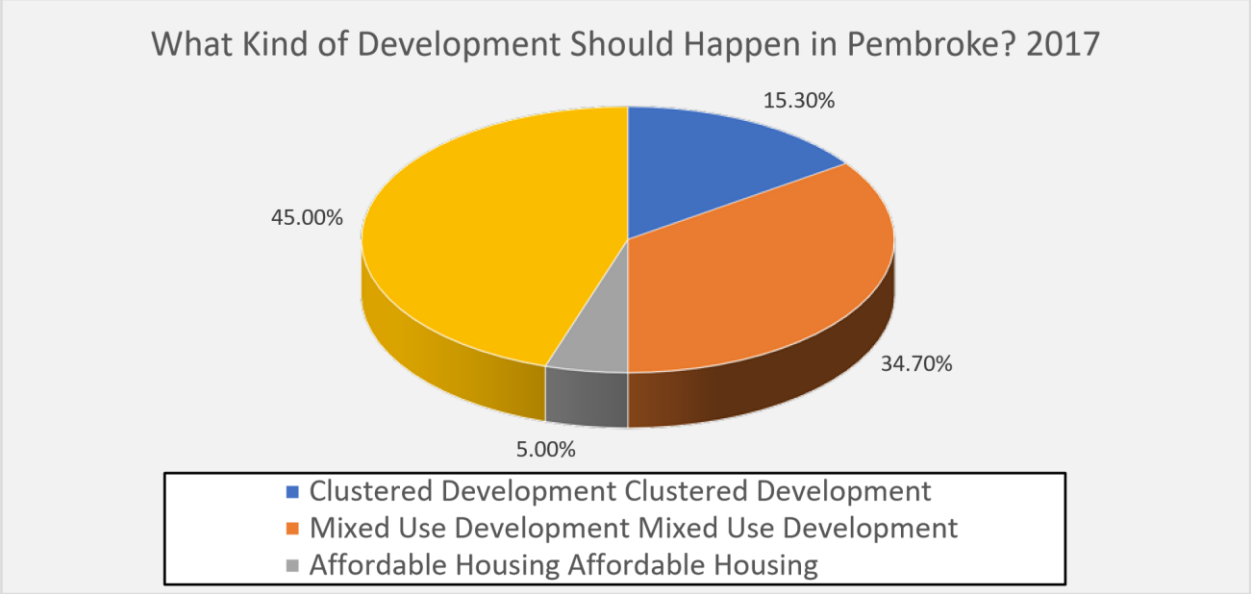
Other
all areas except commercial area near highway
Rts. 14 & 53
Rte 14 / Mattakeesett Street Wompatuck Road
Hwy 36
East Pembroke. The drainage situation is getting out of hand.
All of Monroe Street...Town Landing area. Unsure
any area where homes are and where schools are
47 I think it is a balance. If you choose to develop areas have restrictions on the building styles etc. I encourage some smart development

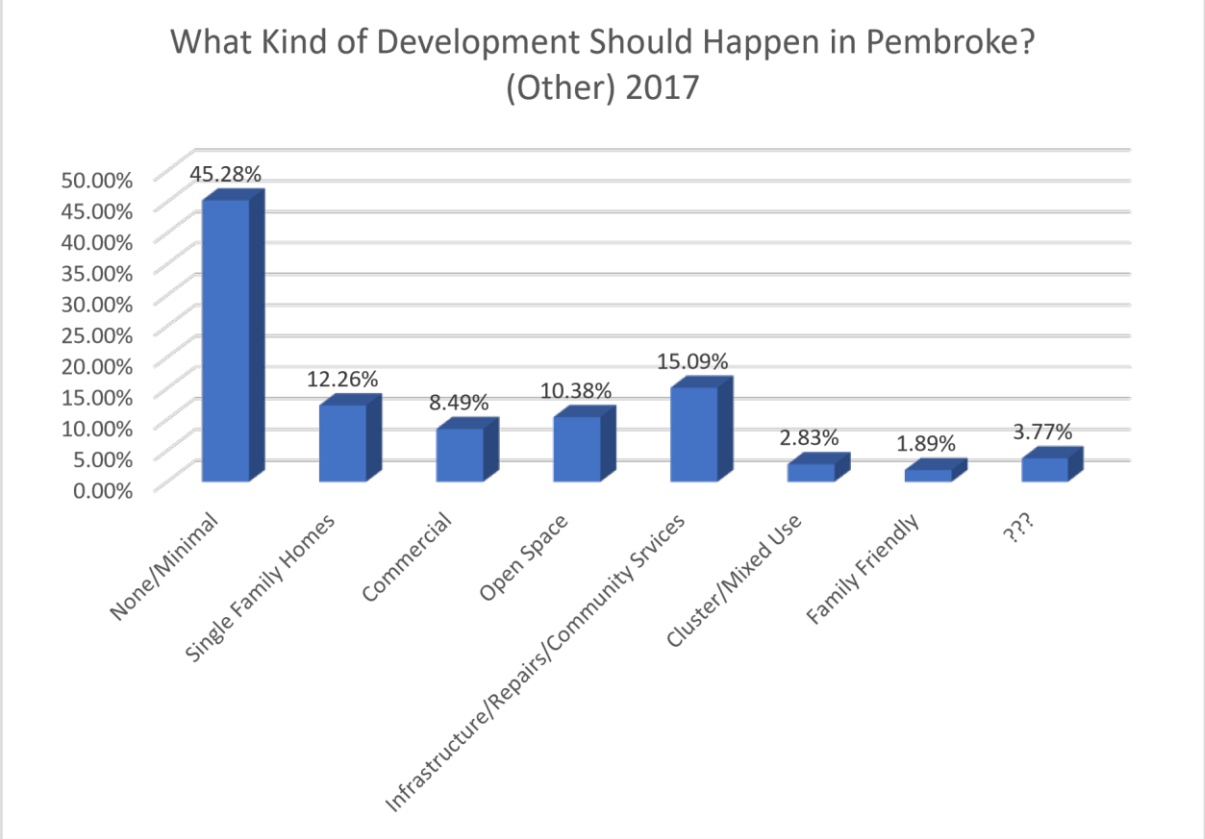
All areas except business district on rt 139 and north part of rt 53 which is already businesses
Any area of the town that is not appropriate for housing projects Not sure.
The Birch street area
the center - I don't understand why there has to be commercial development with residential Bryantville.
I don't know of anything of hand
Not more dense than what's there. Making sure the infrastructure can support it.
Anything our kids use first (they should have more options, not less)
No more building near center of town Town center. Water street.
protect views from obstruction
Parts of Mettakeeset, which have (or will have) sidewalks and provide pedestrian access to ponds and views of the water

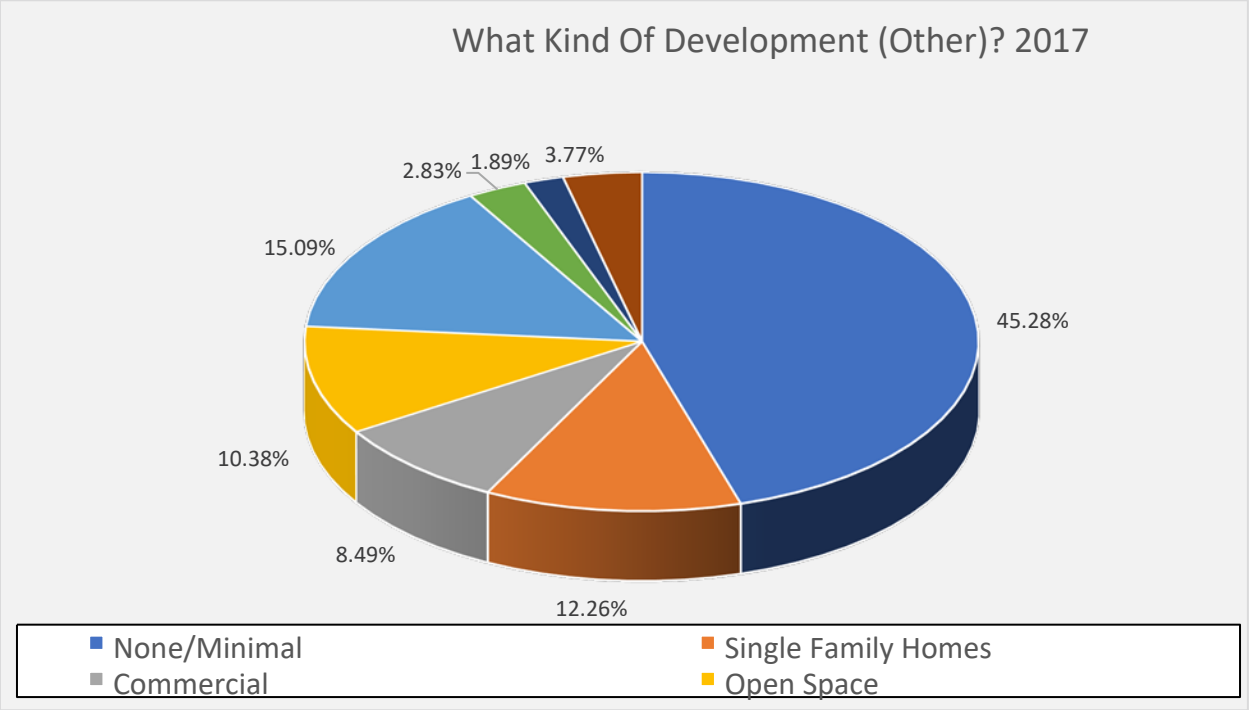
Question 15

What kind of development would you like to see in Pembroke?		
Answer Options	Response Percent	Response Count
Clustered Development	15.3%	34
Mixed Use Development	34.7%	77

Affordable Housing	5.0%	11
Other (please specify)	45.0%	100
	answered question	222
	skipped question	55







Open Responses:

None/Minimal NONE.

not much more none.
None No
more!
None
none!
I think we are good--none!
None
None
None
No more
No more
NONE
Keep it as it is!
none None
Less development on large scale
Not sure I know of any development I would currently like to see.
None...i think Pembroke is perfect the way it is
None. Stop building. Leave the land alone
NONE
None we have enough
There is enough already
Sparse. It's difficult for me development to generate the taxes needed to support the require infrastructure

none, we are fine now, need to fix up what we have Hit
the max. Done for a bit.
New rec center for community use. Other than that, NOTHING!
None
None
None. Leave it alone! :) None
No more developments
None
None we have enough
Nothing, we are almost overdeveloped!
preferably none, but sustainable as a minimum None.
There is already enough.
None. SLOW DOWN.
nothing
No more development on farm lands or open spaces. They should be preserved
None
None
None
None
None for a while.... What has recently been developed is junk.
None
None

Single Family Homes
Those were pretty lousy choices that tend to skew the survey results. Single family homes are fine.
No more condos! Single family homes
Single family home
Single family homes
Single family homes
Individual homes non clustered.
individual houses
Single family homes
Family homes
Neighborhoods!!!
Neighborhoods!!!
Simple affordable housing with large lot sizes
Single homes if there needs to be more development.

Commercial
Commercial on 139 & 53
Tuning the town center into a more classical New England Main Street with walkable shops. If we need development to increase town revenues, I'd like to see additional commercial development in areas along 53 and 139
Ability to create a balance of more businesses in town to increase tax revenue.
Houses and a Starbucks!
Industrial in North Pembroke
Better shopping and restaurants
buisness but not too much...It would be nice to have a good bakery in town Make
pembroke center a hub with restaurants and shops

Open Space parks and
beautiful spaces plant
more trees
I would like to see more parks like Birch street and splash pads like in braintree
Developed open spaces for public use. Only trails dog park
Skate park roller hockey rink behind town hall/police
Green Space
More walking trails - sidewalks near the schools - more playgrounds, bike lanes, etc.
the town structures, playing fields, more playgrounds, gardens historical
preservation

Infrastructure/Repairs/Community Services
Infrastructure and waterway revialization
Fix the town center. It has been talked about for years but nothing has been done.
I rather improve the current infrastructure we have
Maybe a mixed use facility at the community center. As much as I appreciate historic preservation
The only development I would love to see is the rec building and the bryantville area New rec
center for community use. Other than that, NOTHING!
Invest in a recreation department building
Tear down the rec center and have the YMCA build a branch
New high school
Community/Rec center
New road to & from the high school, too much traffic 1,000 cars a day!!!
Develop the Community Center for mixed use or commercial
Invest in community center
Senior housing and recreation center senior housing off grid,
energy efficient units. pairing senior housing with families.

Cluster/Mixed Use
Small clustered
Use of previously zoned commercial land for clustered residential development.
When you say cluster is it business or residential? I would combine mixed use in center with affordable
housing.

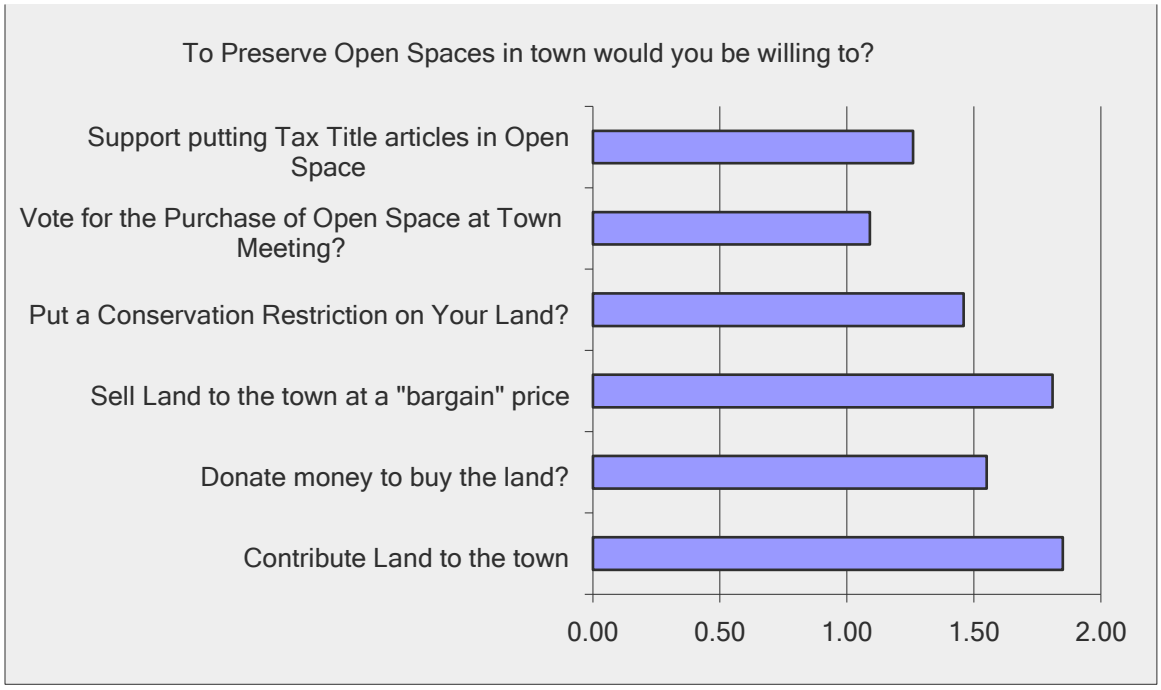
Family Friendly
Development that would facilitate small businesses and families.
I think that the town should focus on building afforable nice homes in the 300K ballpark people who
want to invest in the community, raise families here and spend money eating, shopping etc here.

???
I don't know anything about these types of developments Another
tough question, it has to be right for the area.
I would only like to see development in areas where the infrastructure can support it
Clustered and mixed use needs clarification. No more "affordable housing", keep Pembroke a nice town.

Question 16

To Preserve Open Spaces in town would you be willing to?

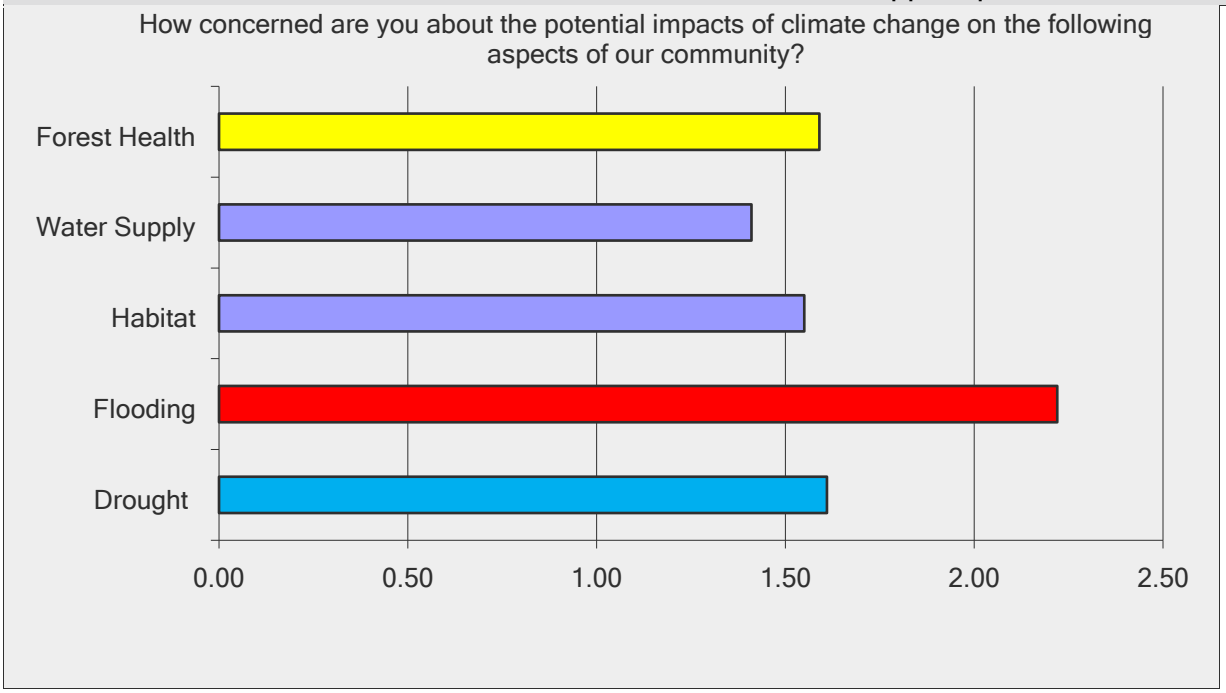
Answer Options	Yes	No	Rating Average	Response Count
Contribute Land to the town	32	188	1.85	220
Donate money to buy the land?	101	125	1.55	226
Sell Land to the town at a "bargain" price	41	174	1.81	215
Put a Conservation Restriction on Your Land?	118	99	1.46	217
Vote for the Purchase of Open Space at Town Meeting?	221	22	1.09	243
Support putting Tax Title articles in Open Space	159	57	1.26	216
Other (please specify)				25
			answered question	256
			skipped question	21



Question 17

How concerned are you about the potential impacts of climate change on the following aspects of our community?

Answer Options	Very Concerned	Some What Concerned	Not Concerned	Rating Average	Response Count
Drought	131	103	28	1.61	262
Flooding	58	87	115	2.22	260
Habitat	140	98	23	1.55	261
Water Supply	173	73	17	1.41	263
Forest Health	133	105	25	1.59	263
				answered question	263
				skipped question	14



BioMap2

CONSERVING THE BIODIVERSITY OF MASSACHUSETTS IN A CHANGING WORLD

Pembroke

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, ɳɦɼɮɴɦɦ ɳɦɤ Dɨ ɵɨ ɲɨ ɮɭ ɮɥ Fɨ ɲɦɤɱɟ ɤɲ ɡɭ ɣ Wɨ ɫ ɣɫ ɨ ɥɤ˘ɲ Natural Heritage & Endangered Species Program (NHESP), and The Nature Cɮɭ ɲɤɱɸɡɭ ɢɸ˘ɲ Mɡɲɲɡɢɦɴɲɤɳɳɲ Pɱɮɧɱɡɫ developed *BioMap2* ɳɮ ɯɱɮɳɤɢɳ ɳɦɤ ɲɳɡɳɤ˘ɲ biodiversity in the context of climate change.

BioMap2 ɢɮɫ ɡɨ ɭ ɤɲ NHESP˘ɲ ȯŌ ɸɤɡɱɲ ɮɥ rigorously documented rare species and natural community data with spatial data identifying wildlife species and habitats that were the focus ɮɥ ɳɦɤ Dɨ ɵɨ ɲɨ ɮɭ ɮɥ Fɨ ɲɦɤɱɟ ɤɲ ɡɭ ɣ Wɨ ɫ ɣɫ ɨ ɥɤ˘ɲ ȯŌŌō State Wildlife Action Plan (SWAP). *BioMap2* also ɨ ɭ ɳɤɦɱɡɳɤɲ Tɦɤ Nɡɳɴɱɤ Cɮɭ ɲɤɱɸɡɭ ɢɸ˘ɲ ɡɲɲɤɲɲɫ ɤɭ ɳ of large, well-connected, and intact ecosystems and landscapes across the Commonwealth, incorporating concepts of ecosystem resilience to address anticipated climate change impacts.

Protection and stewardship of *BioMap2* Core Habitat and Critical Natural Landscape is

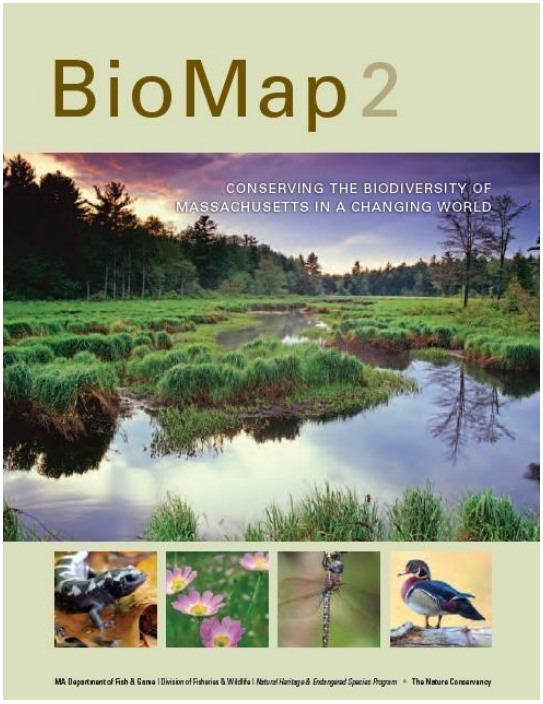
essential to safeguard the diversity of species and their habitats, intact ecosystems, and resilient natural landscapes across Massachusetts.

What Does Status Mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act (MESA), 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.

Natural Heritage



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.

- 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

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potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated by any law or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented good sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 good sites or few remaining acres in the state.
  Vulnerable communities typically have 21100 good 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 longterm 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,

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

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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

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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 landscapesò 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

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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 Mɠɲɲɠɢɧɴɲɤɳɳ˘ gɨ ɮɣɨ ɵɤɱɲɨ ɳɸv Tɧɤ ɭ ɴɫ ɤɱɮɴɲ sources of information and analyses used to

Legal Protection of Biodiversity

BioMap2 presents a powerful vision of what Massachusetts would look like with full protection of the land most important for ɲɴɯɯɮɱɲɨ ɭ ɦ ɳɧɤ Cɮɫ ɫ ɮɭ ɶɤɠɫ ɳɧ˘ɲ gɨ ɮɣɨ ɵɤɱɲɨ ɳɸv 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/natur al-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.

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 Mɠŋŋɠɕɦɴɲɤŋŋ˘ ɭ ɠŋɴɱɠɫ ɲɸŋŋɤɫ ɲ ɥɮɱ ɦɤɭ ɤɱɠŋɨ ɮɭ ɲ to come.

Understanding Core Habitat Summaries

Following the Town Overview, there is a descriptive summary of each Core Habitat and Critical Natural Landscape that occurs in your city or town. These summaries highlight some of the outstanding characteristics of each Core Habitat and Critical Natural Landscape, and will help you learn more about your city or ŋɮɑɫ ˘ɲ ɡɨ ɮɣɨ ɵɤɱɲɨ ŋɸᵛ Ɏɮɴ ɢɠɭ ɥɨ ɭ ɣ ɮɴŋ ɫ ɮɱɤ 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

Pembroke lies on the border of the Bristol Lowland/Narragansett Lowland and the Southern New England Coastal Plains and Hills Ecoregions. The Bristol Lowland/Narragansett Lowland Ecoregion is an area of flat, gently rolling plains. Forests are mostly central hardwoods and some elm-ash-red maple and red and white pine. There are numerous wetlands, some cropland/pasture, and many cranberry bogs. Many rivers drain this area. The Southern New England Coastal Plains and Hills Ecoregion is comprised of plains with a few low hills. Forests are mainly central hardwoods with some transition hardwoods and some elm-ash-red maple and red and white pine. Many major rivers drain this area.

Pembroke at a Glance

- Total Area: 15,072 acres (23.5 square miles)
- Human Population in 2010: 17,837
- Open space protected in perpetuity: 1,993 acres, or 13.2% percent of total area*
- *BioMap2* Core Habitat: 3,249 acres
- *BioMap2* Core Habitat Protected: 1,131 acres or 34.8%
- *BioMap2* Critical Natural Landscape: 3,647 acres
- *BioMap2* Critical Natural Landscape Protected: 1,248 acres or 34.2%.

BioMap2 Components

Core Habitat

- 3 Exemplary or Priority Natural Community Cores
- 6 Wetland Cores
- 3Aquatic Cores
- 9 Species of Conservation Concern Cores** ○ 1 bird, 4 reptiles, 1 amphibian, 3 insects, 2 mussels, 4 plants

Critical Natural Landscape

- 2 Landscape Blocks
- 5 Wetland Core Buffers
- 3 Aquatic Core Buffers
- 5 Coastal Adaptation Areas

* Calculated uɲɨ ɭ ɦ MɠɲɲGIS ɣɠɲɠ ɫɠɸɤɱ âPɱɮɲɤɢɲɤɣ and Recreational Open SpaceȯMarch, ȮȌ̃ȭ̄ȮȨ̀.

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

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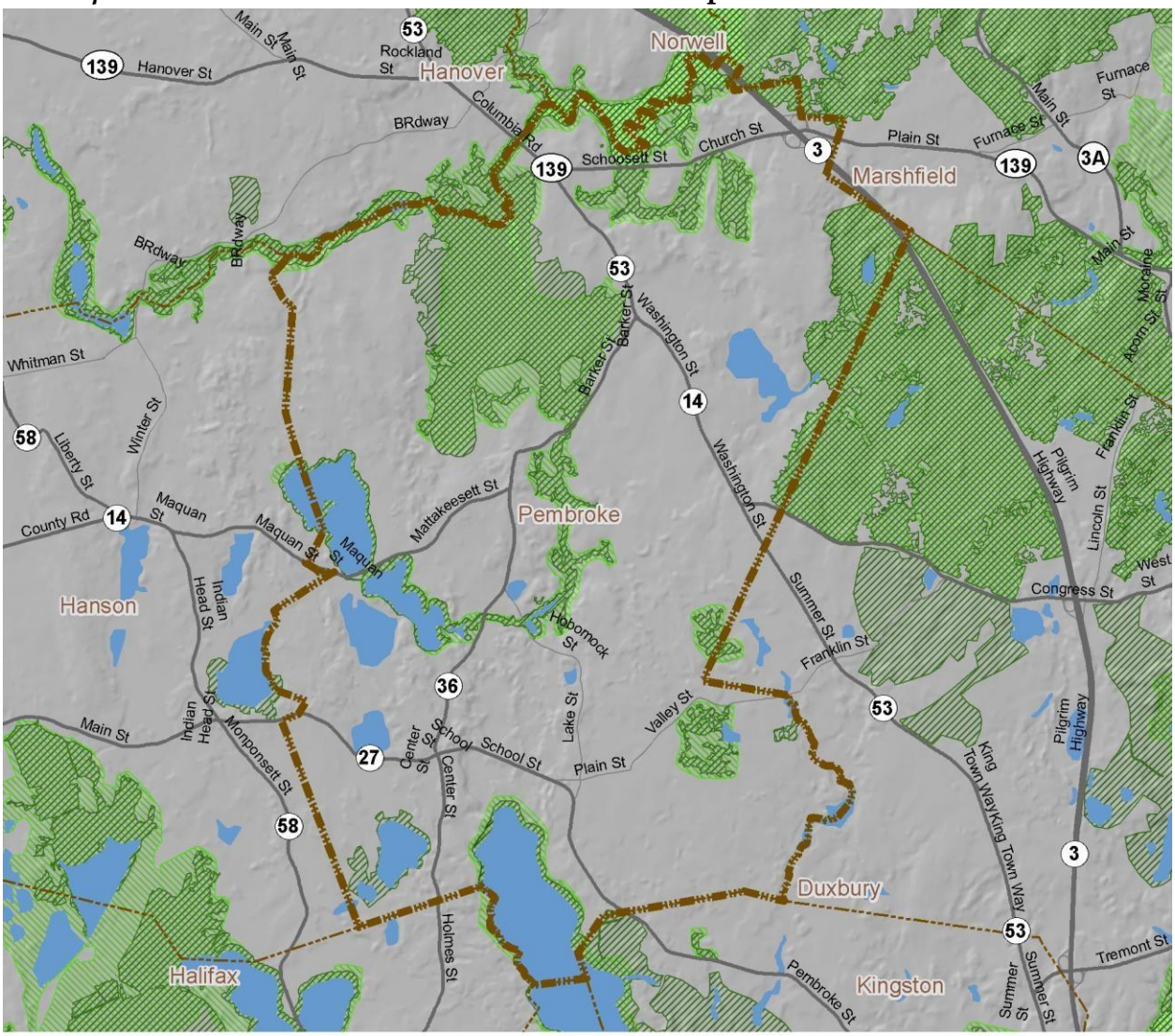
For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.

BioMap2 Core Habitat and Critical Natural Landscape in Pembroke



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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

Mussels

Tidewater Mucket, (*Leptodea ochracea*), SC
Eastern Pondmussel, (*Ligumia nasuta*), SC

Insects

Damselflies

New England Bluet, (*Enallagma laterale*), Non-listed SWAP species

Dragonflies

Spine-crowned Clubtail, (*Gomphus abbreviatus*), SC
Umber Shadowdragon, (*Neurocordulia obsoleta*), SC

Amphibians

Four-toed Salamander, (*Hemidactylium scutatum*), Non-listed SWAP

Reptiles

Eastern Box Turtle, (*Terrapene carolina*), SC
Eastern Ribbon Snake, (*Thamnophis sauritus*), Non-listed SWAP
Northern Black Racer, (*Coluber constrictor*), Non-listed SWAP Spotted Turtle, (*Clemmys guttata*), Non-listed SWAP

Birds

Sharp-shinned Hawk, (*Accipiter striatus*), SC

Plants

Seabeach Needlegrass, (*Aristida tuberculosa*), T
Estuary Beggar-ticks, (*Bidens hyperborea*), E
Long's Bitter-cress, (*Cardamine longii*), E
Hemlock Parsley, (*Conioselinum chinense*), SC

Priority Natural Communities

Estuarine Intertidal: Freshwater Tidal Marsh, S1
Estuarine Intertidal: Fresh/Brackish Tidal Swamp, S1

Other *BioMap2* Components

Aquatic Core
Wetland Core

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Landscape Block
Aquatic Core Buffer
Wetland Core Buffer
Coastal Adaptation Area

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 Pembroke

Core IDs correspond with the following element lists and summaries.

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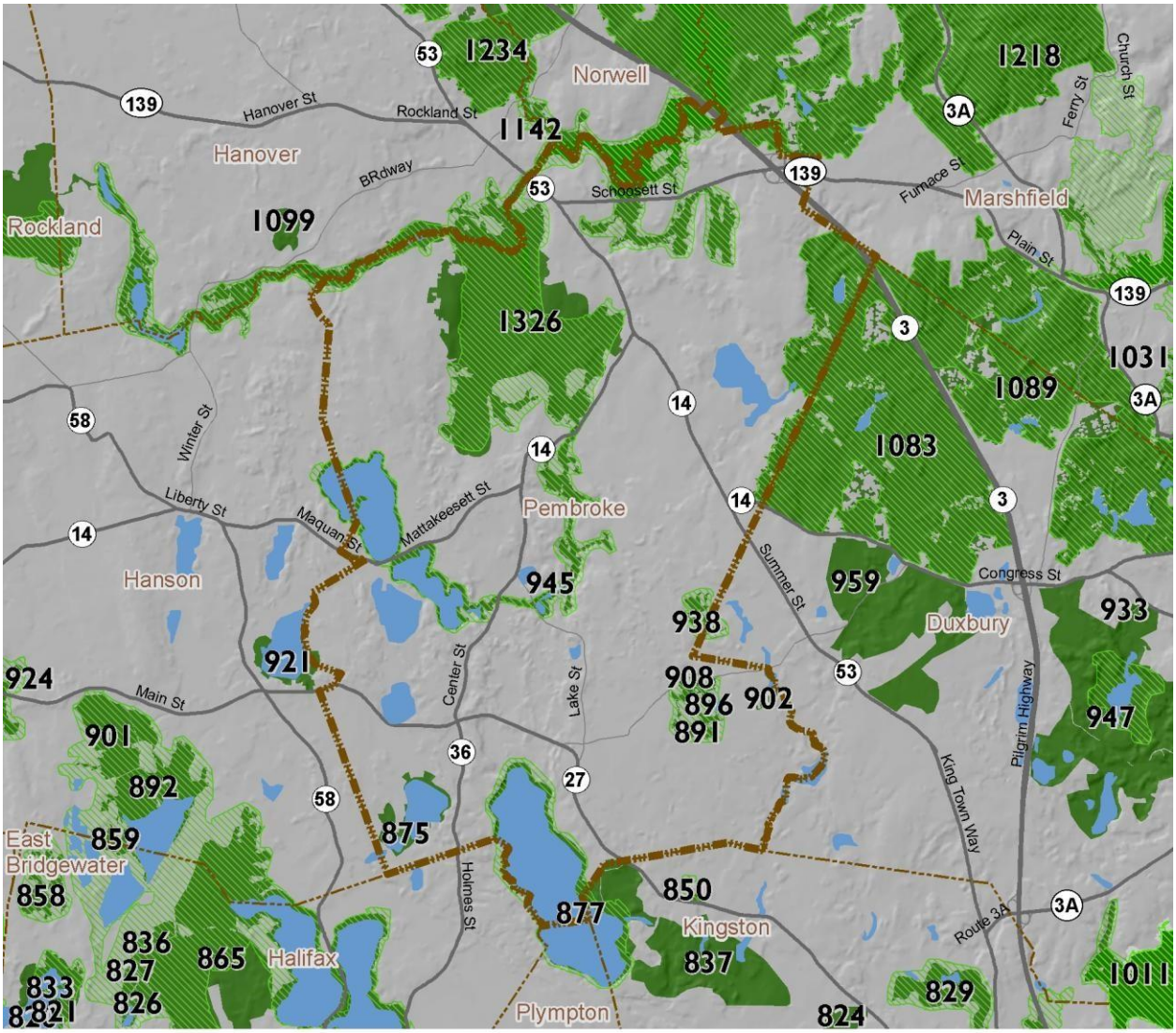

BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

Elements of *BioMap2* Cores

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

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

Core 875	Aquatic Core	
Species of Conservation Concern		
New England Bluet	*Enallagma laterale*	Non-listed SWAP
Core 877		
Aquatic Core		
Species of Conservation Concern		
Eastern Pondmussel	*Ligumia nasuta*	SC
Tidewater Mucket	*Leptodea ochracea*	SC
Spotted Turtle	*Clemmys guttata*	Non-listed SWAP
Core 891		
Wetland Core		
Core 896		
Wetland Core		
Core 902		
Species of Conservation Concern		
Seabeach Needlegrass	*Aristida tuberculosa*	T
Core 908		
Wetland Core		
Core 921		
Species of Conservation Concern		
New England Bluet	*Enallagma laterale*	Non-listed SWAP
Core 938		
Wetland Core		
Core 945		
Core 1083		

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Wetland Core		
Aquatic Core		
Species of Conservation Concern		
Mocha Emerald	*Somatochlora linearis*	SC
Eastern Box Turtle	*Terrapene carolina*	SC
American Bittern	*Botaurus lentiginosus*	E

Core 1118

Priority & Exemplary Natural Communities	S1
Estuarine Intertidal: Freshwater Tidal Marsh	

Core 1326

Wetland Core	
Aquatic Core	
Priority & Exemplary Natural Communities	S1
Estuarine Intertidal: Fresh/Brackish Tidal Swamp	S1
Estuarine Intertidal: Freshwater Tidal Marsh	

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

Species of Conservation Concern		SC E
American Sea-blite	*Suaeda calceoliformis*	SC
Estuary Beggar-ticks	*Bidens hyperborea*	E
Hemlock Parsley	*Conioselinum chinense*	E
Long's Bitter-cress	*Cardamine longii*	T
Parker's Pipewort	*Eriocaulon parkeri*	SC
Seabeach Needlegrass	*Aristida tuberculosa*	SC
Eastern Pondmussel	*Ligumia nasuta*	SC
Tidewater Mucket	*Leptodea ochracea*	SC
Mocha Emerald	*Somatochlora linearis*	SC
Spine-crowned Clubtail	*Gomphus abbreviatus*	Non-listed SWAP
Umber Shadowdragon	*Neurocordulia obsoleta*	SC
Four-toed Salamander	*Hemidactylium scutatum*	Non-listed SWAP
Eastern Box Turtle	*Terrapene carolina*	Non-listed SWAP
Eastern Ribbon Snake	*Thamnophis sauritus*	SC E
Northern Black Racer	*Coluber constrictor*	SC
Common Tern	*Sterna hirundo*	T
Least Bittern	*Ixobrychus exilis*	Non-listed SWAP
Least Tern	*Sternula antillarum*	Non-listed SWAP
Piping Plover	*Charadrius melodus*	Non-listed SWAP
Red Knot	*Calidris canutus*	SC
Ruddy Turnstone	*Arenaria interpres*	
Sanderling	*Calidris alba*	
Sharp-shinned Hawk	*Accipiter striatus*	

Core Habitat Summaries

Core 875

A 150-acre Core Habitat featuring a Species of Conservation Concern.

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

Core 877

An 841-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

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

Eastern Pondmussels, large freshwater mussels, are most abundant in southeastern Massachusetts. They inhabit streams, rivers, and small to large lakes and ponds; they show no preference for substrate, depth, or flow conditions. As sedentary filter feeders they are vulnerable to the alterations of water bodies.

In Massachusetts, the Tidewater Mucket, a freshwater mussel, prefers natural coastal freshwater ponds of several acres in size with clear, clean water and sandy substrates. It almost always occurs near the seacoast.

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

Core 891

A 29-acre Core Habitat featuring Wetland Core.

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

Core 896

A <1-acre Core Habitat featuring Wetland Core.

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

Core 902

A 9-acre Core Habitat featuring a Species of Conservation Concern.

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Seabeach Needlegrass is an annual grass of medium height, usually found on stable dunes growing in association with beach heather.

Core 908

A 29-acre Core Habitat featuring Wetland Core.

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

Core 921

A 121-acre Core Habitat featuring a Species of Conservation Concern.

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

Core 938

A 32-acre Core Habitat featuring Wetland Core.

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

Core 945

A <1-acre Core Habitat featuring Aquatic Core.

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

Core 1083

A 2,103-acre Core Habitat featuring Wetland Core, Aquatic Core, and Species of Conservation Concern.

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Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapesòthose 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.

The 255-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.

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

The Mocha Emerald dragonfly breeds in small to medium-sized streams that flow through woods or swamps. The young spend a year or more in the streams, and then emerge as adults that live in surrounding upland forests.

The Eastern Box Turtle is a terrestrial turtle, inhabiting many dry and moist woodland and early successional habitat. Development, roads, collection, and disease are the primary conservation concerns.

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

Core 1118

A <1-acre Core Habitat featuring a Priority Natural Community.

The Freshwater Tidal Marsh community occurs along coastal rivers, upstream of brackish tidal marsh. Here the marshes are flooded by tidal action twice a day, but with fresh water. These structurally diverse marshes are globally rare. This example of Freshwater Tidal Marsh is of part of a larger complex of estuarine and riverine natural communities, and is unusually large for Massachusetts.

Core 1326

A 9,988-acre Core Habitat featuring Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

A long and convoluted Core Habitat winds its way through the northern part of Plymouth County, following the Drinkwater, Indian Head, North, and South Rivers, along with several of their tributaries. This watery Core supports 17 rare and uncommon species. Along the ocean part of this Core, the federally Threatened and globally rare Piping Plovers nest in small numbers, as well as Common and Least Terns. Along the North River from about where Route 3 crosses, up to and along Herring Brook, healthy examples of two very uncommon natural communities, Freshwater Tidal Marsh and Fresh/Brackish Tidal Swamp, host two plants, Long's Bitter-cress and Estuary Beggar-ticks, that grow only in these types of habitats.

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Fresh / Brackish Tidal Swamps occur along free-flowing coastal rivers at the upper limit of tidal influence and are flooded by daily tides. These low-stature forested wetlands often have a dense shrub understory. The large, highly unusual tidal swamp includes 3 variants in a continuum from upland to streamside. The wetlands are well buffered in a well developed landscape.

The Freshwater Tidal Marsh community occurs along coastal rivers, upstream of brackish tidal marsh. Here the marshes are flooded by tidal action twice a day, but with fresh water. These structurally diverse marshes are globally rare. Three examples of Freshwater Tidal Marsh including one that is of high-quality because of its excellent species diversity, absence of invasive exotic species, and association with many state-listed rare species, in spite of a somewhat urbanized landscape.

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

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

BioMap2 Critical Natural Landscape in Pembroke

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

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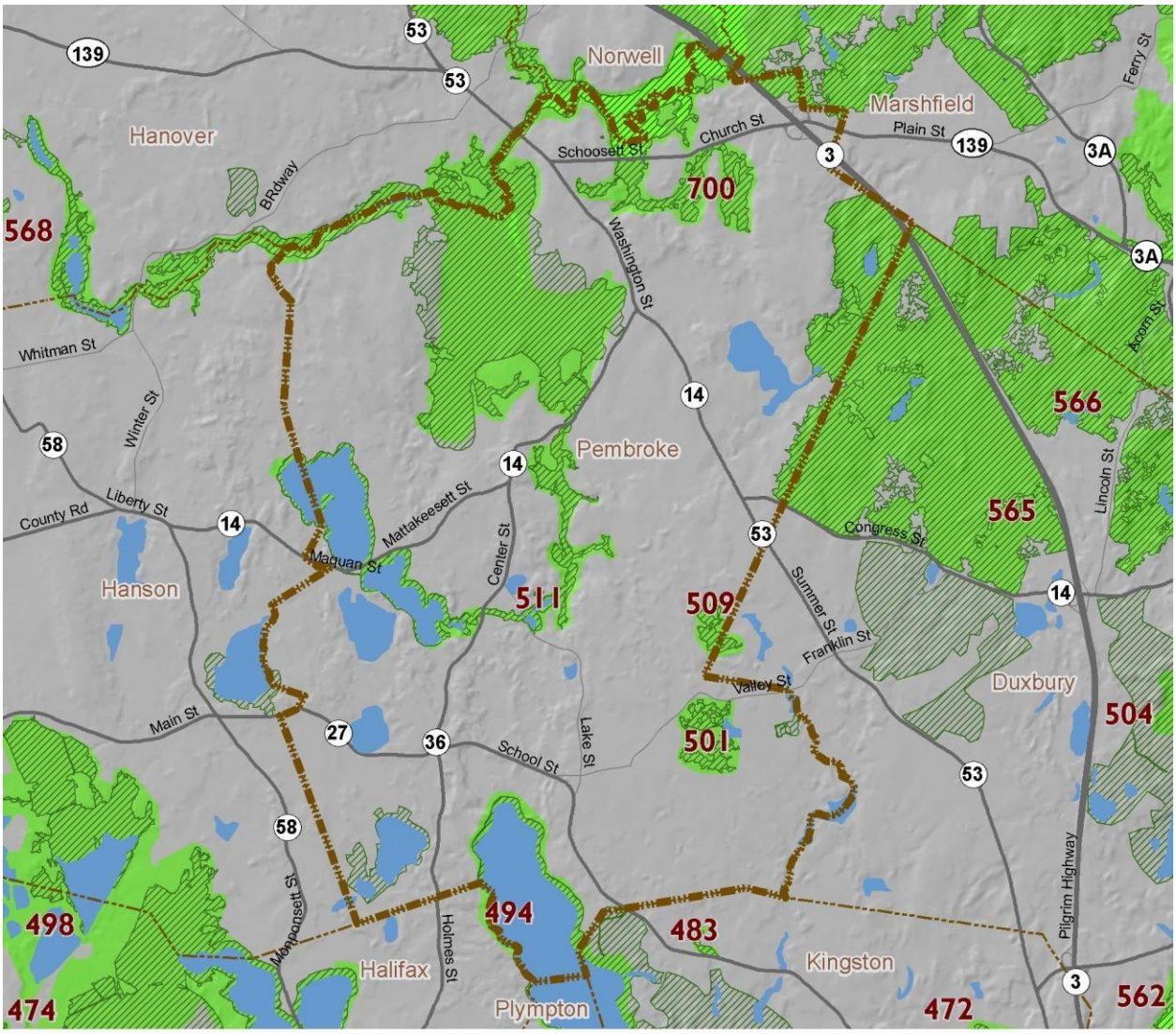

BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

Elements of *BioMap2* Critical Natural Landscapes

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

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

CNL 494
Aquatic Core Buffer

CNL 501
Wetland Core Buffer

CNL 509
Wetland Core Buffer

CNL 511
Aquatic Core Buffer

CNL 565
Aquatic Core Buffer
Landscape Block
Wetland Core Buffer

CNL 571
Coastal Adaptation Area

CNL 700
Aquatic Core Buffer
Coastal Adaptation Area
Landscape Block
Tern Foraging Area

Critical Natural Landscape Summaries **CNL 494**

An 814-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types. **CNL 501**

A 152-acre Critical Natural Landscape featuring Wetland Core Buffer.

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A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types. **CNL 509**

A 72-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types. **CNL 511**

A <1-acre Critical Natural Landscape featuring Aquatic Core Buffer.

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

CNL 565

A 2,133-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block.

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

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as

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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.

CNL 571

A <1-acre Critical Natural Landscape featuring Coastal Adaptation Area.

The coastal habitats of Massachusetts are particularly vulnerable to potential sea-level rise in the next century, which many estimates suggest is likely to exceed one meter. Therefore, in addition to prioritizing current coastal habitats, the creators of *BioMap2* examined the landward side of salt marshes to determine where these habitats might move to as sea levels rise. Undeveloped lands adjacent to and up to one and a half meters above existing salt marshes were identified, and included as Critical Natural Landscapes with high potential to support inland migration of salt marsh and other coastal habitats over the coming century.

CNL 700

A 14,690-acre Critical Natural Landscape featuring Aquatic Core Buffer, Landscape Block, Coastal Adaptation Area, and Tern Foraging Area.

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

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Terns range widely from their breeding colonies to forage. While the breeding and staging areas for Roseate, Arctic, Common, and Least Terns were included in the Species of Conservation Concern Core Habitat for *BioMap2*, tern foraging areas were included in *BioMap2* as part of Critical Natural Landscape. The extent of foraging habitat for Arctic, Common, and Roseate Terns depends on the size of the breeding colony. For Least Tern, all shallow marine and estuarine waters within 2 miles of recent colony sites and up to 1 mile offshore were mapped as foraging habitat.

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Natural Heritage & Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program ɡʅ ɣ ɳɧɤ Cʒɬ ɬ ʒʅ œɤɠɬ ɳɧ˘ɲ ɱʆɱɤ ɲɯɤɢɨ ɤɲˆ ɵɨ ɲɨ ɳ ʒɴɱœɤɡ ɲɨ ɳɤ ɡɳ www.mass.gov/nhesp.

Smart Growth Resource List:

Adoption and implementation of Chapter 43D (Local Expedited Permitting)

This allows communities to designate Priority Development sites, where development permit decisions are issued within 180 days of application submittal. By adopting 43D, a community becomes eligible for MassWorks Infrastructure Program grants, and receives marketing and promotion assistance. Developers are attracted to 43D sites because the expedited permitting process eliminates some of the uncertainties with local development processes (Mass.gov).

In Pembroke, identifying Priority Development sites where development should be directed to, such as the town center or the commercial district in the northeast of town, could be a tool for directing growth away from sensitive and valued areas.

Transfer of Development Rights (TDR):

This strategy gives landowners the right to transfer the development rights from one parcel to another. By a landowner selling his or her development rights for a given property, it allows a buyer of the rights to develop another piece of land at a greater intensity than would be permitted under regular zoning laws. In this way, development rights are transferred from one district (often called the “sending district”) to another (often referred to as the “receiving district”). Communities that use TDR are generally shifting the density of development within their community without changing the overall development potential of their town. This allows them to achieve both economic goals and protection of resources, such as open space (Smart Growth Toolkit, a).

In Pembroke, the sending zones could include areas around water bodies, vernal pools and wetlands, while the receiving zones could include the town center, areas of Route 53, and the commercial district along Route 139.

Traditional Neighborhood Development (TND):

TND is based on the principle that neighborhoods should be walkable, affordable, accessible, distinctive, and in Massachusetts, true to the significant historic context of each community.
TND uses the adoption of different zoning regulatory standards to meet a variety of design goals and principles aimed towards creating vibrant mixed-use neighborhoods with higher densities and a range of complementary uses. *Village Commons* in South Hadley, and *Dennis Village Center* in Cape Cod are both examples of communities where TND principles have been successful (Smart Growth Toolkit, b).

Low Impact Development (LID):

A site planning process and series of design techniques and Best Management Practices which direct development within a site away from critical natural resource areas, and ensure their further protection. LID practices are particularly effective at addressing stormwater runoff and minimizing hydrological disturbances around development areas. This makes LID practices particularly appropriate for Pembroke (Smart Growth Toolkit, c).

Works Cited for Smart Growth Resource List:

Mass.gov. "Local Expedited Permitting - 43D." *Housing and Economic Development*. N.p., 04 Oct. 2011. Web. 14 Mar. 2017. http://www.mass.gov/hed/economic/eohed/pro/zoning-andpermitting/43d/

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Hughes, Bruce, and James Watson. *Old Colony Region Priority Development & Priority Protection Areas*. Rep. Brockton, MA: Old Colony PLanning Council, 2010. Print.

Lautzenheiser, T.E., J.M. Collins, E.H. Ricci, and J. Clarke.
2014. Losing Ground: Planning for Resilience. Massachusetts Audubon Society, Inc. Lincoln, Massachusetts. 32 pp.

Peter Flinker. *Village Guidance: Tools and Techniques for Rhode Island Communities*. Rep. Ashfield, MA: Dodson & Flinker, Inc., 2015. Print.

www.lowimpactdevelopment.org/

www.epa.gov/smartgrowth

www.mass.gov/hed/community/planning/smart-growth.html

Section 319
NONPOINT SOURCE PROGRAM
SUCCESS STORY Restoring Historical Cranberry Bogs Improves Aquatic Life in the Eel River Massachusetts

Waterbody Improved

Historical cranberry farming activities in Massachusetts' Eel River resulted in aquatic life impairments caused by fish barriers and non-native aquatic plants. As a result, in 2001 the state of Massachusetts listed Eel River as Category 4c in the state's Integrated Report, for non-attainment of the state's water quality standard for aquatic life. Project partners performed a series of restoration activities that simplified channel and floodplain structure and addressed barriers to fish and wildlife passage as well as Eel River's altered hydrology and degraded wetland soils. Aquatic life improved after completion of the restoration project.

Problem

The Eel River (Figure 1) is a small spring-fed system that flows east of Long Pond Road in the town of Plymouth, flows through Russell Mill Pond, and discharges into Plymouth Harbor in southeastern Massachusetts. Current land use estimates for the South Shore Coastal watershed (an approximately 15-square-mile subwatershed within the Cape Cod watershed) are forest (70 percent), open land (11 percent), and residential (8 percent). Historically, this area was a wetland known as Finney's Meadow.

The river's flow was uninterrupted and supported a wide variety of wildlife until a series of mills and dams were constructed in the early 1800s. In the late 1800s, cranberry farming began and continued until 2002. Cranberry farmers removed trees, modified the stream channel, and built upland berms and water control structures. In addition, the Sawmill Pond dam was a barrier to fish migration, and the impoundment affected habitat, water quality, and natural riverine processes.

Photo by USDA NRCS

Figure 1. The Eel River meanders through a restored

The Massachusetts Department of Fish and Wildlife surveyed the fish population on the Eel River in 2001. With the exception of American eel, the overall number of fish was low. This was attributed to the lack of quality fish habitat, including available fish cover which was noted as poor. It was also noted that two small impoundments of this segment of the Eel River were both heavily infested with the non-native aquatic plant *Cambomba*

PhotobyUSDANRCS

Figure 2. Land around the Eel River was converted for cranberry farming as early as the late 1800s.

PhotobyBrianGraber

Figure 3. The Sawmill Pond Dam, built downstream of one of the bogs, altered the river's hydrology and blocked fish passage.

PhotobyAlexHackman

PhotobyAlexHackman

caroliniana (fanwort). In order for the Eel River to meet the aquatic life designated use, the fish population wetland area that was once a commercial cranberry bog.

should contain multiple age classes (indicative of reproducing populations) of any cold water fish and there should be no non-native aquatic species. As a result, in 2001 the Massachusetts Department of Environmental Protection listed the 3.9-mile Eel River (Segment MA94-23) as impaired (Category 4c) in the state's Integrated Report because it was not meeting its designated use for fish, other aquatic life, and wildlife.

Project Highlights

Beginning in 2004, project partners worked to improve water quality and reduce the impacts of hydromodification on fish and wildlife in the Eel River. Project partners naturalized over 40 acres of retired cranberry bogs (Figure 2) to mitigate the effects of historical hydromodification and removed

Figure 4. Wetlands have been restored in a portion of the river that was once a commercial cranberry bog.

Sawmill Pond Dam, a large stone dam located downstream of the bogs (Figure 3). Restoration techniques included stream channel and floodplain reconstruction, fill removal, extensive wetland plantings, rare-species habitat creation and enhancement, dam removals, and culvert replacements (Figures 4 and 5). The project took approximately 5 years to complete from feasibility through construction.

Results

In 2006 the town of Plymouth's Community Preservation Committee purchased the cranberry bogs and upland areas. Through the Eel River Headwaters Restoration Project, the town and project partners transformed over 40 acres of former commercial cranberry farm into self-sustaining freshwater wetlands. In addition to improving over 40 acres of habitat, the project addressed the flow of 1.7 miles of headwater stream that had been extensively altered and degraded by human use. This project has made dramatic improvements to wetland and riverine habitat that resulted in new and more abundant fish and wildlife, helped the local ecology become more resilient to climate change, and enhanced public use of the conservation land.

Figure 5. Removing an impoundment has restored the hydrology of the Eel River and improved fish passage.

Rare wetland plant communities have also been reestablished. Over 24,000 plants, including more than 17,000 Atlantic white cedar trees, have been planted, representing the first large-scale restoration of this rare wetland type in Massachusetts. Now known as the Eel River Preserve, the area is managed by the town of Plymouth for public use and benefit. The Eel River project won the 2011 Coastal America Partnership Award, and

U.S. Environmental Protection Agency
Office of Water
Washington, DC

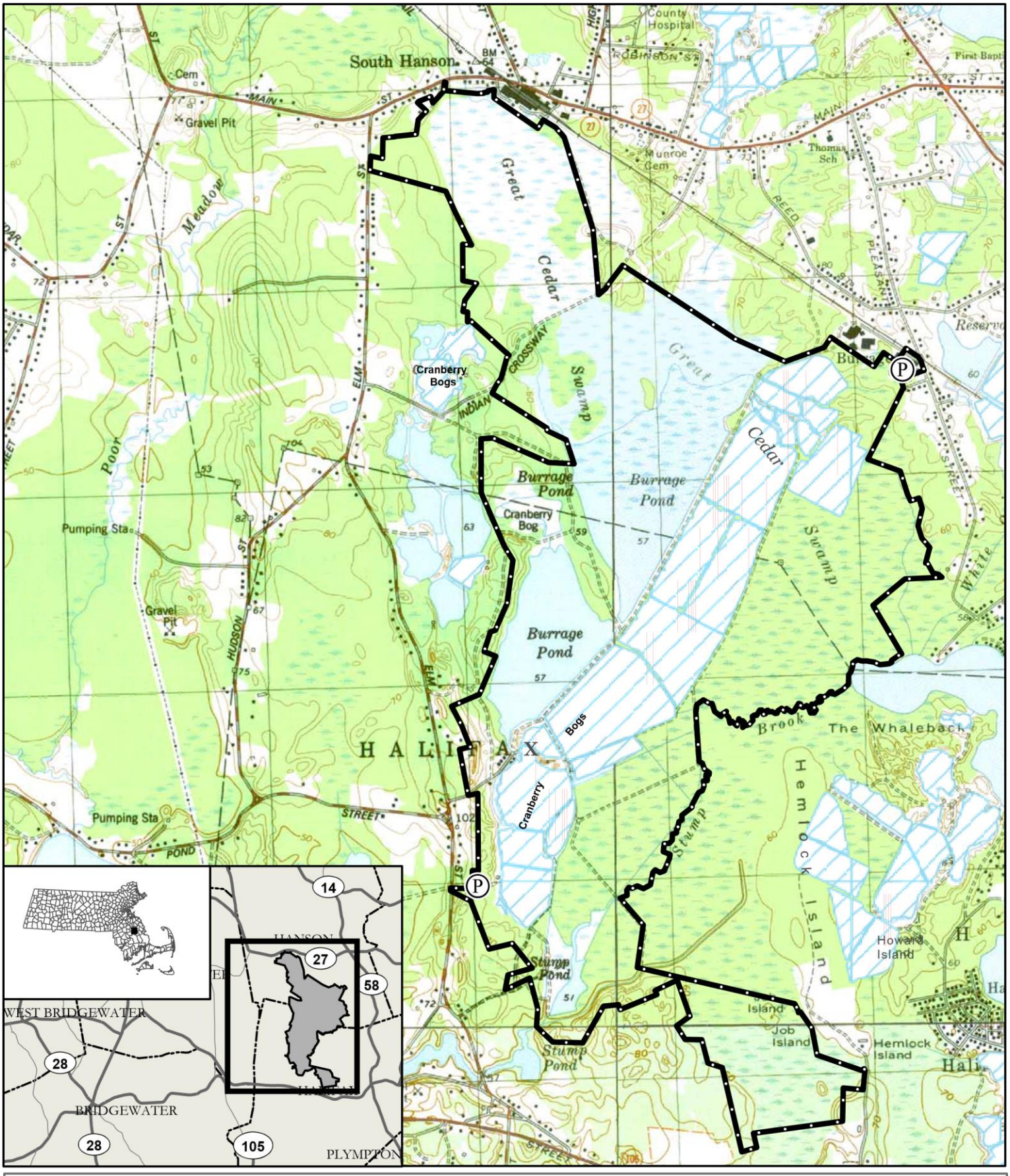
EPA 841-F-14-00 1X
May 2014

For additional information contact:
Jane Peirce
Massachusetts Department of Environmental Protection
508-767-2792 • Jane.Peirce@state.ma.us

provides valuable guidance for other wetland restoration projects.

Partners and Funding

Partners included the town of Plymouth, the Massachusetts Division of Ecological Restoration, the Massachusetts Department of Environmental Protection, the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS), American Rivers, The Nature Conservancy, the Massachusetts Corporate Wetlands Restoration Partnership, and the Horsley Witten Group. The project was funded through several sources with major contributions provided by the U.S. Fish and Wildlife Service ($1 million), the Massachusetts Department of Environmental Protection ($400,000 in Clean Water Act section 319 funds), and NRCS ($350,000).



http://www.masswildlife.org

0 1,000 2,000 Feet

BURRAGE POND WILDLIFE MANAGEMENT AREA (HANSON & HALIFAX, MA.)

Burrage Pond Wildlife Management Area

Hanson/Halifax

1625 Acres

Latitude: 42 00 51 N Longitude: 70 52 16 W

The Burrage Pond Wildlife Management Area (WMA) is 1625 acres of open water, marsh, Atlantic white cedar and red maple swamps and former cranberry bogs located on the border of Hanson and Halifax. It was purchased in 2002 by the Massachusetts Division of Fisheries and Wildlife from the Northland Cranberry Company. The area is managed for fisheries and wildlife habitats and open space. A management plan to protect, enhance and restore the varied natural habitats on the site is currently being developed.

Access

The area is accessible through parking areas at Hawks Avenue in Hanson and at 149 Elm Street in Halifax. One of the attractions of the area is its wide open vistas and easy access over numerous cranberry bog dikes. The regional headquarters for the Massachusetts Environmental Police is also located on the Burrage Pond WMA.

History

The area that is now the Burrage Pond Wildlife Management Area was originally known as the Great Cedar Swamp. The outlet from Monponsett Pond, known as Stump Brook or Herring Brook, was dammed for water power and created an artificial pond called Stump Pond. In this area in 1905, industrialist Albert C. Burrage started digging peat for fuel and later developed cranberry bogs. The area was purchased by the United Cape Cod Cranberry Company from Hanson Cedar Company in 1931. The area was later bought by Cumberland Farms, Inc. who developed some of the wetlands into more cranberry bogs between 1977 and 1990. These actions resulted in an enforcement action by the U.S. Environmental Protection Agency. The current USGS topographic maps and this WMA map still show wetlands in some of the areas that were developed into cranberry bogs. The property was eventually purchased by Northland Cranberry Company and known as Bog 18.

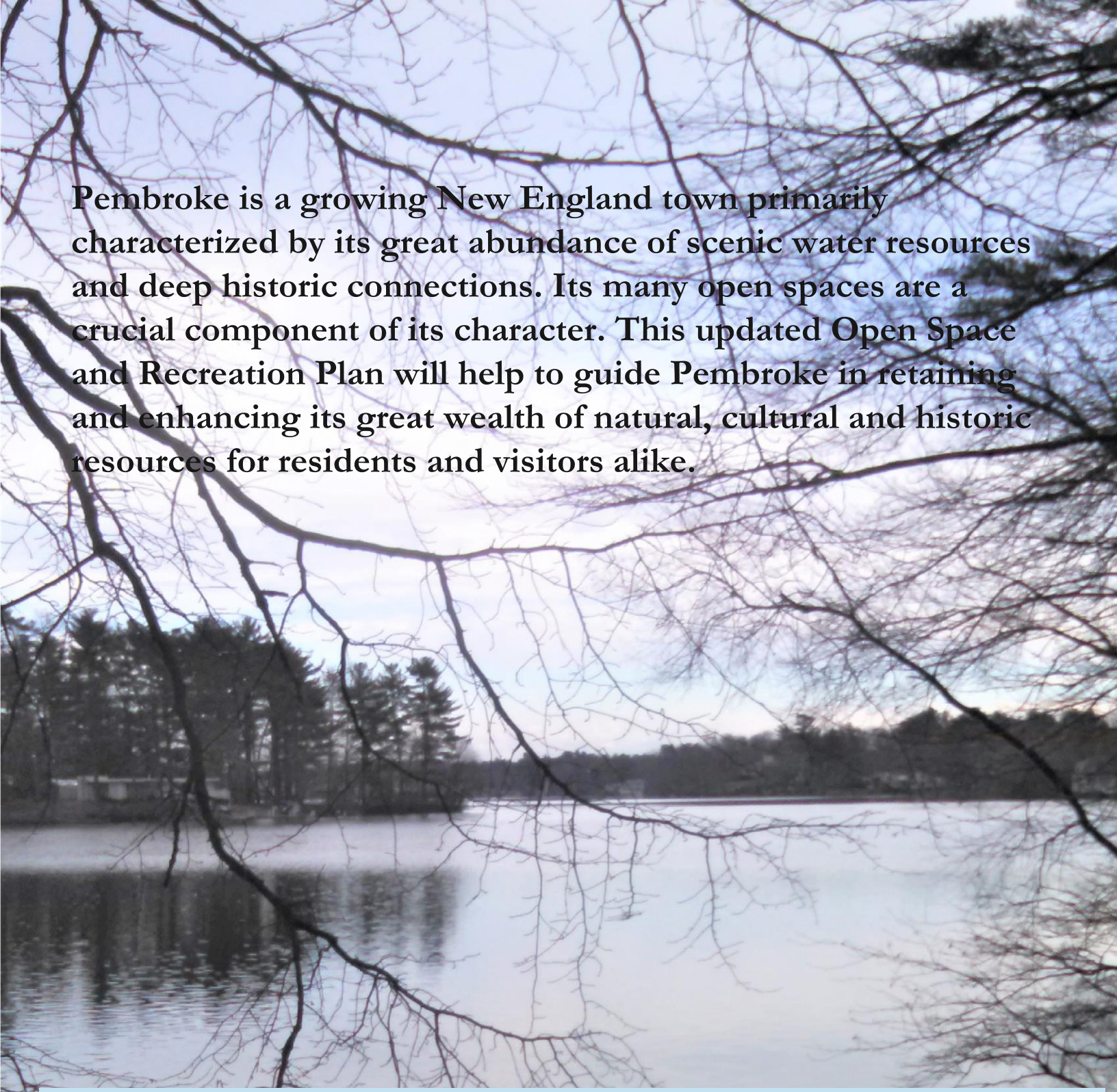
Fishing

Upper and Lower Burrage Ponds offer excellent warmwater shoreline fishing from the main dike. The fish populations of Upper and Lower Burrage Ponds were sampled in June of 2003 and contained bluegill, yellow perch, largemouth bass, pumpkinseed sunfish, chain pickerel, golden shiner, black crappie, brown bullhead and white perch. The ponds are very fertile, shallow (average depth 3 to 4 feet) and weedy which can make fishing difficult during the summer months. Canoes and small cartop boats can be carried in with difficulty.

Hunting and Wildlife Viewing

The Burrage Pond WMA supports a large variety of game and nongame wildlife and is particularly noted for its waterfowl. Hunting opportunities include waterfowl in the marsh and bog areas and deer hunting in the forested areas. The area is also noted for its birdwatching opportunities; a June 2003 bird survey found over 81 species using the area.

For More Information, contact: *Southeast Wildlife District, MassWildlife, 195 Bournedale Road, Buzzards Bay, MA 02532 (508) 759 – 3406 MassWildlife Website:* **www.mass.gov/masswildlife**



Pembroke is a growing New England town primarily characterized by its great abundance of scenic water resources and deep historic connections. Its many open spaces are a crucial component of its character. This updated Open Space and Recreation Plan will help to guide Pembroke in retaining and enhancing its great wealth of natural, cultural and historic resources for residents and visitors alike.

the Conway School

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The Conway School is the only institution of its kind in North America. Its focus is on sustainable planning and design. Each year, through its accredited, ten-month graduate program students from diverse backgrounds are immersed in a range of real-world design projects, ranging in scale from residences to regions. Graduates go on to play significant professional roles in various aspects of landscape design and planning.

Conway: Real World. Real Results