

TOWN OF
BARNSTABLE
Open Space and
Recreation Plan
2018



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The 2018 Open Space and Recreation Plan

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- COMM Fire District – Water Division
- Cotuit Fire District – Water Division
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Terms and Abbreviations

2005 OSRP – 2005 Open Space and Recreation Plan

2010 OSRP – 2010 Open Space and Recreation Plan

ADA – Americans with Disabilities Act

ACEC – Area of Critical Environmental Concern

ATV – All-terrain Vehicles

BCP – Barnstable Comprehensive Plan

CAP – Coastal Access Program

CDBG – Community Development Block Grants

C-O-MM – Centerville-Osterville-Marstons Mills

CPA – Community Preservation Act

CPC – Community Preservation Committee

DCPC – District of Critical Planning Concern

EOEEA– Executive Office of Energy & Environmental Affairs

GIZ – Growth Incentive Zone

GRASP – Geo-referenced Amenities Standards Program

HYCC – Hyannis Youth and Community Center

LAPC – Land Acquisition and Preservation Committee

MA DCR – MA Division of Conservation and Recreation

MA DCS – MA Division of Conservation Services

MA DFW – MA Division of Fisheries and Wildlife

MA GIS – MA Geographic Information Systems

MA NHESP – MA Natural Heritage and Endangered Species Program

NRCS – National Resource Conservation Service

SCORP – State Comprehensive Outdoor Recreation Plan

TDR – Transfer of Development Rights

TMDL – Total Maximum Daily Load

USDA – US Department of Agriculture

US EPA – US Environmental Protection Agency

WFP – Wastewater Facilities Plan

Zone I - protective radius around a public water supply wellfield

Zone II - area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated.

Section 1

Plan Summary



Section 1. Plan Summary

This section summarizes the content of the 2018 Open Space and Recreation Plan (2018 OSRP) for the Town of Barnstable.

Open spaces devoted to conservation or recreation help to define community character and enhance quality of life. Over several decades the Town of Barnstable has demonstrated a strong commitment to preserving and enhancing its open space resources.

The Town's strong commitment to open space and recreation planning is demonstrated by a record of accomplishment. Roughly 11,098.81 acres (29% of total land area in the town) is protected open space; another 2,565.34 acres (7% of total land area in the town) is other public open space, recreation land or other public land; and 1,483.72 (4% of total land area in the town) is lands in public or private ownership dedicated to agricultural or recreational uses. Despite this progress, ongoing efforts to protect open space and enhance opportunities for recreation are needed.

At 60.17 square miles, Barnstable is geographically the largest town on Cape Cod and the third largest in the Commonwealth. The Town also is the most populous community on Cape Cod, accounting for approximately 21% of Barnstable County's year-round population. As the region's largest and most heavily populated community, and as a regional center for commercial and institutional services, the Town of Barnstable often experiences the pressures of growth earlier and more acutely than other Cape Cod towns. In response, the Town has taken a leadership role in addressing many growth management issues, including the protection of open space and the provision of recreational facilities, often providing models for action followed by other Cape Cod towns.

Barnstable's diverse population is somewhat younger than other Cape Cod towns or the County as a whole. Barnstable also has significant populations with special socio-economic needs, including Environmental Justice communities. Median household income in Barnstable is below the County median, which, in turn, is below the state median. These demographic characteristics are key factors to be considered in setting priorities and allocating resources for open space and recreation facilities and programs.

Barnstable faces challenges in protecting and enhancing the vibrancy, variety and quantity of its natural, historic and cultural resources. Many of the challenges the Town faces relate to the pace and location of development over the past half century, as well as other natural or economic trends. These challenges include: threats to groundwater and surface water quality, increasing habitat fragmentation, increasing coastal erosion, visual encroachment on scenic roads, challenges of maintaining conservation areas, and growing demands for diverse recreation opportunities, including those needed to serve Environmental Justice communities.

A purpose of the 2018 Open Space and Recreation Plan (OSRP) is to update the Town's previous OSRP and maintain the Town's eligibility for state funding assistance for open space and recreation purchases and improvements. A broader purpose is to provide a blueprint to guide the Town's plans, investments, policies and regulations in support of protecting and enhancing open space and recreation resources. The goals of the OSRP have been developed based on community survey input, an analysis of environmental challenges facing the Town and an assessment of the community's open space and recreation needs. The goals of the OSRP are to:

- Protect and maintain a maximum amount of open space to enhance environmental protection, recreational opportunities and community character.
- Use land protection to protect water supply, protect fresh and marine surface waters, preserve historic, scenic and cultural resources, and provide opportunities for farming and agriculture.
- Provide diverse recreational opportunities and access throughout Barnstable and ensure that the current and future needs of all user groups are met appropriately.
- Provide adequate public access to and safe enjoyment of the Town's open space and recreational resources and programs, particularly its fresh and marine shoreline areas.
- Promote greater coordination and communication about community open space and recreation needs within government and among stakeholder groups in the Town.

The Goals are the broad outcomes the OSRP seeks to engender. The OSRP contains a complete list of actions needed to accomplish goals and objectives, and an implementation plan for tracking progress.

A row of colorful kayaks is lined up on a sandy beach. The kayaks are in various colors including blue, red, yellow, and green. The scene is captured from a low angle, showing the curved hulls of the kayaks. The background is a bright, overcast sky. The text 'SECTION 2 Introduction' is overlaid in the upper left quadrant.

SECTION 2
Introduction

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Section 2. Introduction

2.1 Purposes of the 2018 OSRP

Open spaces devoted to conservation or recreation help to define community character and enhance quality of life. Open spaces offer scenic views and vistas, and provide opportunities for a variety of active and passive recreational pursuits. They also support a wide range of habitats and other ecological functions essential to biodiversity and environmental integrity. Open space resources contribute to the economic wellbeing of a town by supporting property values and offsetting or avoiding the need to mitigate development-related impacts.

Over several decades Barnstable has demonstrated a strong commitment to preserving and enhancing its open space resources. The Town has done so by developing and implementing a series of open space plans, by undertaking and supporting land acquisition efforts, by modifying regulations and policies to promote open space and natural resource protection, and by continuing to manage and enhance its inventory of open space and recreation resources.

Barnstable’s previous open space planning efforts include *A Plan for Open Space: Barnstable, MA* (1973) by the Regional Field Service of the Harvard Graduate School of Design, Department of Landscape Architecture; *Goals and Policies for the Town of Barnstable* (1983) by Lozano-White Associates; *The Town of Barnstable Open Space Plan* (1984, updated 1987 and 1997) by previous town committees; the *2005 Open Space and Recreation Plan* (2005 OSRP) approved by

the Massachusetts Division of Conservation Services (MassDCS); and the *2010 Open Space and Recreation Plan* (2010 OSRP) also approved by MassDCS in March 2011. As a result of the approval, Barnstable was eligible through October 2017 to apply for land acquisition grants available through MassDCS.

The *2018 Open Space and Recreation Plan* (2018 OSRP) is intended to update the 2010 OSRP and maintain the Town’s eligibility for state funding assistance for open space and recreation purchases and improvements. A broader purpose is to provide a blueprint to guide the Town’s plans, investments, policies and regulations in support of protecting and enhancing open space and recreation resources. To do this the plan reviews progress since the 2010 OSRP, identifies new issues or changing conditions, and assesses future needs based on community dynamics. It also provides a realistic plan of action to address issues, challenges and opportunities to meet the community’s open space and recreation needs over the next seven years.

2.2 Progress since the 2010 Plan

Broadly, the recommendations of the 2010 OSRP focused on the following areas:

- Open space acquisition for recreation and resource protection;
- Use of creative regulatory and non-regulatory tools;
- Public access improvements, particularly in coastal areas;
- Stewardship of existing open space resources and public recreation facilities;

- Improved coordination among town departments and committees, as well as private open space and recreation stakeholders.

The Town has made substantive progress in these areas, as described below.

2.2.1 Open Space Acquisitions

Barnstable’s on-going commitment to open space protection was demonstrated by strong public and private efforts. Since 2010, 138.17 additional acres came under protection through acquisition or conservation restriction. Of this amount, the Town purchased 38.33 acres of open space and the Barnstable Land Trust purchased 89.65 acres. The Town has now purchased and protected nearly 1,000 acres of land using Land Bank or CPA funds. An additional 10.19 acres was protected through the recording of conservation restrictions. A total of 448.58 acres of land is now protected by a conservation restriction held by either the Town of Barnstable or the Barnstable Land Trust.

2.2.2 Public Access Enhancements

The Town has made strides in enhancing public access to conservation lands and water resources. Trailways and access improvements were undertaken at conservation areas throughout Town. The Town of Barnstable Conservation Division coordinated the improvements with assistance from the DPW Highway Division. Since 2010 these improvements include:

- New parking area constructed for Crocker Neck Conservation Area;
- Installed 10 new kiosks at various trail head parking areas;
- Constructed 80ft ADA boardwalk, Long Beach, Centerville. Landscape improvements at entrance to boardwalk;
- Public access parking expansion at West Barnstable Conservation Area;
- Installation of a new parking lot, trailhead, connector trail and landscape for new access to Lumbert Pond Conservation Area, Centerville;
- Implemented directional street sign project in West Barnstable Conservation Area roads for safety purposes;
- Completed \$450,000 in improvements to the Craigville Beach bathhouse; and
- Completed ADA accessibility improvements to the Olde Fair Grounds Golf Course, and Hyannis Golf Course restrooms; and
- Constructed a boardwalk along Ocean Street connecting the parking lot to the trail system at Stewarts Creek.

2.2.3 Habitat Restoration and Fire Prevention

With funding from Barnstable County fire management improvements continued at Old Jail Lane Conservation Area in 2011. In 2013, \$22,600 was awarded from the County. Two additional acres were cleared, as a grassland restoration project, at Bridge Creek Conservation Area and Phase II Old Jail Lane fire management work was completed. Improvements were made to the fire access

road in West Barnstable Conservation Area for emergency rapid response.

In 2014, the Division received a \$3,500 grant from Barnstable County to develop Crocker Neck Conservation Area prescription burn plan. In 2015, \$16,315 in grant funding was awarded for wildfire management. Removal of 3.5 acres of dead pines on Old Stage Road occurred under the Wild Fire Management program.

In 2015, the Crocker Neck Conservation Area controlled prescribed burn took place for wildlife habitat restoration and forest fire fuel reduction. Coordination took place between the Conservation Division, Northeast Forest and Fire Management, and Cotuit Fire Department. A second controlled burn took place in 2017.

The Conservation Division continues maintain 33 acres of fields for habitat protection and fire prevention at Seabury Farms Conservation Area, West Barnstable Conservation Area, and Bridge Creek Conservation Area.

2.2.4 Community Programs

In 2013, 10 additional plots were added to the Long Pond Community Gardens, at Long Pond Conservation Area, bringing the number to 72. Two of the plots are dedicated to the Wild Flower Garden. In addition a new water meter was installed. The gardens have reached maximum size and will not be expanded. Donna Lawson currently oversees gardens. The Community Gardens are very popular and there are currently 12 people on the waiting list.

The non-profit Meetinghouse Farm, Inc. manages the horticultural activities at the 23-acre Meetinghouse Farm Conservation Area in West Barnstable. The farm offers educational programs, provides

youth and adult community service opportunities, rents 30 community garden plots, and operates a seasonal farm stand. A 3,000 sq. foot unheated greenhouse and barn are available for community horticultural activities. The Farm's landscape is notable for it's unique trees and demonstration gardens.

2.2.5 Recreation Programs and Facilities

The Recreation Division continues to manage 13 of the Town's public swimming beaches, and the Hyannis and Olde Barnstable Fair Grounds Golf Courses as well as numerous public playing fields and parks.

As described in more detail in section 7, the Recreation Commission conducted a facilities assessment in 2012 that was used to set priorities for facilities improvements. There has been progress toward each project:

1. Craigville Beach House (Centerville) - work commenced in 2017 and is ongoing
2. Lombard Field (West Barnstable) – work is in progress
3. Osterville Bay Fields, playground, tennis courts (Osterville) – work is in progress
4. Skate Park (Hyannis) – nearly completed
5. Lopes Field (Hyannis) – nearly completed
6. Lopes Field (Hyannis) – nearly completed
7. Veterans Beach Park Playground & Other (Hyannis) – playground is complete and study is underway
8. Barnstable West Barnstable Tennis Courts (West Barnstable) – tennis courts resurfaced for tennis/pickle ball
9. Tennis Courts (Cotuit) – completed

The Commission is considering another study to reprioritize needs identified in the 2017 Field study.

The \$24.7 million Hyannis Youth and Community Center built in 2009 continues to serve as a focal point for many community recreation programs and services. The center is a year-round full-service facility with two skating rinks, two basketball courts, a skateboard park, a café and a Youth Center with after-school programming.

The Recreation Commission has opted to continue its policy adopted in 2005 to open recreation programs to non-residents following a resident only enrollment period.

2.2.6 Policies, Regulations and Planning

The Town has adopted plans or enacted policies and ordinances that deepen the Town's understanding of open space, resource protection other community needs and provide a comprehensive assessment of opportunities for meeting those needs.

Significant planning efforts that were recently completed or are underway since the 2010 plan was approved include:

- *HyArts & Barnstable Village Cultural District* planning;
- Climate-based planning for climate change and sea level rise;
- The *Hyannis Access Study*, a preferred alternative study for the Route 28/Iyannough Road/Airport Rotary Corridor;
- *Gateway City Designation*
- Town-wide *nitrogen management planning* (former Water Resources Advisory Committee planning) consistent with the

Cape Cod Commission's Section 208 Areawide Water Quality Management Plan

- Development of the *Housing Needs Assessment* (2014) and *Housing Production Plan* (2017) lays out a strategy for meeting the community's affordable housing needs.
- Reauthorization of the Downtown Hyannis Growth Incentive Zone;

These actions complement other existing plans that were referenced in the 2010 plan, including:

- Adoption of the *Barnstable Comprehensive Plan* (2010) lays out a vision and action steps to guide land use in the community, including village plans;
- Update of the *Barnstable Coastal Resource Management Plan for Three Bays and Centerville River Systems* (2009) provides an assessment of issues and recommended actions regarding natural resource protection as well as public access to and use of waterways;
- Creation of the *Downtown Hyannis Growth Incentive Zone* (GIZ) implements the strategy of guiding future growth where it can be accommodated by infrastructure, and away from sensitive resource areas;
- Adoption of the *Hyannis Village Center Zoning Districts and Design and Infrastructure Plan* (2005) codifies objectives of the GIZ;
- Creation of the *Craigville Beach and Centerville Village Center District of Critical Planning Concern* (DCPC), and adoption of *implementing regulations for the Centerville Village Center* portion of the DCPC;

- Creation of the *Pond Village DCPC* and associated zoning changes;
- Update of Federal Emergency Management Agency (FEMA) *Flood Insurance Rate Maps (FIRMs)* for the Town (2014) reflect recent changes to floodplains and flood risks, and will drive changes in flood insurance requirements for some property owners;
- Development of the *Comprehensive Wastewater Management Plan for Stewarts Creek* (2007) addresses the expansion of wastewater treatment to address impaired water quality and habitat degradation;
- Development of the *Nutrient Management Plan* to provide alternative strategies to manage nutrient impacts to water quality; and
- Development of the *Historic Preservation Plan and Inventory* (2010) carefully inventories historic resource and provides specific preservation action steps.

Each of these plans directly or tangentially influences the Town’s open space and recreation resource planning. On an on-going basis, the Planning and Development Department (PDD), along with the Town Manager and other town departments, is undertaking an evaluation of town-owned parcels (including tax title properties) to determine the suitability for open space protection, recreation and affordable housing. This on-going assessment is intended to help inform for future land management actions.

An evaluation of town-owned parcels (including tax title properties) was undertaken to determine the suitability of properties for open space protection, recreation and affordable housing. This led to reclassification of several parcels in the Town’s inventory of open space, municipal and protected properties.

2.2.7 Property Reclamation or “Undevelopment”

The Town has adopted as a land use strategy the reclamation or “undevelopment” of existing developed properties for the purpose of traffic mitigation, resource protection or property remediation. The initiative is supported by the Cape Cod Commission’s Development of Regional Impact mitigation program, which requires physical improvements or cash contributions to a revenue account for projects that increase demands on public services or have other negative community effects. The demolition of built structures has the added benefit of creating open and green spaces in densely developed areas.

The latest example of “undevelopment” is the 2014 purchase of the Stone’s Antiques property on Main Street in Downtown Hyannis. The Town purchased the .18-acre property, demolished the structure, and invested \$50,000 to prepare the site as a pocket park.

Additional examples of “undevelopment” previously reported in the 2010 plan include the purchase and clearing of the following properties:

- Former Chili’s restaurant on Iyannough Road and the parcel adjacent to Wendy’s at the Airport Rotary in Hyannis, for traffic mitigation and community character. In accordance with Town Council Orders 2008-08, 2008-111 and Cape Cod Commission DRI decision TR07020, any use of the open space for roadway or transportation improvements by the Town or the state would require repayment of funds to the Community Preservation Act (CPA) account;
- Former Suni Sands Motel, Craigville Beach Road in Centerville, to preempt more intensive development in the Craigville Beach and Centerville Village Center DCPC. The property is now used

as the Town's coastal plant nursery;

- Former Cotuit Gas Station, Main Street, Cotuit to provide parking for the Cotuit Town dock, in support of the Coastal Access Plan;
- Former Gulf Station, Main Street, Hyannis which now serves as a pocket park utilizing phyto-remediation, which refers to the use of plants to address environmental degradation;
- 115 Pleasant Street (residential home) in Hyannis which now provides open space along the Walkway to the Sea, in support of the Harbor Management Plan;
- Nelson Coal and Oil property on Route 28 in Hyannis, is being purchased as a condition of the Development of Regional Impact Review for a new Stop & Shop store to mitigate traffic impacts.

2.3 Summary of the Planning Process

The Land Acquisition and Preservation Committee (LAPC) is charged by the Barnstable Town Council with keeping the Open Space and Recreation Plan and open space sections of the Barnstable Comprehensive Plan updated and current. The nine-member committee also:

- Recommends parcels of land that are available for acquisition to the Community Preservation Committee;
- Works with the Town Manager and Town Council to leverage non-CPA funding for purchase of additional land;
- Reviews conservation restrictions before presentation to the Town Council for approval; and
- Implements the approved Cape Cod Pathways Plan.

The LAPC was assisted in the development of the 2018 OSRP by the PDD. The PDD identified a qualified consultant, Ridley & Associates, Inc., to work with the Town in developing the update. The PDD coordinated with other town departments to collect data and review draft documents, including the GIS Department, Conservation Division and Commission, Recreation Division and Commission, Water Department and town fire districts, among others. Outreach meetings were held with many of these groups to gather information about accomplishments since the 2010 OSRP, and to identify future projects, goals and objectives.

To facilitate participation by town departments and stakeholders, and to foster discussion about issues, goals and objectives, the PDD sponsored three planning workshops:

- *Session I: Land Management: The Functions of Open Space* addressed management issues and challenges, working landscapes, disposition/purchase of properties, protecting ground and surface waters, and resource needs.
- *Session II: Recreation: Fields, Facilities, Trails, Parks and Programs addressed* planned facilities and programs, programs and partnerships, outreach to improve access for all residents, use or maintenance issues, beaches and coastal access issues.
- *Session III: Resource Protection: Conserving, Preserving and Restoring Open Spaces addressed* use of creative tools for land protection, habitat protection, connectivity, climate change and resiliency, improved access or all residents, stewardship issues, resource needs.

Community input beyond town boards and recognizable stakeholder groups was an integral part of the planning process. This input was gathered through a community survey, a copy of which is provided in Appendix A. Other steps taken to encourage wide-spread survey participation included:

- A link to the survey was posted prominently on the Town’s website home page and on the Town’s Facebook page;
- Announcements to all seven civic associations, the Hyannis Area Chamber of Commerce, the Hyannis Business Improvement District and all town employees;
- Leaving notices of the survey at the town Senior Center;
- Including mention of the survey link in the Town Manager’s weekly e-newsletter;
- Announcements through local radio, including a five minute interview on WXTK a popular local radio channel ;
- Posting an informational slide about the survey on the local cable access channel; and
- Discussing the survey on local televised shows, Barnstable Today and Barnstable This Morning.

To ensure that survey responses reflected the input of Environmental Justice populations, additional steps were taken to announce the OSRP and update and distribute the survey in areas with higher concentrations of low-income households, minority residents, and foreign-born populations.¹ Residents from these

¹ See Section 3.4 for an extended discussion of Environmental Justice populations in the Town.

areas may not have equitable access to traditional media channels. Steps taken to raise awareness of the plan in these areas include:

- Distributing paper copies of the survey to the Hyannis Youth and Community Center, a community center located in an Environmental Justice neighborhood that provides a variety services and programs that frequently serve neighborhood residents;
- Handing out paper copies of the survey at the Senior Center, which provides a range of services for seniors, especially for those of low-income;
- Sending the survey announcement to the Barnstable Housing Authority (BHA), along with a request to distribute it to their residents via their contact lists (the BHA provides services to over 1,000 residents who qualify for low-income subsidized housing).

The survey was available from June 12th through August 15th, and there were 570 completed surveys for tabulation. The input gathered from the community survey and outreach to town committees was instrumental in shaping the vision for the OSRP as described in Section 6, and in the subsequent formulation of goals and objectives.

With the benefit of input from this public process each section of the 2018 OSRP was carefully reviewed and revised to provide a concise and up to date inventory and assessment of open space and recreation resources, issues and opportunities, along with a workable plan of action for the coming seven years.

A draft of the 2018 OSRP was released for public comment on February 16, 2018. Notice of the availability of the draft 2018 OSRP

was sent to the following boards and committees and in some cases a letter of support was requested:

- Planning Board
- Conservation Commission
- Community Preservation Committee
- Recreation Commission
- Cape Cod Commission
- Fire and Water Districts
- Barnstable Land Trust
- MA Audubon
- Barnstable Clean Water Coalition

The draft 2018 OSRP was presented at a public hearing held at Barnstable Town Hall on March 8, 2018. Written public comments were accepted by the Planning and Development Department through March 12, 2018. Public comments were reviewed and integrated into a final draft 2018 OSRP.

Public comments and letters of support from are found in Section 10.

The final draft 2018 OSRP was then submitted to MassDCS for review and feedback.

SECTION 3

Community Setting



Section 3. Community Setting

3.1 General Background

At 60.17 square miles Barnstable is geographically the largest town on Cape Cod and the third largest in the Commonwealth. The Town also is the most populous community on Cape Cod, accounting for approximately 21% of Barnstable County’s year-round population.

The Town of Barnstable includes seven villages: Hyannis, Centerville, Osterville, Cotuit, Marstons Mills, West Barnstable and Barnstable Village. Each has a dynamic history of development and a unique village character. The Village of Hyannis has the largest population and most intense commercial development of the seven villages and serves as the commercial, transportation, cultural, social service and health care center of Cape Cod.

As the largest and most populous community and the region’s commercial and service center, the Town of Barnstable often experiences the pressures of growth earlier—and more acutely—than other Cape Cod towns. In response the Town has taken a leadership role in addressing many growth management issues, including the protection of open space and the provision of recreational facilities, often providing models for action followed by other Cape Cod towns.

Barnstable is within the Cape Cod watershed as defined by the Massachusetts Executive Office of Energy and Environmental Affairs. Barnstable shares the Popponesset Bay watershed with

Mashpee and Sandwich, the Three Bays and Scorton Creek watersheds with Sandwich, Barnstable Harbor watershed with Sandwich and Yarmouth, and the Parkers River and Lewis Bay watersheds with Yarmouth. The Centerville River and Rushy Marsh watersheds are entirely within the Town.

3.2 Regional Context

Barnstable is a “Mid-Cape” town, located 20 miles from the Cape Cod Canal and approximately 50 miles from Provincetown. Barnstable is bounded by the towns of Mashpee and Sandwich to the west, Yarmouth to the east, Cape Cod Bay to the north and Nantucket Sound to the south. Barnstable’s extensive shoreline, diverse natural resources, and location near the center of Cape Cod are among the factors that may have contributed to its development as a major tourism and second home destination, a popular location for residential and commercial development and the commercial and service hub of the Cape. Map 1 shows a representation of Barnstable’s regional context.

As noted above, Barnstable is home to many regional services, businesses and institutions and, as a result, is a destination for many Cape Cod residents over the course of a year. Destinations of regional interest include:

- Cape Cod Hospital and affiliated medical practitioners;
- Cape Cod Community College;

- Community and social services agencies including the YMCA, Red Cross, Big Brothers/Big Sisters and Cape Cod Child Development;
- Cultural entities such as Cape Cod Symphony Orchestra, Cape Cod Community College Tilden Arts Center, and the performing Arts Center at Barnstable High School;
- Major retail shopping malls and automotive retailers;
- Transportation centers including the Barnstable Municipal Airport, Hyannis Intermodal Transportation Center, and Hyannis Harbor, the terminus of boat traffic to the islands of Nantucket and Martha's Vineyard; and
- The political seat of Barnstable County government, Superior and District Courts are located in Barnstable Village.

Barnstable is one of fifteen towns in Barnstable County, which is one of the more active County governments in Massachusetts. Barnstable County is governed by a three-member board of County Commissioners elected Cape-wide. The County legislature, the Assembly of Delegates, has proportionate voting based on each town's population. The Cape Cod Commission is Barnstable County's regional planning organization, providing land use and open space planning assistance in addition to its regulatory functions. Barnstable is also a member town of the Cape Cod Regional Transit Authority.

Barnstable participates with its neighboring towns in regional planning for land use, transportation and wastewater infrastructure. Examples of the Town's regional activities include:

- Working toward achieving Total Maximum Daily Loads for total nitrogen in shared watersheds with Yarmouth (Lewis Bay), Sandwich (Three Bays and Popponesset Bay) and Mashpee (Popponesset Bay);
- Working with the Town of Yarmouth to address growth management issues surrounding the Barnstable Municipal Airport and Cape Cod Hospital;
- Participating in corridor planning with Yarmouth (Route 28 and Willow Street/Iyannough Road);
- Participating as a member town of the Old King's Highway Regional Historic District² Commission, which has jurisdiction over the exterior appearance of buildings, settings and places located north of Route 6, so as to preserve and maintain the historical, cultural, literary and aesthetic tradition of Barnstable County.

The Barnstable Land Trust, which is a private land trust in the Town of Barnstable, collaborates through the Cape Cod Compact of Conservation Trusts. The Compact is a regional non-profit organization that provides technical support, negotiations strategies and grant-writing support to municipal and private land conservation organizations. Other conservation organizations involved in land protection in Barnstable include Massachusetts

² An Act Establishing The Old King's Highway Regional Historic District and the Old King's Highway Regional Historic District Commission In Barnstable County, As established by Chapter 470 of Acts of 1973 and amended by Chapters 298 and 845 of the Acts of 1975; Chapter 273 of Acts of 1976; Chapters 38 and 503 of Acts of 1977; Chapter 436 of Acts of 1978; Chapter 631 of the Acts of 1979; Chapter 338 of Acts of 1982; and Chapter 90 of the Acts of 1994.

Audubon, The Nature Conservancy, Orenda Wildlife Land Trust and Trustees of Public Land.

3.3 History

Archeological sites scattered throughout the Town indicate that Barnstable has been inhabited since the end of the Ice Age some 10,000 years ago. The first European settlement in Barnstable took place at what is now Barnstable Village in the late 1630s, and the Town was formally established in 1639.

Barnstable's importance as the seat of regional government was established in 1685 with the creation of Barnstable County and the designation of present Route 6A as the County Road. Pockets of 17th and 18th century agricultural settlements were concentrated on the north side of Town. Limited industrial development during this period, consisting of grist and fulling mills, occurred in Barnstable Village, West Barnstable and Marstons Mills.

In the early 19th century, prosperity from fishing, salt-making, ship-building and shipping stimulated south-side development in Cotuit, Osterville, Centerville and especially Hyannis with its deep water port. Mid-19th century rail connections served the growing north-side villages of West Barnstable, where brick firing was a significant commercial activity, and Barnstable Village. A southern railroad branch to Hyannis assured its subsequent growth as a regionally significant commercial center.

By the turn of the 20th century development of the south-side coast

intensified with the growing popularity of seaside resorts. Concentrated summer communities were established at Hyannis Port, Craigville, Wianno and Osterville's Grand Island (Oyster Harbors). The resort boom, coupled with the continued expansion of Hyannis as a regional commercial center, was furthered by the establishment of Route 28 as a primary east-west automobile corridor in the 20th century. Areas of concentrated summer development remain in Hyannis Port, Wianno and Craigville. Marstons Mills and West Barnstable continue to reflect the Town's early agricultural character integrated with more recent suburban residential neighborhoods.

Following World War II, continued development of Barnstable was stimulated by population growth as well as completion of U.S. Route 6 (Mid-Cape Highway) in the 1950's, which served as the major connector between Cape Cod towns. By the 1970's, Hyannis' position as a regional retail center was anchored by the development of the Cape Cod Mall located on Route 132 in Hyannis. Over the next several decades, suburban residential growth continued throughout Barnstable, including traditional grid-style residential subdivisions and condominium communities.

3.4 Population Characteristics

According to US Census data, Barnstable's total estimated population in 2015 was 44,591, down 2,789 or 6% from the 2006 population estimate reported in the 2010 plan, and down 3,230 or nearly 7% from the 47,821 reported by the 2000 census. By

comparison, the County lost 7,464 residents or slightly more than 3% of the year-round population between 2000 and 2015.

Key demographic features are shown in Table 1. As previously noted, Barnstable is the most populous town on Cape Cod and accounts for 21% of the County's year-round population. The Town estimates that the seasonal population swells to 78,333, due to an influx of visitors and seasonal residents, or 126,000 if day-trippers are included. Many seasonal visitors are second homeowners. According to a 2008 survey of second homeowners conducted by the UMASS Donahue Institute for the Cape Cod Commission, second homeowners in the Mid-Cape area tend to use their homes more days per month than in other parts of the Cape, and one in five plan to retire to the Cape fulltime within the next fifteen years, which is within the time horizon of this plan. The large influx of seasonal residents places added stress on the Town's open space and recreational facilities, particularly town-owned ways to water and public beaches. The likelihood that many second homeowners ultimately will become fulltime residents is also an important factor in setting long-range priorities for recreational and open space investments.

The Town, at 60.17 square miles, has a year-round population density of 1.16 persons per acre. Factoring in the seasonal population, density increases to 3.27 persons per acre. The village of Hyannis has the greatest population density, attributable to the concentration of multi-family housing and urban-style residential neighborhoods. Because Hyannis is also an employment center and tourist destination, there is an increased need for adequate open space to serve a variety of populations.

Overall, Barnstable's population has gotten slightly older than was the case when the 2010 plan was prepared. Median age has risen six years, and adults over 65 account for 2% more of the Town's population than in 2010. These changes in the Town's demographics mirror similar changes that occurred for the County as a whole. Barnstable's population is still somewhat younger than other Cape Cod towns or the County as a whole. At 48.4 years, Barnstable's median age is mid-way between the County median (51.3 years) and the state median (39.3 years). The Town has a slightly higher percentage of people under 19 years of age (19.5%) than the County (18.3%) and a lower percentage of people 65 years and older (22.2% for the Town compared to 27% for the County.)

For open space and recreation planning, the age distribution suggests that Barnstable needs to provide a broad mix of active and passive recreational opportunities, and should gear facilities and programs to meet the needs of young families as well as retired adults.

According to population projections prepared by the Donahue Institute (2015), the Cape and Islands region is predicted to decrease in population by 10.1% from 2010 through 2035 if trends in migration, fertility, and mortality continue. During this time there will be a sizeable upward shift and consolidation of the population profile among persons in the sixties, seventies and eighties.

Barnstable is likely to reflect these same regional trends. However, the influence of the Town's large seasonal population and its relatively younger population compared the region may mitigate these trends somewhat.

| Table 1. Key Demographic and Income Statistics | | | |
|--|------------------|-------------------|--------------------|
| | Barnstable Town | Barnstable County | Massachusetts |
| Total population | 44,591 | 214,766 | 6,784,240 |
| Median age | 48.4 | 51.3 | 39.3 |
| Persons under 18 years | 8695 (19.5%) | 39,300 (18.3%) | 1,609,340 (23.7%) |
| Persons 65 years and older | 9,898 (22.2%) | 58,115 (27%) | 979,015 (14.4%) |
| Median household income* | 63,549 | 65,382 | 70,954 |
| Median family income* | 80,801 | 82,945 | 90,180 |

Source: American Community Survey 2011-2015 Estimates; *American Community Survey 2012-2016 Estimates

Barnstable is not an affluent community compared with the County and the state. Median family income in Barnstable is 2% lower than the County median household income, and 10% lower than the

state median family income. Slightly more than half of the families in Barnstable earn between \$50,000 and \$150,000.

Barnstable is the hub of County government, the home of the largest regional health care facility and regional community college; and the location of major shopping areas. According to the US Bureau of Labor Statistics, the sectors providing the largest number of jobs in the Town of Barnstable include *Education and Health; Trade, Transportation and Utilities; Government; and Leisure and Hospitality*. Agricultural activity is not a significant employment sector in the Town.

In summary, Barnstable is a community of diverse age groups, including working families with children earning below the state median income, and a significant number of retirees, many of who are on limited incomes. These characteristics point out the importance of providing affordable, accessible open space and recreation opportunities.

3.4.1 Environmental Justice Populations

Barnstable also has significant populations with special socio-economic needs that should be considered in setting priorities and allocating resources for open space and recreation facilities and programs. One of the ways communities can address environmental injustices is through open space and recreational resource planning. Since the 2005 OSRP was developed, Environmental Justice populations have been identified and mapped in the Town of Barnstable.

According to the Commonwealth’s Executive Office of Energy and Environmental Affairs (EEA), the state established an Environmental Justice Policy to “help address the disproportionate share of

environmental burdens experienced by lower-income people and communities of color who, at the same time, often lack environmental assets in their neighborhoods. The policy is designed to help ensure their protection from environmental pollution as well as promote community involvement in planning and environmental decision-making to maintain and/or enhance the environmental quality of their neighborhoods.” This policy was developed in response to U.S. Executive Order 12898 promulgated in 1994, which directed federal agencies to address environmental injustices in their operations and communities across the country.

MassGIS identifies and maps environmental justice populations for all communities in Massachusetts. MassGIS delineation of Environmental Justice populations in Barnstable is shown on Map 2A. The criteria for environmental justice communities is as follows:

- Income – households earn 65% or less of the statewide median income;
- Minority – 25% or more of residents are minority;
- Foreign Born – 25% or more of residents are foreign born; or
- Lacking English Proficiency – 25% or more residents are lacking in English proficiency.

Barnstable is identified as having Environmental Justice populations meeting the income and minority criteria, respectively, and populations that meet both income and minority criteria. The areas meeting the Environmental Justice Criteria are generally within census tracts 153 and 126.01.

Census tract 153 is the area north and east of Iyannough Road to the Mid-Cape Highway and encompasses much of East Hyannis. Household income in this area is 46% of statewide median, 36% of residents are non-white, and 27.3% of residents are foreign born.

Census tract 126.01 is roughly the area north of West Main Street and south of Route 28 (Falmouth Road), bounded to the west by Lincoln Road and the east by Winter Street. Household income in this area is 52% of statewide median, 34% of residents are non-white.

However, in reviewing the mapping of these populations prepared by MassGIS, the Town’s Planning and Development Department (PDD) found that they included geographic areas that are either undeveloped or very sparsely populated or contain high value homes. As a result, the Town has refined the mapping of Environmental Justice areas based on the same EEA criteria. The areas of Environmental Justice populations as delineated by Barnstable GIS are shown on Map 2B.

According to a report entitled *Monitoring the Human Condition 2009* prepared by the Barnstable County Department of Human Services, the following populations of need are found in the Town, and in Hyannis in particular:

- Low-income young households with one to two children who rent their home and may receive some financial assistance;
- Low-income young to middle-age households with at most one child who rent, are homeless or live in a group home; and
- Low-income young to middle-age households with no more than one child who rent, are homeless or live in a group home.

These households also may be cultural minorities, receiving financial assistance, or chronically ill. This group is considered by the report as the most needy among Cape Cod households.

3.5 Growth and Development

From its origin in 1639, the Town of Barnstable has evolved from an agricultural, fishing and shipping community to its present mixture of summer resort, retirement community and regional commercial, transportation and shopping center. Like many Cape Cod towns, growth patterns in Barnstable have been shaped by automobile dependency. In recent years the Town has made considerable progress in revising growth management regulations throughout the community in order to replace a pattern of sprawling growth with more compact, village style development. Reducing or mitigating the negative impacts of growth—namely traffic, wastewater and loss of open space and community character—and maintaining the distinctive character of each of the seven villages are town-wide growth management objectives. Zoning districts in Barnstable are shown on Map 3.

The overall growth management strategy for Barnstable, implemented through the zoning ordinance, encourages growth and redevelopment in locations where dense development is appropriate and viable because of available transportation and wastewater infrastructure and because the location is harmonious with green infrastructure that includes open space and sensitive natural resources. The majority of the Town is zoned for single-family residential development; in 81 percent of the Town, future single-family development is limited to one unit per two acres by

the Resource Protection Overlay District. Commercial zoning districts are located at traditional village centers and working waterfronts and along auto-oriented roadway corridors in Centerville, Hyannis, and Marstons Mills. Areas zoned for regional commercial and industrial development are found primarily in the village of Hyannis, west of the Barnstable Municipal Airport.

Selected changes in zoning ordinances since 2005 include:

- Creating a Gateway Medical District to streamline the special permit process, encourage mixed use and multifamily housing, retail and restaurant operations, and business and medical professional offices.
- Amending an ordinance to establish a temporary moratorium on the cultivation, manufacture, sale and distribution of recreational marijuana and associated activities. This moratorium was later extended.
- Amending zoning to allow a Lot Area Exchange by Lot Line for simple transfers of land between two neighboring developed lots.
- Adopting then extending a temporary moratorium on establishing and permitting medical marijuana treatment centers and associated activities.
- Establishing the Historic Barnstable Village Cultural District with goals for enhancing programming, improving the built environment, and supporting cultural economic development.

- Amending the Shopping Center Redevelopment Overlay District (SCROD) to allow drive through restaurants as are allowed in the underlying Hyannis Business District.
- Creating a Hyannis Parking Overlay District to allow as of right permitting for land located south of Main Street in Hyannis which land has some legal pre-existing nonconforming status or was licensed as of May 1, 2014 as an open air parking lot involving the temporary storage of vehicles.

Other notable planning and growth management projects include:

Iyannough Road Retail Center RESET Project – Working with the Cape Cod Commission, the project is studying four retail centers: Cape Cod Mall, Capetown Plaza, Southwind Plaza and Festival Plaza. Recognizing the importance of these properties as sources of revenue, jobs and commercial services, the goal is to learn what these centers may need from the Town and/or the Cape Cod Commission in order to facilitate any plans for redevelopment and reinvestment.

Ground-mounted Solar Photovoltaic Overlay District – Working with the water districts and other stakeholders, the Planning and Development Department is evaluating changes to the overlay district in order to facilitate renewable energy production while preserving community character and natural resources.

Cultural District Implementation – The PDD submitted a Cultural District Implementation plan to Massachusetts Cultural Council. On-going implementation activities include increasing staff resources for arts planning and programming, and new public art installations at public parks, and a Bismore Park bike rack design.

Village Planning and Implementation - The PDD works with each of

the seven villages to implement their community and economic development initiatives including pedestrian safety measures, open space connections and improved parking options.

Climate Change Adaptation - PDD staff worked with Massachusetts Institute of Technology (MIT) and Waquoit Bay Estuarine Research Reserve on the Climate Change Adaptation Project. The project involved interviews with town staff, first responders and businesses to hear their ideas and concerns about climate change and adaptations that may be necessary to address potential impacts to Barnstable.

Gateway City Designation - In 2012 Barnstable was designated as a Massachusetts Gateway City. The Town was eligible for the designation because its population exceeds 35,000, median household and per capita income are below the statewide average, and the rate of educational attainment of a bachelor's degree or higher is below the state average. As a Gateway Cities the Town qualifies for certain state grants, tax credits, and investments in economic and community development.

The Town continued progress in implementing measures identified in the Barnstable Comprehensive Plan (BCP), which was adopted in 2010. The BCP identifies strategic planning areas (SPAs) within the Town that require study, analysis, policy development and regulatory changes to ensure that land use and growth management policies are implemented quickly and effectively. Barnstable growth management policy for the location of new development and intensification of existing development seeks to locate growth in areas where infrastructure capacity is in place or has the ability to absorb development impacts through planned expansion. The SPAs include the Downtown Hyannis Growth

Incentive Zone, Route 132 Regional Commercial Center, the village centers and auto-oriented transportation corridor nodes.

The BCP estimates a potential for 11.8 million square feet of new commercial growth town-wide, much of which can be accommodated in Hyannis. In 2005 the Town adopted the Hyannis Village zoning districts, a major zoning reform intended to guide future growth and redevelopment in downtown Hyannis. The Town and the Cape Cod Commission collaborated to designate Hyannis as a Growth Incentive Zone (GIZ) in 2006. The GIZ ensures that new future growth is supported by infrastructure and is offset by reducing development intensity and protecting land elsewhere in Town. At this time, growth in the Downtown Hyannis GIZ has not met Phase 1 threshold targets.

The focus of development potential in Hyannis is among the reasons why the Town has identified as a priority the development of a parks plan for Hyannis. Since the 2010 Open Space Plan, two Hyannis parks were added or rehabilitated:

- Ridgewood Park involved the rehabilitation of existing open space in the “tree streets” of Hyannis. A portion of Maple Street was closed permanently to join two separate open space blocks into one larger park. The new park space was upgraded with paths, extensive plantings and gardens and new play equipment. The park, which was dedicated in 2015, was funded by a \$200,000 grant from the Gateways Park Program;
- A new pocket park on the former Stone’s Antiques property.

SPA’s are complemented in the BCP by Green Infrastructure Corridors, an interconnected network of environmentally significant

areas, protected open space and other open lands and working landscapes that retain ecological functions, protect water quality, support growth management and contribute to the overall quality of life in the Town. Green Infrastructure corridors connect the village and commercial districts to each other and to the waterfront. Green Infrastructure Corridors are shown on Map 10A.

A key growth management strategy in Barnstable is redevelopment and infill. The Town has agreed to offset 163,000 square feet of non-residential gross floor area in order to permit development for the next phase of the GIZ. New development, in the form of expansion, conversion and re-development of existing built properties, provides opportunities to improve areas characterized by strip commercial development.

Barnstable has continued to implement a program of removal of existing built properties. This approach presents opportunities to reclaim parcels of open space through acquisition and “undevelopment” of strategic built parcels. The latest example is the 2014 purchase of the Stone’s Antiques property on Main Street in Downtown Hyannis. The Town purchased the .18-acre property, demolished the structure, and invested \$50,000 to prepare the site as a pocket park.

Other on-going land use goals articulated in the BCP pertaining to open space, resource protection and preservation of the Town’s historic, agricultural, and scenic character include:

- Acquire, retain, preserve and protect a maximum amount of open space for the community and its natural and wildlife habitats. Protected status must be quickly achieved for the

small amount of undeveloped land that remains in Barnstable (Goal 1.3);

- Protect and enhance Barnstable’s unique and fragile natural habitat and cultural resources including scenic beauty, historic areas and unique habitats (Goal 1.4);
- Manage residential development and redevelopment to protect sensitive embayments and drinking water supply, offset growth incentives in the GIZ and densely developed residential areas, manage traffic circulation, preserve open lands, agricultural lands and cultural, historic and scenic landscapes (Goal 1.6.)

Several recent planning efforts were aimed preserving coastal property, preparing for coastal hazards, and understanding the likely implications of sea level rise.

Another growth management challenge for the Town is addressing the community-wide need for affordable housing. The Barnstable Comprehensive Plan and Housing Production Plan (HPP) identify the needs and address strategies and initiatives to create additional affordable housing opportunities for the community. Many strategies are in place already including an inclusionary zoning ordinance that requires new developments of ten units or more to set aside 10% of residential units as affordable. The Accessory Affordable Apartment Program uses existing stock to allow for the creation of new affordable rental units accessory to an existing unit. The Town has shown a strong commitment to providing local funds for important affordable housing initiatives including Community Development Block Grant, Community Preservation Act and Affordable Housing Trust funds. Through the rezoning of downtown Hyannis, the Medical Services District, Office-Multifamily District and Hyannis Gateway District were created to encourage production of workforce housing for those earning 80%-120% of median income. The Hyannis GIZ allows for the development of 600

new residential units including rental and affordable housing opportunities. Affordable housing may also be developed under a Chapter 40B Comprehensive Permit, which allows for higher densities than provided under local zoning. The HPP suggests new zoning ordinances and regulatory incentives for the Town to consider to stimulate affordable housing creation while guiding new development to appropriate locations in order to maintain community character and natural resources.

3.6 Water and Wastewater Infrastructure

3.6.1 Water Supply

Four water districts provide service to customers in Barnstable. The districts are:

- Centerville-Osterville-Marstons Mills Fire District (COMM) – serves the villages of Centerville, Osterville and Marstons Mills.
- Cotuit Fire District (CT) – serves the village of Cotuit.
- Barnstable Fire District (BFD) - serves the village of Barnstable.
- Hyannis Water System - Town department, which has 12 wells.

The West Barnstable Fire District (WB) has a mapped well with Wellhead Protection and Groundwater Protection overlays. However, this village is dependent upon private wells and the Fire District does not now supply public water.

The non-municipal water suppliers, COMM, CT and BFD, are quasi-public entities formed under Massachusetts General Laws and must review budgets and expenditures with rate payers in their respective districts at public meetings.

Together the water suppliers own and maintain 443 miles of mains, 16 interconnections with water suppliers in Barnstable and abutting towns, 41 wells and 10 storage tanks. They pump over two billion gallons of water per year and own approximately 1,233 acres of watershed property. Water suppliers maintain their own infrastructure and plan their own capital expenditures to improve the supply and distribution system, increase pumping capacity, and respond to other supply or quality control issues. A Water Quality Advisory Committee with representatives from all water suppliers meets several times a year to coordinate water supply issues.³

In spite of the relatively large number of wells in town, there remains the need for continued acquisition and development of well fields. In some districts, certain wells are not in compliance with the 400-foot protective barrier required by MA DEP. One third of the town is within a Zone II area of contribution and some of these areas overlap with intense development. Incidences of contamination have occurred in the wells on the eastern portions of the Town, which are more susceptible to contamination from nearby industrial and commercial land uses. Wells particularly vulnerable to potential sources of contamination are in the following areas:

- Independence Park and the Hyannis Ponds Complex where there are industrial uses within the Zone II;
- Wells located to the east of Yarmouth Road, close to the airport, industrial uses and gas stations along Route 28;
- Wells to the south of downtown area, which are down gradient of the most densely, developed areas of the town, in Hyannis

³ Barnstable Comprehensive Plan, June 2008. Page 4-9.

and the adjacent village of Centerville.

The Town is coordinating with the Department of Environmental Protection and the Division of Fisheries and Wildlife on use of Commonwealth property for public drinking water supply. The parties have identified a need for an evaluation of the hydrologic impacts of potential wells on the property's ponds and other resources. The US Geological Survey has been identified as a partner in providing this evaluation.

The Town will continue to coordinate with the Water and Fire districts on the purchase and management of open space for water supply protection.

3.6.2 Wastewater Management

The majority of Barnstable's residential and commercial areas depend upon on-site Title V septic systems for wastewater disposal. There is municipal sewer service available in a small area of Barnstable Village, portions of Hyannis, and Independence Park. The service area in Barnstable Village includes the county complex and areas near the harbor basin. This system is a force main with a low capacity, which is difficult to tap into for system expansion. The Wastewater Pollution Control Facility is located off of Bearses Way and Route 28 in Hyannis. However, the facility has experienced some groundwater mounding in this location, and studies are ongoing to determine locations where offsite disposal of effluent from this plant can be accommodated.

Managing the effects of nutrients from land uses is a major priority of the Town. The Town participated in the Massachusetts Estuaries

Project to analyze and quantify the extent of nutrient loading in its estuaries, a first step in the subsequent development of Total Maximum Daily Loads (TMDLs) for Total Nitrogen. TMDLs have been approved by MassDEP and US EPA for Three Bays, Popponesset Bay, Centerville River and Lewis Bay. The TMDLs represent the maximum amount of nutrients the estuarine waters can receive and remain healthy, and they provide the target for reducing nitrogen loading from watershed sources through wastewater treatment (sewering) and non-structural nutrient management alternatives.

The Town's plans for wastewater treatment, including sewerage, are detailed in the Wastewater Facilities Plan (WFP). The WFP identifies how the Town's wastewater management needs can be addressed by centralized treatment, and identifies the phases of infrastructure development that would occur over the twenty-year planning horizon of 1994 through 2014.

The Town also has initiated a comprehensive nutrient management plan for areas of Town where TMDLs apply but where centralized treatment will not be extended. The nutrient management plan will identify management alternatives to centralized treatment such as cluster systems, neighborhood package plants, fertilizer management and other alternatives.

3.7 Transportation Infrastructure

Historically, the harbors at Barnstable, Cotuit, Osterville, Centerville and Hyannis, along with Route 6A on the northside, and Route 28 on the southside had much to do with the settlement patterns of the Town. As in many historic New England towns, many roadways

developed along historic routes, the oldest and best known of which is Route 6A, the Old Kings Highway. Many of these historic routes now function as major roads but were not laid out or designed for the purposes they now serve. Routes 6A and 28 continue to serve as major east-west connectors along a network of north-south roadways. Route 6, the Mid-Cape Highway, has two interchanges in Barnstable: Exit 5 in West Barnstable and Exit 6 at Route 132. Exit 7 at Willow Street in Yarmouth, connects to Yarmouth Road, a major connector into Hyannis.

Barnstable has experienced an increase in traffic volumes resulting from decades of development. However the Town's ability to expand the roadway network has been limited. As a result many major roadways operate at poor levels of service. The Town's continuing challenge is to improve the capacity of the major roadways while also improving the streetscape of these roadways and the character of development along them. The Town has collaborated with the Town of Yarmouth on planning improvements to Yarmouth Road as it connects to Willow Street off of Exit 7. The Town is also beginning a corridor study along Route 132, the airport Rotary, Iyannough Road and Route 28.

The Town has purchased properties in the vicinity of the rotary and removed buildings as a means of eliminating the traffic generating potential of the properties. Examples of "undevelopment" for traffic mitigation include the Town purchase of Chili's, the Gulf Station and the Nelson Coal and Oil property. These purchases create green space in more urbanized locations in addition to supporting congestion and traffic management efforts.

The Town's transportation infrastructure also includes the following regional facilities:

- Barnstable Municipal Airport, which provides scheduled air service to the islands, Boston and other locations;
- Hyannis Harbor which is the terminus for the Hyannis and Nantucket Steamship Authority and other regional boat lines connecting Cape Cod and the Islands; and
- Cape Cod Regional Transit Authority Hyannis Intermodal Transportation Center, which provides bus and regional transit services and connecting service to the Hyannis docks and airport.

Barnstable also has incorporated increased hiking, pedestrian and biking opportunities in land use and transportation planning.

The Cape Cod Rail Trail is a major regional off-road multi-use path envisioned to stretch from the Cape Cod Canal to Provincetown. One phase of this trail will connect Peter Homer Park in Yarmouth to Barnstable, terminating at a new trailhead Mary Dunn Road and Independence Drive. A feasibility study is current underway for potential routes for the pathway across Barnstable. Connections between the regional trail and downtown Hyannis along Yarmouth Road and Bearses Way are envisioned in transportation plans and moving towards implementation.

Smart growth zoning measures in the Hyannis Growth Incentive Zone incorporate pedestrian accommodations and other measures to promote a more walkable, bikable and pedestrian friendly downtown. These include sidewalk improvements as well as the creation of multi-use paths, which are paths wider than sidewalks separated from traffic flow that can be used by pedestrians or bikes and connect to key activity areas. A recent example of implementation is on Sea Street, between Kalmus Beach and downtown. Other near term opportunities for this type of amenity are on East Main Street and Barnstable Road.

Map 10A, Green Infrastructure, identifies the Cape Cod Pathways

Project, a series of off-road walking trails throughout the region's natural areas, and extensive hiking trails throughout town. The Pathways program is continued through the efforts of the Land Acquisition and Preservation Committee, AmeriCorps Cape Cod, and the Barnstable Land Trust.

3.8 Local Economy

Barnstable has many economic advantages over other Cape Cod towns. These include being host community for the county government, Cape Cod Community College, the largest enclosed retail shopping mall on Cape Cod, the Cape Cod hospital ambulatory, surgical and emergency services, and the major embarkation point for air, sea and ground transportation. The Town also has many natural and cultural attractions such as Craigville Beach, Sandy Neck, and the Kennedy Compound. Because of these and other attributes, Barnstable is a regional economic center for residents and visitors.

Barnstable's challenge continues to be finding ways to attract and manage new growth in ways that maintain environmental integrity and community character, and provide opportunities for residents. From an open space perspective, this means providing open space and recreational opportunities for a large and economically diverse local population, as well as for seasonal residents and visitors.

As shown in Table 2, Barnstable accounts for approximately one-fifth of the Cape and Islands work force. Unemployment in the Town is somewhat lower than it is for the region, but higher than for the state as a whole. Local, county and state unemployment

rates have fallen more than a full percentage point compared with the 2010 plan, likely reflecting broader economic trends.

| Table 2. Employment and Unemployment, April 2017 | | | |
|---|--------------------|-------------------|--------------------------|
| | Labor Force | Employment | Unemployment Rate |
| Barnstable | 23,135 | 22,062 | 4.6% |
| Barnstable County | 109,443 | 103,777 | 5.2% |
| State | 3,684,300 | 3,543,900 | 3.8% |

Source: Town and County Data from Local Area Unemployment Statistics (LAUS) for the Commonwealth, New England City and Town Statistical Areas, Labor Market Areas (LMA), Workforce Development Areas (WDA), Counties, Cities and Towns.

Barnstable is predominantly a service-based economy. The major industries in Barnstable as a share of total employment are health care and social assistance (25%), retail trade (19%), and accommodation and food service (11%). Several of the industries accounting for the majority of employment in Town have weekly wages well below the Town-wide average of \$886.⁴ This suggests that due to a lack of disposable income, a large number of working residents in Barnstable are likely to rely on public facilities and open space to meet their recreation needs, as opposed to fee-based private facilities.

Long distance commuters do not account for a significant share of Barnstable’s labor force. The mean travel time to work in

Barnstable is 21.4 minutes.⁵ According to research by the Cape Cod Commission, 11.5% of Town residents commute off-Cape for work, accounting for approximately 17.4% of all of the region’s off-Cape commuters.⁶

⁴ MA Labor and Work Force Development March 2016

⁵ <http://www.statscapecod.org/towndata/commute.php>

⁶ Cape Cod Commission. Cape Trends. Commuting, Parts I and II. 2005.

SECTION 4

Environmental Inventory & Analysis



Section 4. Environmental Inventory & Analysis

This section provides a wide-ranging description of natural and cultural resources in Barnstable, and attempts to relate resource conditions to the community's open space planning needs and objectives. This section concludes with a brief discussion of environmental challenges resulting from this inventory, and how these challenges relate to or can be addressed by open space planning.

4.1 Geology

The geology of the Town of Barnstable is the result of glacial activity during the Wisconsin stage of the Pleistocene epoch, 15,000 to 25,000 years ago. The retreat of the ice sheets from their maximum stage of advance, at the islands of Martha's Vineyard and Nantucket, resulted in deposition of rock debris (known as glacial drift) over the original bedrock, which now underlies the surface of the Town at depths of between 150 to 400 feet below sea level. Geology in Barnstable is shown on Map 4B.

Glaciers left behind two major types of drift formations: moraine and outwash plain. The moraine is a ridge of debris that accumulated when the glacier remained more or less stationary for a long period of time. The outwash plain is composed of sand and gravel washed out of the moraine by meltwater streams during this period. In the present-day landscape, these two formations are reflected in the hills of the Sandwich moraine, which runs across the Town from east to west along the course of the Mid-Cape highway,

and in the Mashpee and Barnstable outwash plains, which extend from the moraine to the south shore. Soils are clearly divided by the moraine, with clay-like, generally non-permeable soils to the north, and the sandy ground of the outwash plain stretching south to Nantucket Sound. Numerous ponds and lakes were formed within the outwash plain when blocks of ice left behind by the glacier melted and left 'kettle holes' that were later filled by groundwater. Many host rare plant species, including wildflowers that attract threatened butterflies, moths and dragonflies.

The numerous barrier beach and salt marsh systems within the Town, including Sandy Neck and the extensive Great Marshes on the north shore, were formed from coastal processes over the last several thousand years. The Great Marshes area, protected by Sandy Neck, is the largest salt marsh on Cape Cod, and is a state designated Area of Critical Environmental Concern (ACEC). Evidence of cow tunnels suggests that this was a rich salt-haying area. Sandy Neck includes several imperiled natural communities of rare native biodiversity.

The geologic formations of the Town have been a determinant of land use patterns. The difficult topography of the 'knob and kettle' landscape of the moraine, along with problems accessing groundwater and poor soils characterized by sands mixed with clays, cobbles and boulders, have caused it to be developed slowly in comparison with the rest of the Town. Relatively large areas of the moraine, including the West Barnstable Conservation Area and Old Jail Lane Conservation Area, remain undeveloped. The comparatively level topography of the outwash plain, combined with readily available groundwater and the ease of on-site sewage disposal in the sandy soils, resulted in extensive development from the nineteenth century onward. This growth was centered primarily

along the south shore and in the villages, but spread in recent decades to include Centerville, Hyannis and Marstons Mills.

4.2 Soils

Soil types in the Town of Barnstable correspond with the geologic formations described above. In general, five major soil associations are found within the Town of Barnstable.⁷ Map 4A shows the location of soil types in Barnstable.

Plymouth-Barnstable Association – very stony and extremely stony and bouldery soils on moderate to steep slopes. Soils of this association are characteristic of the moraine. According to NRCS criteria, these soils are generally suitable for upland wildlife and for recreational uses such as hiking and nature trails; Plymouth-Barnstable soils also present moderate to severe limitations for residential and other intensive uses due to the degree of slope, plus the presence of many stones and boulders.

Carver-Windsor-Hinckley Association - coarse sandy soils on nearly level to strongly sloping terrain. These are the characteristic soils of the outwash plain, and present only slight to moderate limitations to residential, commercial and industrial uses due to relatively level terrain and the ease of on-site sewage disposal in coarse sands and gravels.

Enfield-Agawam Association - well-drained, loamy soils underlain by sands on nearly level to moderately sloping terrain. These soils are

found within portions of the outwash plain, primarily in the Marstons Mills area in the western part of the town, and were formed as a result of wind action following the retreat of the glacier, when the recently deposited sediments were subject to extensive erosion. Fine sediments were transported by strong winds and deposited in an "eolian mantle" over the coarser sediments of the outwash plain. The resulting soils are among the most suitable within the Town for agriculture, due to the relatively level slope, lack of stone, and loamy composition that retains moisture and nutrients. Like the soils of the Carver-Windsor-Hinckley association, the Enfield-Agawam soils are generally suitable for residential development and on-site sewage disposal.

Belgrade-Raynham-Hinesburg Association - moderately well drained soils, poorly drained soils, and soils with hardpan on nearly level and gently sloping terrain. These are the characteristic soils of the glacial lake deposits on the north shore within Barnstable and West Barnstable villages. The better-drained soils of this association are highly suitable for farming, and in the past have been extensively cleared for this purpose. In general, this soil association has severe limitations for residential or other uses that require on-site septic disposal, due to a high water table and/or slow percolation rate.

Tidal marsh-Dune sand-Sanded muck Association - low-lying soils subject to regular tidal overflow, partly stable droughty sands and very poorly drained organic soils. This association includes Sandy Neck, the Great Marshes, and other beaches, salt marshes and inland wetlands throughout the town. Tidal marshes comprise about 50 percent of this association; dune sand and coastal beach about 25 percent; and muck and peat soils the remainder. This soil association in general provides excellent wildlife habitat, with tidal

⁷ Soil types for the Town of Barnstable have been mapped by the U.S. Department of Agriculture Soil Conservation Service (now part of federal Natural Resources Conservation Service (NRCS).

marshes fulfilling a particularly critical role, both as wetland wildlife habitat and for finfish and shellfish resources.

As noted in the 2005 OSRP, according to NRCS criteria, 10,482 acres (26%) of the Town's land area are classified as agricultural soils of prime, State, or local importance. Of these, 4,657 acres are prime farmland soils and rank among the most productive in Massachusetts. Prime soils are mainly concentrated in the Marstons Mills area, on soils of the Enfield-Agawam Association, and in portions of the north shore, on better drained soils of the Belgrade-Raynham-Hinesburg Association. Surprisingly, several of the soils of the Plymouth-Barnstable Association are classified as agricultural soils of State and local importance, indicating that portions of the moraine could potentially be used for agricultural purposes.

Maps and interpretative data indicating the limitations of individual soils for different land uses such as on-site sewage disposal, home sites, and woodlands, are available for review through the NRCS or through the Conservation Division office located at 200 Main Street in Hyannis.

4.3 Landscape and Topography

Elevations within the Town of Barnstable range from sea level along the north and south shores to a maximum of approximately 230 feet above sea level on the moraine, near the Sandwich town line, within the West Barnstable Conservation Area. The moraine generally declines in altitude from west to east, to a maximum elevation of around 100 feet at the Yarmouth town line, the eastern boundary of Barnstable. Similarly, the maximum elevation of the

outwash plain located farther south declines from around 120 feet above sea level at the Sandwich line to around 50 feet at the Yarmouth line.

As previously noted, the most extensively sloping terrain is generally found within the irregular 'knob and kettle' landscape of the moraine. The outwash plain has for the most part level to moderately sloping terrain, with the exception of the numerous glacial kettle holes, which are frequently characterized by moderate to extremely steep slopes abutting water bodies, wetlands, or occasionally dry upland bottoms.

With 170 miles of coastline, Barnstable also has extensive areas of coastal landforms, including beaches, barrier beaches, bluffs and dunes. These coastal landforms are an important part of the scenic landscape, and serve significant ecological functions. Coastal landforms provide a first line of defense against coastal flooding and wave-induced erosion. The natural erosion of coastal landforms from wind and waves supplies sediments to down-drift public and private beaches. The landforms also provide habitat for a variety of species. Coastal landforms are under threat due to encroachment by development, growth in the number of hard engineered coastal structures, increased storm activity and relative sea level rise. As more coastal land is developed, it is more difficult for landforms to migrate inland in response to erosion.

4.4 Landscape Character

Barnstable's landscapes vary from wooded upland areas covered by oaks and pines to seashore habitats of salt marshes, beach grasses and dunes, to highly developed commercial and residential areas.

The boundaries with the sea are flat, there are no rocky cliffs, and the sea and shore form a shifting pattern of sandy beaches, dunes, estuaries and marshes. Also significant are the inland wetland areas, including pond and lakeshore areas, cranberry bogs and associated red maple and cedar swamps. There are numerous wetlands throughout the Town because of low elevations and high groundwater levels.

Barnstable is traversed by the Mid-Cape Highway, Route 6, which bisects the Town in the east-west directions. The land for several miles in each direction is currently covered by the oak/pine forests and contains numerous ponds and lakes. A significant amount of this land has been preserved in a natural state by purchase for open space or by conservation restrictions.

To the south, the land levels off in topography and the fresh watercourses connect to the bays and inlets that lead to the Sound. Several of the older village centers are characterized by small commercial strip development and dense single-family residential development.

With the exception of bridge crossings and the occasional public beach, the line of sight to the shore is cut off by structures and mature landscape vegetation. Currently, however, there is progress being made to visually and physically reconnect the main village of Hyannis to its harbor through the use of open space, parks and pedestrian pathways and bridges. The “Walkway to the Sea” connects Hyannis Main Street to Hyannis Harbor and offers passive and active recreation areas as well as much-needed visual relief near the waterfront. Key segments of the walkway were completed in 2004 and there are ongoing efforts to make the Hyannis

waterfront more pedestrian oriented and publicly accessible.

Land north of the moraine and Route 6 slopes more abruptly toward Cape Cod Bay. This area is protected by the Old King’s Highway Regional Historic District. The Old King’s Highway Commission is charged with protecting the visual and historic character of the land north of Route 6 and is responsible for maintaining much of the visual colonial era character along Route 6A (also known as Old King’s Highway).

Further to the north are the Great Marshes and the barrier beach Sandy Neck, which has been designated as the Sandy Neck/Barnstable Harbor Area of Critical Environmental Concern (ACEC). Areas of Critical Environmental Concern are places in Massachusetts that receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources.

As a regional commercial center, Barnstable includes densely developed commercial areas dominated by auto-oriented strip development. In particular commercial sprawl along Routes 28 and 132 has compromised community character, and is now being addressed through comprehensive corridor planning and redevelopment as outlined in the Barnstable Comprehensive Plan.

4.5 Groundwater

Barnstable’s public drinking water supply source is its underground sole source aquifer. Public wells draw water from wide surface areas known as Zones of Contribution to Public Water Supply wells,

which occupy approximately 30 percent of the area of the Town. Map 6A, *Wells and Zones of Contribution*, shows Barnstable's wells and three groundwater protection zones:

- Wellhead Protection Overlay District
- Groundwater Protection Overlay District
- Aquifer Protection Overlay District

The Aquifer Protection Overlay District consists of all areas of the Town, except those areas within the Groundwater and Wellhead Protection Overlay Districts. The Wellhead Protection Overlay District consists of the area within the five-year time of travel zone to existing, proven future and potential future public water supply wells. The Groundwater Protection Overlay District consists of all those areas within Zones of Contribution to existing, proven future and potential future public water supply wells.

In general terms, the groundwater system can be described as the saturated zone of water-bearing glacial deposits beneath the land surface. The upper surface of this zone, known as the water table, lies at depths beneath the land ranging from more than 100 feet in the highest part of the moraine to 0 to 10 feet along the shores and in the vicinity of ponds and lakes. In cross-section, the groundwater body is shaped like a lens, with the highest elevations of the water table being found along the groundwater divide, which in Barnstable roughly parallels the east-west axis of the moraine. Groundwater flows from the higher water table contours along the divide north and south to the lower elevations near the town's shores and beaches.

The Town's groundwater system, like the whole of Cape Cod, is replenished entirely by precipitation. The level of the water table

fluctuates seasonally due to evaporation, precipitation and water withdrawals. The major threat to the aquifer is from contamination due to land use impacts. The Hyannis Water Pollution Control Facility and the transfer station in Marstons Mills are potential point sources of pollution located upland of public water supply wells. The industrial zone at Independence Park resides in Hyannis' and Barnstable's primary drinking water supply areas, as does the Barnstable Municipal Airport. On-site septic systems, which account for the vast majority of wastewater treatment in the Town, are a possible source of groundwater pollution if located in unsuitable soils, at high density, or in close proximity to water bodies or the groundwater. There is also mounting concern about the location of inappropriate land uses within designated wellhead protection areas.

4.6 Freshwater Ponds and Lakes

Freshwater lakes and ponds in the Town of Barnstable are significant scenic, recreational, and wildlife habitat resources. All of the Town's ponds and lakes intersect the groundwater table. The majority of these water bodies are located on the outwash plain, having formed in kettle holes. They range from the 596-acre Wequaquet Lake, the third largest fresh water body on Cape Cod, to numerous smaller ponds of just a few acres in size. Freshwater features are shown on Map 6C.

A Great Pond is defined as any lake or pond that is ten acres or more in size in its natural state. Permitting of structures such as a dock or pier in a Great Pond is subject to review by MassDEP Waterways in accordance with MGL Chapter 91. Barnstable ponds

of 10 or more acres are shown in Table 4.

The Town has 61 ponds of at least two acres. They contain a total area of 2.9 square miles. Many of these smaller ponds are used for swimming, boating, fishing, and ice fishing. They also provide habitat for waterfowl and fish.

Barnstable also has ponds identified as having characteristics of Coastal Plain Ponds, a habitat community of global significance. The Hyannis Coastal Plains Ponds—Mary Dunn, Lamson, Israel Pond and pondlets, Flintrock, Campground and Lewis Ponds—have shores and surrounding vegetation supporting habitat for significant populations of very rare plant and animal species. Most of these ponds are shallow, with average depths from 0.6 to 3.4 feet, and several occasionally dry up in the summer. The inundation/desiccation cycle is part of the coastal plain pond shore ecology. Seasonal fluctuations in the water level help to create and maintain the special Coastal Plain Pond Shore, which provides habitat for some important rare species. However, dramatic changes in hydrology can threaten these habitats. Groundwater levels in the area of the ponds are strongly affected by nearby public water supply wells and are subject to seasonal changes in groundwater levels of three to four feet.

| Table 3. Barnstable Ponds > 10 Acres | |
|--|---------------------|
| Pond Name | Size (Acres) |
| Bearse’s Pond | 67 |
| Crystal Pond | 10 |
| Eagle Pond | 10 |
| Fawcetts Pond | 12 |
| Garretts Pond | 28 |
| Hamblin Pond | 115 |
| Hathaway Pond South | 13 |
| Hathaway Pond North | 21 |
| Hinckley Pond | 10 |
| Joshua Pond | 15 |
| Lamson Pond | 12 |
| Long Pond, Centerville | 51 |
| Long Pond, Marstons Mills | 55 |
| Lovells Pond | 56 |
| Mary Dunn | 18 |
| Micah Pond | 16 |
| Middle Pond | 105 |
| Mill (W Barnstable) | 16 |
| Muddy Pond | 25 |
| Mystic Lake | 148 |
| Neck Pond | 14 |
| Parker Pond | 11 |
| Rushy Marsh Pond | 15 |
| Shubael Pond | 55 |
| West Pond | 10 |
| Wequaquet Lake | 596 |

Source: Barnstable Ponds: Current Status, Available Data, and Recommendations for Future Activities FINAL REPORT July 2008

Freshwater streams or rivers within the Town of Barnstable are shallow and are largely not navigable. Several town rivers (for example, the Bumps, Centerville, and Marstons Mills Rivers) are groundwater-fed streams running north-south across the outwash plain, receiving drainage from surrounding shallow watersheds and frequently connecting existing kettle hole ponds or lakes, thereby creating runs for herring and other anadromous fish to gain access to the ponds and lakes to spawn. In addition to the natural runs, several artificial channels have been excavated to serve as herring runs, and two are still in use: a 2,000 foot channel running from the outlet of Middle Pond to the Marstons Mills River, and channels connecting Wequaquet Lake, Long Pond, and the Centerville River. A third run is currently undergoing restoration between Lake Elizabeth and the Centerville River. Dry most of the year, these channels are opened by the Town's Marine and Environmental Affairs Division in spring and fall during herring migration periods. They also provide a means of shunting stormwater flows to reduce high lake levels.

4.7 Coastal and Estuarine Resources

Barnstable's vast and varied coastal resources include expanses of exposed shoreline along Nantucket Sound, extensive tidal flats on Cape Cod Bay, and more protected estuarine areas in its numerous embayments. The Town contains eight watersheds: Popponeset Bay Watershed, Rushy Marsh Watershed, Three Bay System Watershed, Centerville River System Watershed, Halls Creek Watershed, Lewis Bay Watershed, Barnstable Harbor Watershed and a very small portion of the Scorton Creek Watershed. Of these watersheds, two are contained solely within the Town's borders

(Centerville River System Watershed, Halls Creek Watershed), while the rest are shared with neighboring communities. Marine water features and estuarine watersheds are shown on Map 6C. Each type of coastal area offers different recreational and ecological benefits, and faces different threats and management challenges. With a strong commitment to preserving the health and vitality of its coastal waters and the activities they support, the Town is actively engaged in comprehensive planning and focused management activity in these areas.

4.7.1 Sandy Neck ACEC

The 9,125-acre area encompassing Sandy Neck, Barnstable Harbor and the Great Marshes is one of eight state-designated Areas of Critical Environmental Concern (ACEC) on Cape Cod. ACEC's are state designations for areas, which have "unique natural and human resource values whose protection requires regional as well as local consideration⁴⁹. This ACEC contains one of the largest barrier beach systems in New England, as well as extensive shellfish resources, salt marsh, numerous MESA-listed species and more than half of the Town's certified vernal pools.

4.7.2 MA Estuaries Technical Reports

The Town recognizes that the future health of its estuaries is tied to its ability to address nutrient loading in its estuaries. Watershed sources of nitrogen include septic systems, road run off and use of fertilizer. While not the only contributors of nitrogen in estuaries—sediment regeneration and atmospheric deposition are two other sources—they are sources that can be effectively controlled by local action.

The Town participated in the Massachusetts Estuaries Project (MEP) to understand the extent of nutrient overloading and craft effective management responses, The MEP analyses quantified the extent of nutrient loading in several Barnstable’s embayments, and helped make the link between nutrient overloading and impacts to eelgrass and other indicators of estuarine health. MEP Technical Reports have been completed for Popponesset Bay, Rushy Marsh, Three Bays, Centerville River and Lewis Bay. The Technical Reports set forth the nutrient thresholds that are the basis for Total Maximum Daily Loads (TMDLs) for Total Nitrogen enforced by MassDEP and the US EPA, and which provide the targets for wastewater planning. A TMDL represents the amount of a pollutant, in this case nitrogen, that a water body can receive and still remain healthy.

TMDLs call for dramatic reductions in watershed nutrient loads in almost all embayments, as shown in Table 4.

| Table 4. Reductions in Watershed Nitrogen | |
|--|---|
| Selected Embayment | Reduction in Attenuated Nitrogen |
| Barnstable Harbor | 25% |
| Centerville River East | 53% |
| Cotuit Bay | 6% |
| Hyannis Inner Harbor | 72% |
| Lewis Bay | 76% |
| Mill Creek | 32% |
| Pinquickset Cove | 19% |
| Shoestring Bay | 44% |
| North Bay | 82% |
| Prince Cove | 81% |
| Prince Cove Channel | 87% |
| Warrens Cove | 29% |

Source: Town of Barnstable Department of Public Works

The Town’s efforts to address nutrient loading are described in section 4.12.1 below.

4.7.3 Coastal Flood Plain and Resource Planning

The potential for flooding from sea level rise and increased storm surge threatens the town along its north and south coastlines. Map 6D shows the extent of inundation from storm surge and flooding caused by hurricanes. Map 6E shows Special Flood hazard Areas. The maps point out the extent of inland flooding that could affect wetland resource areas, public and private roadways, homes, businesses, utilities and marine infrastructure.

The Community Rating System (CRS) is a voluntary program offered by the Federal Emergency Management Agency as part of the National Flood Insurance Program (NFIP). Under the CRS, flood insurance premium rates are discounted to reward community actions that meet the three goals of the CRS, which are to: (1) reduce flood damage to insurable property; (2) strengthen and support the insurance aspects of the NFIP; and (3) encourage a comprehensive approach to floodplain management.

In 2014, the Town received a Coastal Community Resilience Grant from the Massachusetts Office of Coastal Zone Management to prepare a CRS application and a recommendations report for future floodplain management actions creditable under the CRS.

As part of the effort, staff from the Cape Cod Cooperative Extension and Woods Hole Sea Grant created an online interactive map analyzing existing and potential flood risk for the Town of Barnstable. This research was conducted in support of the CRS

application, as well as to provide the Town of Barnstable with a greater understanding of where to target future adaptation planning efforts in light of potential climate change impacts.

There are a number of activities already in place or under consideration by the Town to improve local floodplain management. The activities that gain a community CRS credits are intended to increase protection to life and property during a flood; reduce and avoid flood damage to property; further public health, safety, and welfare; minimize damage and disruption to infrastructure and critical facilities; and preserve and restore the natural functions and resources of floodplains and coastal areas. This project provides a unique opportunity to result in an immediate net cost savings to taxpayers, along with protecting life, property, and natural, cultural and economic resources located vulnerable coastal zones.

In 2014, the Town participated in the New England Climate Adaptation Project in collaboration with MIT, Waquoit Bay National Estuarine Research Reserve, and the Consensus Building Institute. The project assessed risk of climate change, and gaged public opinions about potential management options.

The risk assessment concluded, among other things, that sea level around Barnstable could rise by as much as 5 to 6 feet by the end of the century, and weather conditions and storm surge potential could become more severe. These conditions could lead to impacts on beaches, public infrastructure and water access, and private property.

Interviews with key stakeholders found a range of opinions about climate change, but most people share the view that the town is

vulnerable to the effects of climate change and agree that more public education and dialogue on the topic is necessary.

The Town is currently working with the Cape Cod Commission to build on the work of this study through a community risk assessment and trade-offs exercise.

In 2016 the Town commissioned an *Assessment of the Century Scale Sediment Budget for the Sandwich and Barnstable Coasts of Cape Cod Bay* (Center for Coastal Studies, 2016) to inform decisions about the impacts associated with altering the nearshore zone with coastal engineering structures, beach replenishment projects and other related activities.

The assessment found that current assumptions about sediment transport patterns along the Town's north facing shore were inaccurate and that a large amount of sediment from the Barnstable/Sandwich shore—including the Town Neck Beach area—moves westward. A jetty intended to capture this sediment is not effective, and a large amount of the material is being deposited in the Cape Cod Canal where it is lost to the system forever. The assessment identifies the need for additional work to assess the full impact of this on resources such as Sandy Neck and Town Neck Beach.

The Three Bays and Centerville River systems are among the Town's south-facing coastal resource areas. These areas are important scenic and natural resources and also provide a wide range of public waterways access opportunities for commercial and recreational purposes.

As was reported in the 2010 OSRP, a *Coastal Resources Management Plan: Three Bays and Centerville River Systems* was

completed in 2009. This plan served to update the *Barnstable Coastal Resources Management Plan* (1990 plan) developed for these areas.

The study area for the updated plan includes nearly 2,000 acres of water surface area, 2,000 acres of land area and 59 miles of shoreline. The study area also contains important commercial and recreational shellfish resources and major public beaches, and is a popular sailing and power boating venue. The plan strives to balance the health and restoration of natural resource conditions with heavy demand for public access and impacts associated with water-based activities and structures. A key theme of the plan is providing access to the waterways for traditional water-related activities such as shellfishing, fishing, swimming, boating and nature viewing.

The plan was intended to provide a template for other coastal planning efforts in the town, and provides an assessment of management issues and recommendations for the following topics:

- Marine Services and Facilities,
- Fishing and Aquaculture,
- Natural Resources,
- Coastal Landforms and Processes,
- Coastal Structures, and
- Coastal Land Use and Access.

4.8 Plant Communities and Habitats

The Town of Barnstable contains a number of diverse vegetative

communities which are ecologically significant, and which help to define the visual character of the town. The wide diversity of vegetation performs many critical functions. Plant species moderate weather extremes, help maintain the quality of the soil and air, protect against erosion, and absorb runoff, therefore protecting groundwater supplies. Vegetation provides useful habitats for wildlife, including shelter and food, breeding and overwintering habitat. Some wild plants, such as those producing berries, provide food for humans. Trees, shrubs and groundcover have aesthetic value, and are a major component of Barnstable's visual quality.

The dominant species in seashores and sand dunes is American beachgrass, which is significant in stabilizing dunes from wind and storm erosion. This plant is very sensitive to vehicular and foot traffic. Other common plants include seaside goldenrod, salt-spray rose, bayberry, and beach plum.

Pond, stream and lake margins are populated by the yellow pond-lily, and the white water-lily. Freshwater bogs are common throughout the town and contain cranberries, highbush blueberries, and swamp azaleas.

Woodland areas are characterized by a mixed oak-pine association dominated by several species of oak and principally pitch pine. Pitch pine is dominant in areas where fires have been frequent over the years because it is extremely fire resistant. Areas covered by pitch pine forests have, however, declined in recent years, as fire prevention methods have improved.

Former agricultural areas, including abandoned fields, meadows and pastures, are important habitats for a wide diversity of weed-like plants and wildflowers. Pokeweed, wild morning-glory, chicory, Queen Anne's Lace, and the common milkweed are common throughout these areas. These habitats are in an intermediate stage of succession, and if left undisturbed, will be replaced by a variety of woody vegetation, including eastern red cedar and wild cherry.

4.8.1 MESA-listed Plant Communities

Massachusetts Natural Heritage and Endangered Species Program (MANHESP) maintains a list of all species that are listed as protected under the Massachusetts Endangered Species Act (MESA) that have been observed and documented in each town. These species are listed because they are threatened (T), Endangered (E) or of Special Concern (SC). Table 5 shows the MESA-listed plant species in Barnstable.

4.8.2 Wetlands and Vernal Pools

Wetlands in the Town are shown on Map 6B. These include extensive areas of salt marsh. Barrier beaches, coastal beaches, dunes and bluffs are among the coastal landforms that make up the Town's 170 miles of coastal shoreline. Freshwater wetlands also are a large-scale resource. Open water surface area totals over 1,800 acres, or 17% of the Town's surface area. In addition there are associated bordering vegetated wetlands, swales, creeks, and bogs.

These vast and varied wetland resource areas provide a number of important ecosystem services. They provide habitat for terrestrial

and aquatic plants and animals, they filter pollutants before they enter water bodies or groundwater, and in many cases they provide a buffer against storm damage.

Barnstable's extensive coastal wetlands are an important resource requiring protection. According to Barnstable's Comprehensive Plan, more than a quarter of Cape Cod's salt marshes are located in Barnstable, mostly in the Great Marsh south of Sandy Neck. Salt marshes are among the most productive ecosystems on the planet, rivaling the productivity of rain forests. In addition to providing vital aquatic and wildlife habitat, salt marshes filter pollutants, and buffer shorelines from storm surge. Blue carbon represents another ecosystem service provided by salt marshes. Blue carbon is a term used to describe carbon that is absorbed by salt marsh and other coastal wetlands. Salt marsh systems absorb large amounts of carbon that otherwise would be released as carbon dioxide and contribute to global climate change.

Vernal pools are a particularly vulnerable wetland resource. Vernal pools are temporary bodies of water, isolated in low spots in woodlands. They can be easily overlooked. These fish-free environments are perfect places for fairy shrimp, spotted salamanders, wood frogs and a variety of insects. Vernal pools are also important recharge areas for the aquifer. According to the MANHESP there are 31 certified vernal pools in the Town of Barnstable, one more than reported in the 2010 OSRP and 14 more than were reported in the 2005 OSRP.

The locations of the 31 certified vernal pools in Barnstable are shown on Map 8, *Fisheries and Vernal Pools*.

4.9 Wildlife and Fisheries

4.9.1 Wildlife

The spread of roadways and subdivisions has reduced and greatly fragmented the habitat of many native wildlife species. Many of these species have already been replaced with species which have adapted to suburban environments; others remain threatened by development.

MANHESP maintains a list of Endangered, Threatened and Special Concern wildlife species in each town. There are twenty-nine MESA-listed animal species in Barnstable (Table 6). A variety of snakes, salamanders, frogs and turtles have been sited, including Diamondback Terrapins (*Malaclemys terrapin*), Eastern Spadefoot Toads (*Scaphiopus holbrookii*), Eastern Box Turtles (*Terrapene Carolina*), and Four-toed Salamanders (*Hemidactylum scutatum*). Other non-listed species such as Opossum, bats, flying squirrels, fox, raccoon and White-tailed deer have been documented in the Town.

Invertebrates noted in the Town include rare moths, such as the Coastal Heathland Cutworm (*Abagrotis nefascia benjamini*), the Dune Noctuid Moth (*Oncocnemis riparia*), and other species, Barrens Buckmoth (*Hemileuca maia*), Comet Darner (*Anax longipes*), New England Bluet Damselfly (*Enallagma laterale*), Pine Barrens Bluet (*Enallagma recurvatum*), and Water-willow Stem Borer Moth (*Papaipema sulphurata*).

Cape Cod is considered a birder's paradise because of its location along the Atlantic Flyway, one of the most important corridors for migratory birds. Barnstable's extensive shoreline provides

important habitat for shorebird nesting, breeding, foraging and for shelter during the winter. Sandy Neck, Sampson's Island/Dead Neck, Kalmus and Long Beaches are designated as habitats for rare and endangered shorebird species⁴². Avian species sited in the Town include Least Terns (*Sterna antillarum*), Common Terns (*Sterna hirundo*), one of the largest concentrations of breeding Piping Plovers in the

| | Common Name | Status |
|----------------|------------------------------|---------------|
| Vascular Plant | Purple Needlegrass | T |
| Vascular Plant | Mitchell's Sedge | T |
| Vascular Plant | Commons's Panic-grass | SC |
| Vascular Plant | Wright's Panic-grass | SC |
| Vascular Plant | Redroot | SC |
| Vascular Plant | New England Blazing Star | SC |
| Vascular Plant | Rigid Flax | T |
| Vascular Plant | Dwarf Bulrush | T |
| Vascular Plant | Heartleaf Twayblade | E |
| Vascular Plant | Bayard's Green Adder's-mouth | E |
| Vascular Plant | Adder's-tongue Fern | T |
| Vascular Plant | Philadelphia Panic-grass | SC |
| Vascular Plant | Pondshore Knotweed | SC |
| Vascular Plant | Maryland Meadow Beauty | E |
| Vascular Plant | Short-beaked Bald-sedge | T |
| Vascular Plant | Long-beaked Bald-sedge | SC |
| Vascular Plant | Torrey's Beak-sedge | E |
| Vascular Plant | Slender Marsh Pink | E |
| Vascular Plant | Plymouth Gentian | SC |
| Vascular Plant | Terete Arrowhead | SC |
| Vascular Plant | Papillose Nut Sedge | E |
| Vascular Plant | Bristly Foxtail | SC |
| Vascular Plant | Swamp Oats | T |
| Vascular Plant | Grass-leaved Ladies'-tresses | T |
| Vascular Plant | Cranefly Orchid | E |
| Vascular Plant | Subulate Bladderwort | SC |

Source: MA NHESP

Commonwealth (*Charadrius melodus*, in the Sandy Neck Core Habitat), Eastern Towhee (*Pipilo erythrophthalmus*), Northern Parula Warbler (*Parula Americana*), Black-crowned Night-Herons (*Nycticorax*), Snowy Egrets (*Egretta thula*), Great Egrets (*Casmerodius albus*), Herring Gulls (*Larus argentatus*), Great Blackbacked Gulls (*Larus marinus*), and Roseate Terns (*Sterna dougallii*). In addition, grebes, heron, ducks, osprey, owls, hawks, swallows, flycatchers, hummingbirds and warblers have all been documented.

| Table 6. MESA-listed Animal Species in Barnstable | | |
|---|---------------------------|--------|
| | Common Name | Status |
| Butterfly/Moth | Coastal Heathland Cutworm | SC |
| Bird | Grasshopper Sparrow | T |
| Bird | Short-eared Owl | E |
| Bird | Long-eared Owl | SC |
| Butterfly/Moth | Frosted Elf | SC |
| Bird | Piping Plover | T |
| Butterfly/Moth | Chain Dot Geometer | SC |
| Dragonfly/Damselfly | Tule Bluet | SC |
| Dragonfly/Damselfly | Scarlet Bluet | T |
| Dragonfly/Damselfly | Pine Barrens Bluet | T |
| Mammal | Northern Right Whale | E |
| Crustacean | Agassiz's Clam Shrimp | E |
| Butterfly/Moth | Barrens Buckmoth | SC |
| Mussel | Tidewater Mucket | SC |
| Mussel | Eastern Pondmussel | SC |
| Reptile | Diamond-backed Terrapin | T |
| Fish | Bridle Shiner | SC |
| Butterfly/Moth | Chain Fern Borer Moth | T |
| Butterfly/Moth | Water-willow Borer Moth | T |
| Bird | Northern Parula | T |
| Butterfly/Moth | Mustard White | T |
| Amphibian | Eastern Spadefoot | T |
| Butterfly/Moth | Pine Barrens Speranza | SC |
| Bird | Roseate Tern | E |
| Bird | Common Tern | SC |

| | | |
|----------------|--------------------|----|
| Bird | Arctic Tern | SC |
| Bird | Least Tern | SC |
| Reptile | Eastern Box Turtle | SC |
| Butterfly/Moth | Pine Barrens Zale | SC |

Source: MA NHESP

4.9.2 Wildlife Corridors

Wildlife corridors, green corridors and habitat corridors provide continuity of habitat and enable animals to migrate and maintain their appropriate species range. According to Barnstable Land Trust, Bridge Creek Conservation Area provides a continuous corridor between the Great Marsh and the West Barnstable Conservation Area. Bridge Creek area is beneficial to turkeys, fox, coyote, deer, and other wildlife because it is such a large wilderness area that connects a variety of habitats in West Barnstable. Another major wildlife corridor stretches from Mill Pond in Marston's Mills to the cranberry bogs north of Lovell's Pond in Cotuit. Map 7C shows other wildlife and green corridors in town. Other corridors connect significant habitat such as biomap core habitat areas (see 4.10.1). A significant green infrastructure connector extends from the biomap core habitat area at the Yarmouth town line, along the Route 6 corridor past Wequaquet Lake biomap core habitat area, to the biomap core habitat area north of Race Lane in West Barnstable. Smaller green corridors connect East Bay and Centerville Harbor, respectively, with upstream wetlands, creating extensive wetland/upland corridors. The Sandy Neck/Barnstable Harbor Area of Critical Environmental Concern is roughly 9,000 acres of continuous habitat, including extensive salt marsh and one of the largest barrier beach systems in New England.

4.9.3 Fisheries

As coastal community, fisheries are an element of Barnstable's local economy and community way of life. Saltwater finfisheries include

bluefish, white perch, striped bass, tautog, scup and winter flounder. Small boat commercial fisherman, rod and reel and pot fishermen and commercial charters operate out of Barnstable and Hyannis Harbors, Lewis Bay, Popponesset Bay and Three Bays.

Ponds provide high quality freshwater fisheries habitat. Trout are stocked in Hamblin, Hathaway, Shubael and Lovells Ponds. Three streams in Barnstable, the Santuit River, Marstons Mills River, and Bridge Creek are also stocked with trout. Smallmouth bass, yellow perch and other species are also found in the Town's ponds. Anadromous fish live most of their lives in salt water, but use fresh water for breeding and spawning. Anadromous fish runs include the Centerville, Marstons Mills and Santuit Rivers (Map 7C). With increased maintenance on these runs, herring populations have been increasing over the years. Following is a general breakdown of fisheries resources in Barnstable. Map 8, *Fisheries and Vernal Pools*, depicts information on fisheries.

A variety of commercially and recreationally significant shellfish resources also are abundantly located in the Town. There are more than 6,000 acres of shellfishing area within the Town, as reported in the 2005 OSRP.

Barnstable Harbor and its surrounding marshes are considered prime shellfish habitat. Species harvested from the area include soft shell clams, quahogs, sea clams, razor clams, blue mussels, oysters and scallops. The most abundant of these species are soft shell clams, quahogs, oysters and blue mussels. The Great Marsh, and the Huckins, Little Thatch and Great Thatch Islands are ideal for soft shell clamming. Natural quahogs are also found in the Eel Grass Cove, Mussel Point and Calves Pasture areas. Natural mussel beds

are found off Mussel Point and Bone Hill. These beds are subject to forces of nature such as ice flows and intense predation by waterfowl. These beds are extensively used by large flocks of eider ducks, and the threat of nutrient-loading by water fowl is high. Barnstable Harbor is the site of many propagation projects, including oyster and quahog propagation for recreational harvesting at Scudder Lane. Around 600,000 oysters are grown yearly by the Town's shellfish propagation program. Barnstable Harbor contains 91.32 acres of private aquaculture grants. Lease holders grow mainly oysters, but also quahogs and soft shell clams.

The Three Bays estuarine system, encompassing Cotuit, North and West Bays and the Marston's Mills River is another important shellfish resource area. Approximately 85% of the Town's commercial quahog harvest comes from areas within the Three Bays.^[1] Soft shell clams and scallops are also important naturally occurring species. Oysters and quahogs are propagated by the Town for recreational shellfishing. In Prince Cove, over two million quahogs are grown each year using a floating upweller system and seeded throughout the bays. Private growers are licensed for 61.66 acres in the Three Bay Area. The Town is looking into expanding aquaculture in the Three Bays system.

Species harvested from Lewis Bay include soft shell clams, quahogs and bay scallops. Quahogs and soft shell clams can be found along the east side of Lewis Bay. Soft shell clams can be found on Egg Island. Shellfishing in Snow's Creek in Lewis Bay is prohibited. Scallops are found in all areas of Lewis Bay and Hyannis

^[1] Town of Barnstable Coastal Resource Management Plan: Three Bays and Centerville River Systems, 2009.

Harbor. Soft shell clams can be found on the flats of Shoestring Bay, extending all the way around Ryefield Point. Quahogs can be found in the same general area. A portion of Shoestring Bay is prohibited to shellfishing.

Shellfishing is a commercially and recreationally significant activity in Barnstable. In 2017, the Town issued 2,760 recreational shellfishing permits. Barnstable ranked second in the state for oyster landings in 2017, with a dockside value of over \$6 million paid directly to Barnstable shellfish growers, according to seafood dealer-reported Standard Atlantic Fisheries Information System (SAFIS) data provided by the state's Division of Marine Fisheries.

In addition, the Town has increased its “Learn to Shellfish” classes that have introduced new harvesters to the shellfisheries. The number of commercial shellfishing permits, now at forty-seven, is controlled in order to prevent overfishing. The Town effectively manages its extensive shellfish resources. The Town has an active propagation program for quahogs and oysters. Since the 1930’s the Town has participated in a contaminated shellfish relay program monitored by MA DMF. The town has designated Shellfish Relay Areas where contaminated stock from out-of town sources (such as Mount Hope Bay in New Bedford) as well as in-town locations (such as the Centerville River) are placed for depuration prior to harvesting. The very successful shellfish relay program has resulted in tens of thousands of shellfish animals being available for harvest. As fewer quahogs are brought in from out of town, the Town is increasing in-town production to make up the difference. In 2008 the Town established a Temporary Shellfish Relay Area and Recreational Shellfish Area Overlay District to protect shellfish habitat and public access in these areas. The overlay placed a temporary moratorium on certain activities such as placement of

new private docks and hydraulic shellfish harvesting, pending the completion of a coastal resource management plan. On October 7, 2010, The Town Council replaced the expiring temporary ordinance with a permanent ordinance as recommended in the 2010 Town of Barnstable Coastal Resource Management Plan for the Three Bays and Centerville River Systems.

4.10 Critical Habitats

Critical habitats in Barnstable have been identified by the NHESP, Core Biomap and Cape Cod Wildlife Conservation Project.

4.10.1 BioMap

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) developed a BioMap to identify the areas most in need of protection in order to protect the native biodiversity of the Commonwealth. BioMap combines information on rare and endangered species from NHESP with spatial data on wildlife species and habitats from the Division of Fisheries and Wildlife, and an assessment of intact landscapes and ecosystems generated by The Nature Conservancy. A BioMap2 report was generated by NHESP in 2012. The NHESP Biomap2 is shown on Map 7A.

Core Habitats represent habitat for the most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. The BioMap2 produced for Barnstable indicates 81 Core Habitat areas including 7 exemplary or Priority Natural Community Cores, 4 Wetland Cores, 29 Aquatic Cores, 41 Species of

Special Concern Cores. These areas encompass 10,149 acres of which 75% or 7,585 acres are protected. Three major NHESP Core Habitat areas that include and surround the Town's three largest conservation areas: West Barnstable Conservation Area, Sandy Neck barrier beach, and the Division of Fisheries and Wildlife Land.

The Core Habitat in the Sandy Neck barrier beach encompasses the following priority and natural communities: Coastal Interdunal Marsh/Swale, Estuarine Intertidal: Salt Marsh, Maritime Dune Community, Maritime Juniper Woodland Shrubland, Maritime Pitch Pine on Dunes, and Oka-Hilly forest/Woodland. Endangered, Threatened or Special Concern species within these natural communities include: Roseate Tern (*Sterna dougallii*), Agassiz's Clam Shriomp (*Eulimnadia agassizii*), and Salt Reedgrass (*Spartina cynosuroides*).

The Core Habitat in the West Barnstable Conservation Area shared with the Town of Sandwich encompasses pine/oak woodlands and barrens, as well as Coastal Plain Ponds. Several *Threatened* or *Special Concern* species are located in the Core Habitat, including New England Blazing Star (*Liatrix scariosa var. novae-angliae*) and Rough Panic-grass (*Dichanthelium scabriusculum*).

The Hyannis Ponds Complex, a Core Habitat shared by the Towns of Barnstable and Yarmouth and managed by the state Division of Fisheries and Wildlife, is considered to be a prime example of the Coastal Plain Pondshore natural community. Coastal Plain Pondshore communities are herbaceous communities of exposed pondshores in areas of oak and oak pine forests, characterized by a distinct coastal plain flora and subject to flooding and drought. Dense clusters of rare plants including Plymouth Gentian (*Sabatia*

kennedyana), Redroot (*Lachnanthes caroliana*), and the *Endangered* Torrey's Beak-Sedge (*Rhynchospora torreyana*) and Mattamusket Panic-grass (*Dichanthelium dichotomum ssp. Mattamuskeetense*) have been found there. In addition, this habitat includes pitch pine/scrub oak barrens as well as an Imperiled Atlantic Coast White Cedar Swamp Habitat.

Critical Natural Landscapes support ecological processes and a wide array of species and habitats over long time frames. BioMap2 also identifies 101 Critical Natural Landscapes encompassing 12,022 acres of which 8,106 or 67.4% is protected.

Unprotected Core Habitat Areas and Critical Natural Landscapes should be considered as high priority parcels for land acquisition.

4.10.2 NHESP Rare and Estimated Habitats

NHESP maintains the Natural Heritage Atlas, which identifies statewide areas of Priority Habitat and Estimated Habitat for state-listed species data in a GIS format. Priority and Estimated Wildlife Habitats are shown on Map 7B. NHESP is responsible for the conservation and protection of Massachusetts' biodiversity, with particular focus on the approximately 169 species of vertebrate and invertebrate animals and 257 species of native plants and their habitats that are officially listed as Endangered, Threatened (T) or of Special Concern (SC) under the Massachusetts Endangered Species Act. **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts. **Threatened** species are likely to become endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range. **Special Concern** species

have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened in Massachusetts. These species found in Barnstable are listed in Table 5, MESA-listed Plants in Barnstable, and Table 6, MESA-listed Animals in Barnstable. These species depend upon a specific habitat makeup for their survival. Thus protection of this habitat is the first and most important step towards ensuring the long-term success of these species.

4.10.3 Cape Cod Wildlife Conservation Project

The central goal of the Cape Cod Wildlife Habitat Conservation Project, conducted by The Compact of Cape Cod Conservation Trusts, Inc., is *to preserve and enhance biodiversity on Cape Cod*. To achieve this ambitious goal, the project focused upon the identification, mapping and ranking of natural communities, including existing areas held for conservation or other open space purposes.

The results⁸ of this analysis provide a comprehensive view of the best *potential* wildlife habitats on Cape Cod based upon natural community type (i.e. vegetation cover, geologic and hydrologic features), size, condition and landscape context. One of the greatest threats to wildlife populations on Cape Cod is the continued fragmentation of habitat resulting from land development practices.

Thirty-two habitat types are identified and mapped across Cape

Cod. Town-by-town summary tables were prepared which identify the total amount of each habitat type (in acres); these tables were then mapped to illustrate the distribution of habitat types across the region. Barnstable has nineteen significant habitat types, according to the Cape Cod Wildlife Conservation Project.

On a town-wide basis, the predominant habitat type is Uncategorized Forest totaling 30.7 percent of the total, the majority of which exists in the large conservation areas on the east and west borders of town. Salt marsh is a distant second at 9.54 percent of the total acreage and Ponds/Lakes came in third at 4.67 percent of the total. Notably, more than 44 percent of the Town is considered developed, compared to the regional figure of 17 percent, which clearly indicates the more urban nature of Barnstable compared to others on Cape Cod.

Additional findings indicate:

- Barnstable is one of four towns with the most remaining forested woodland with 12,348 acres;
- Barnstable contains the most extensive amount of salt marsh with just over 3,800 acres or about 27 percent of the total for Cape Cod;
- Barnstable ranks second in percentage of total acreage dedicated to coastal habitat categories combined (barrier beach/dune system, barrier beach, coastal beach, coastal dunes and coastal bluff);
- Barnstable has 468 acres of vegetated wetlands including shrub swamps, wooded swamps, fresh marsh and bogs, second only to Truro;
- Barnstable has the largest combined acreage for wooded swamp habitat (deciduous, coniferous and mixed) with 624 acres;
- Barnstable has the largest proportion of fresh marsh within its

⁸ Interpretation of results presented herein is taken from the 2005 OSRP

boundaries with 265 acres or about 11.4 percent of the region's total;

- Barnstable leads the Cape with 242 acres (20 percent) dedicated to growing cranberries;
- Barnstable contains the most open water among Cape towns, with water accounting for 1,868 acres or about 17 percent of the total area.

4.11 Scenic and Unique Resources

4.11.1 Scenic Views and Vistas

Barnstable offers beautiful views of several landscape types including marsh, woodland, beach, dune, open water, and sky. The Massachusetts Landscape Inventory⁹ identifies Barnstable's Sandy Neck as a notable area with the seaward sections of the barrier beach designated as Distinctive and the more inland section shown as Noteworthy. Most of the interior of Barnstable is considered by the inventory as a common scenic landscape.

Scenic views are enhanced by the cultural landscape, which includes views of shellfishermen, fishing and sailboats, beachgoers, people walking the shore, and wharves punctuating the horizon. These cultural landscapes add to the visual experience of those who visit Barnstable. The combination of natural and cultural scenery is the sort of beauty people want to experience when they come to Cape Cod, and the sort of beauty this open space plan seeks to preserve.

⁹ This inventory was reported in the 2005 OSRP as a collaboration of the MA Department of Environmental Management (DEM) now Conservation and Recreation, and The Nature Conservancy.

Barnstable's scenic resources include many scenic areas, scenic views and scenic roadway corridors. Scenic roadways are listed by village in Table 7.

Map 5, *Unique Features*, depicts Barnstable's scenic areas and vistas. As is apparent, the resources are distributed throughout town, and are clustered around coastal areas and water bodies.

4.11.2 Public Shade Trees

Public trees contribute importantly to community character throughout Barnstable. The Barnstable Tree Warden, whose office is within the Department of Public Works, manages the care, preservation, pruning, planting, replanting, and removal of trees on public property. On Conservation land, the Tree Warden works in cooperation with the Conservation Division.

Street trees are protected by the Public Shade Tree Law (MGL Ch. 87), and, where applicable, by Scenic Road designations (MGL Ch. 40 Sec. 15C). These regulations, along with corresponding local ordinances, prevent the removal or cutting of street trees without prior review by the Town Tree Warden or the Planning Board. Additional regulations provide guidelines for planting and replacement. This oversight helps to protect the scenic quality and natural character of the Town's roads and the health of public trees.

Recent public streetscape improvements on Hyannis Main Street and in Barnstable Village center included the reintroduction of street trees in the public right-of-way.

These improvements are complemented by recently adopted ordinances that require street tree planting in many of the town's commercial zoning districts.

Barnstable County Cooperative Extension Service operates a municipal shade tree nursery, located on the Barnstable County Farm in Barnstable Village. The nursery provides a variety of low-maintenance shade trees to towns throughout the Cape, including River Birch, Hedge Maple, Green Ash, and American Sycamore.

4.11.3 Unusual Geologic and Environmental Features

Unusual and significant environmental or geologic features in Town include the Sandwich Moraine, kettle ponds, salt marshes and critical habitats. Additional information about these resources is found earlier in this section.

The Sandwich Moraine runs west-east along the Town of Barnstable's north side, with Route 6 along its ridge. Soils are clearly divided by the moraine, with clay-like, generally non-permeable soils to the north, and the sandy ground of the outwash plain stretching south to Nantucket Sound.

Kettle holes were formed by the melting of ice blocks left behind from a retreating glacier. Kettle holes deep enough to expose the water table are lakes or ponds.¹⁰ There are numerous kettle ponds in Barnstable. Many host rare plant species, including wildflowers that attract threatened butterflies, moths and dragonflies. At the

¹⁰ Geological History of Cape Cod Massachusetts. USGS. <http://pubs.usgs.gov/gip/capecod/glacial.html>

Hyannis Ponds Complex is found one of the most unusual and diverse assemblages of plants, animals and especially invertebrates in the state.

The Great Marshes area, protected by Sandy Neck, is the largest salt marsh on Cape Cod, and has ACEC status. Evidence remains that this was a rich salt-haying area. Fishing remains excellent. Extensive recreational use, including by off road vehicle use, makes wildlife management at Sandy Neck a considerable challenge. Sandy Neck includes several *Imperiled* Natural Communities and rare native biodiversity.

Critical habitats in the Town in need of protection, in addition to those mentioned above, include coastal plain ponds, sphagnum bogs, cedar swamps, sandplain grass communities, herring runs with undisturbed banks and edges, and Sandy Neck's holly forests and coastal basswood stands.

4.11.4 Historic Resources

Formally established in 1639, Barnstable has a rich colonial heritage that is extant in many buildings, cemeteries, homesteads and neighborhoods throughout the Town. Every village has unique historical assets that reflect its history and development. The Town's historic cemeteries, the Hyannis Main Street/Waterfront Historic District, National Register Historic Districts and the Old King's Highway Regional Historic District are depicted on Map 5, *Unique Features*. Other notable historic sites in town include:

- Barnstable, Centerville, Santuit and Cotuit, Marstons Mills, Osterville, and West Barnstable all have historical societies and, with the exception of West Barnstable and Marstons Mills, have historical museums. The museums maintain collections of

maritime artifacts, textiles, period decorative arts, regional artifacts, and furniture reflective of each village’s unique history;

- The Olde Colonial Courthouse, built somewhere between 1763-1772 and renovated in 1974, serves as a meeting place and cultural and historical repository. It also serves as home to Tales of Cape Cod, an organization dedicated to recording an oral history of Cape Cod;
- The Sturgis Library, established in 1867, is of special interest to those seeking genealogical information. The oldest part of the library, built in 1644 by Rev. John Lothrop, contains his Bible. The second oldest part houses a room named for local historian Henry Kittredge, and holds his maritime collection and other memorabilia;
- The United States Customs House was constructed in 1856 and is now home to the Coast Guard Heritage Museum. The Old Jail is also located on the Trayser Museum grounds. The Jail was constructed ca. 1690.

The 2010 Historic Preservation Plan Update for the Town of Barnstable provides a comprehensive inventory of the Town’s historic resources as well as an assessment of threats and management issues and an action plan for safeguarding historic resources. Table 8 lists National Register districts by village, and Table 9 lists local historic districts by village.

The 2010 draft plan, currently under public review, updates previous plans in 1985 and 1990. The current draft notes that many of the issues and recommendations identified in the 1990 plan

remain valid today, namely protecting historic resources amidst burgeoning development in nearly all seven villages. Still, the draft notes that despite rapid growth since 1990, the Town has been successful in protecting most of the community’s important open space parcels and historic cultural landscapes.

The 2010 Draft Historic Preservation Plan calls for actions in the following areas:

- Continued documentation of historic and cultural resources;
- Integration of historic resources into local permitting processes;
- Preservation advocacy and education; and
- Regulatory protection.

| Table 7. Scenic Roads By Village | |
|----------------------------------|--|
| Village | District |
| Barnstable | Aunt Hatch’s Lane, Mill Way, Pine Lane, Bone Hill Rd, Old Neck Rd, Hyannis Rd, Commerce Rd, Freezer Rd, Scudder La, Rendezvous La, Keveney Lane, Phinney’s Lane, Route 6A/Old King’s Highway |
| Centerville | Bay La, Old Post Rd, Main St, Bumps River Rd, Old Stage Rd, Pine St, Craigville Beach Road, Shootflying Hill Rd, Fuller Rd, Great Marsh Rd South Main St |
| Cotuit | Main St, Putnam Ave, Old Kings Rd, Santuit/Newtown Rd, Old Shore Rd, School St |
| West Barnstable | Cedar St, Parker Rd, Church St, Pine St, Maple St, Plum St, High St, Service Rd, Oak St, Meetinghouse Way/Route 149, Willow St, Route 6A/Old King’s Highway |

| | |
|-----------------------|--|
| Hyannis | Craigville Beach Rd, Lewis Bay Rd, Sea St, Mary Dunn Rd, Pine St, Scudder Ave |
| Marstons Mills | Farmersville Rd, Race La, Barnstable Rd, Old Barnstable – Falmouth Rd, River Rd, Old Mill Rd, Route 149 Old Post Rd, School St |
| Osterville | Bridge St, Old Mill Rd, Bumps River Rd, Seaview Ave, East Bay Rd, South County Rd, Eel River Rd, Wianno Ave, Main St, West Bay Rd, Osterville-West Barnstable Rd |

| | |
|-------------------|--|
| | Historic District <ul style="list-style-type: none"> ▪ Pleasant/School Street National Register Historic District |
| Osterville | <ul style="list-style-type: none"> ▪ Wianno National Register Historic District |

Source: 2010 Historic Preservation Plan Update

| Table 8. National Register Districts | |
|---|---|
| Village | District |
| Barnstable | <ul style="list-style-type: none"> ▪ Old King’s Highway Historic District (Route 6A) ▪ Mill Way National Register District ▪ Hyannis Road National Register District ▪ Sandy Neck National Register Historic District ▪ Yarmouth Camp Ground Historic District (Regional district with Yarmouth) |
| Centerville | <ul style="list-style-type: none"> ▪ Centerville National Register Historic District ▪ Craigville National Register Historic District |
| Cotuit | <ul style="list-style-type: none"> ▪ Cotuit National Register Historic District, Main St ▪ Santuit Historic National Register District, Route 28 |
| West Barnstable | <ul style="list-style-type: none"> ▪ Meetinghouse Way Historic District on Route 149 ▪ West Barnstable Village Historic District |
| Hyannis | <ul style="list-style-type: none"> ▪ Hyannis Port National Register Historic District ▪ Kennedy Compound National Register District ▪ Municipal Group National Register |

| Table 9. Local Historic Districts | |
|--|---|
| Village | District |
| Barnstable | Old King’s Highway Regional Historic District (OKH) |
| Hyannis | Hyannis Main Street Waterfront Historic District |

Source: 2010 Historic Preservation Plan Update

4.11.5 Cultural Resources

Barnstable’s cultural resources encompass a vibrant arts scene and numerous activities and festivals that both celebrate and enhance the Town’s maritime and historic traditions.

Barnstable's art and theatre events have long been an attraction to residents and visitors. In the Town’s village centers numerous art galleries showcase local and regional talent in various media including oils, photography, and sculpture. The Cape Cod Art

Association, the Arts Foundation of Cape Cod and the Cotuit Center for the Arts foster local artists by providing teaching resources, art shows, promotional opportunities and cultural events throughout the year.

The Town and community partners have been working to establish Hyannis as a regional center for creative and performing arts by fostering a cultural downtown arts district. In May of 2012, the Hyannis HyArts Cultural District received its official state designation from the Massachusetts Cultural Council. It is the first cultural district designated on Cape Cod and was, at the time, the seventh in the state to be named. The HyArts District, along with the Harbor Your Arts program, is intended to increase the value of the arts in the community through the cultivation of diverse new audiences and support the growth of the creative economy downtown. The district includes seven artists' shanties located on the waterfront, and two properties on Pearl Street renovated by the town and used for artists' shared live/studio and exhibit space. Attractions in the district include the Shirley Blair Flynn Center for the Creative and Performing Arts, which provides artists living, working and gallery space. In Bismore Park, seven artist shanties serve as affordable and publicly accessible studio and gallery space for local artists and artisans.

In 2014 the Town established the Historic Barnstable Village Cultural District. The fledgling district has set forth goals for enhancing programming, improving the built environment, and supporting cultural economic development.

The Town also undertook an Art Space Feasibility Study in 2012 to determine the extent of regional demand for artist studio space,

and the economic feasibility for developing such space. Not surprisingly, a survey of the regional arts community found robust demand for reasonably priced studio space. However, the economic analysis demonstrated that development of the space could be economically viable if the developer already owned the property, but may not be viable if property acquisition was included in development costs.

The creation of artists live/work space in existing buildings in villages throughout the town could add vibrancy and opportunities for public art in nearby parks.

Performing arts are another important component of the Town's cultural infrastructure. The Barnstable High School Performing Arts Center, the largest high school auditorium in New England, features performances by the award-winning Barnstable High School drama and music club¹¹ and is home to the Cape Cod Symphony Orchestra. The Cape Cod Community College is another important location for the arts. Arts exhibits are displayed at the Higgins Art Gallery and the Tilden Arts Center is the venue for a wide variety of performing arts.

The Cape Cod Community College is another important location for the Arts. Art exhibits are displayed at the Higgins Art Gallery, while the Tilden Arts Center is the venue for a wide variety of performing arts. Performances by the award winning Barnstable High School drama and music programs also are renowned.

Other points of interest include the Cape Cod Central Railroad,

¹¹ For more information about the High School drama and music club visit www.bhsdc.org

which offers scenic excursions aboard a vintage train. Whale watching out of Barnstable Harbor is a wonderful way to admire and learn about marine mammals. The Town also has many special-interest organizations, including bird-watching groups, sports clubs, walking groups, garden clubs and yacht clubs.

Summer brings many special cultural events that include festivals, sporting events, concerts, theatre performances, road races and musical performances. The Town Green and Aselton Park at Hyannis Harbor both host summertime concert series. Winter also brings a variety of events. Most villages sponsor holiday festivals, plays and “strolls” down main streets.

4.12 Environmental Challenges

Many of the environmental challenges that Barnstable faces result from the pace and location of land development over the past half century.

Among the implications of growth is a loss of open space and associated natural resources. The need to plan for and address open space for recreation and resource protection has been a theme in prior town plans, including the 1985 and 2005 Open Space and Recreation Plans, and remains one of the top priorities in Barnstable today.

The 2018 OSRP maps out a plan of action to continue progress in protecting open space that has environmental, scenic, cultural or recreational value, and to provide adequate linkages and access opportunities to these areas. Making progress in these areas requires a clear understanding of environmental challenges that the

Town faces in protecting and managing open space resources. These challenges are briefly described below. Please note that the ordering does not connote relative priority.

4.12.1 Wastewater and Stormwater Management

Protecting Barnstable’s coastal waters from eutrophication due to excessive watershed nitrogen loading continues to be a primary environmental challenge facing the Town. While substantial progress has been made in understanding the extent of nitrogen pollution and examining potential solutions, implementation of nitrogen reduction measures is still many years away.

Nutrient management implementation challenges related to open space protection include (1) using open space and land protection to promote concentrated village center growth and away from sensitive resources areas and (2) finding adequate land area to discharge up to one million gallons per day of treated effluent.

Three Bays and Centerville River are classified as Class SA Outstanding Resource Waters, as is Barnstable Harbor, excluding waters along the western portion of the harbor.¹² Under the Massachusetts Surface Water Quality Standards (310 CMR 4.00) Class SA waters are an excellent habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for use for primary and secondary contact recreation. The classification system represents the water quality that the embayment should support, not the existing level of water quality.

¹² Coastal Resource Management Plan and Cape Cod Watershed Assessment

The environmental, economic and cultural values associated with Barnstable’s water resources have been touched on above. Yet the continued health and vitality of the resource, and particularly estuarine waters and freshwater lakes and ponds, continues to be the subject of intense study and planning. Overexposure to nutrients coming primarily from watershed land uses threatens fresh and marine waters. In marine waters, nitrogen is the limiting pollutant, while in freshwater bodies it is phosphorous. In either case, an excessive amount of the limiting nutrient causes eutrophication and ultimately a loss or total lack of oxygen necessary for healthy plant and animal life. As noted above, Total Nitrogen TMDLs have been issued for seven coastal embayments in Barnstable and call for dramatic reductions in watershed nitrogen loads. Under the auspices of the Department of Public Works and the former Water Resources Advisory Committee, the Town is in the process of developing a comprehensive nutrient management plan that complies with the requirements of Cape Cod’s final Section 208 Areawide Water Quality Management Plan Update.

The nutrient management plan is scheduled to be submitted to permitting agencies by the end of 2018, following review and comment by Town Council and the public. The plan calls for sewerage in some areas of town to reduce nitrogen at its source, and other non-traditional methods to reduce nitrogen in-situ where sewerage is not cost effective. As currently proposed, implementation of sewerage and other nitrogen management measures would be implemented over sixty years, in three twenty-year phases.

Another threat to water quality comes from stormwater runoff. Stormwater carries bacteria and petrochemicals that can degrade

water quality and aquatic habitat. Bacterial pollution has resulted in the closure of some shellfish areas. The Town has an aggressive Coastal Discharge Mitigation Program which seeks an annual appropriation for the installation and maintenance of stormwater management improvements. Despite the progress resulting from this program, it is believed that not all stormwater management problems have yet been identified and annual funding is not able to address the number of new and maintenance projects.

Open space planning can help to reduce the threat of degraded water quality by focusing on purchases that can reduce development potential, provide opportunities for treated wastewater discharge, and filter pollutants from run-off before they enter an estuary or pond.

4.12.2 Aquifer Protection

Protecting wellhead protection areas—designated zones I and II—from illegal activities or inappropriate land uses is a resource management challenge facing the Town.

As noted in the 2010 OSRP, concerns have been raised about illegal activities taking place on water department lands. Water department officials have reported concerns with illegal dumping, tent cities, dirt bikes and drugs, with insufficient resources to monitor and prevent these activities from occurring.

Water department officials also expressed concern that some land uses allowed in zones of contribution under the Town’s zoning ordinance are not suitable to protecting public water supply. For example, the Barnstable Water Department is seeking to expand

the use of Conservation Restrictions to protect key public and private properties within zones of contribution to public water supply wells. Additional protections could be afforded through an amendment to the Town's Groundwater Protection Overlay District, to restrict inappropriate land uses in zones of contribution.

4.12.3 Coastal Erosion, Flooding, Relative Sea Level Rise

Erosion of coastal landforms is a natural process that provides sediment for downdrift marshes, beaches and dunes. However, intensive land development along the coastline has reduced the amount of land available for natural erosion. Erosion of coastal landforms is more commonly viewed as a threat to public and private property. As eroding sediment moves off shore it can cause shoaling in navigation channels, impeding navigation.

With 170 miles of shoreline, Barnstable is especially prone to issues associated with coastal erosion. During the winter of 2010, storm surges on Nantucket Sound and Cape Cod Bay caused significant erosion of private property and public beaches and landings. Storm-induced erosion was sustained at Sandy Neck Park and Kalmus Beach, among other areas in Town. A Multi-Hazard Mitigation Plan¹³ developed for Cape Cod shows portions of the Barnstable Harbor shoreline, of Sandy Neck, of Sampson's Island and of Dowses Beach as areas identified as being susceptible to shoreline erosion of two feet per year. The plan notes that 73% of

Barnstable's shores are experiencing erosion and 25% are experiencing accretion.

Over time, erosion due to storm surges would be exacerbated by relative sea level rise, which is expected to increase three feet by 2100.

The Town is addressing coastal erosion through recommendations in the 2010 Coastal Resource Management Plan. The plan calls for development of a sediment management plan and limiting the use of hard engineered structures where alternative soft solutions can be effective.

A closely related issue is coastal flooding. FEMA Flood Insurance Rate Maps and Hurricane Inundation Areas, also known as Sea Lake Overland Surge from Hurricanes (SLOSH) zones, are shown on Maps 6D and 6E, respectively. Fortunately, few developed parcels in Barnstable reside in coastal velocity zones. Long Beach and Craigville Beach have benefited from the placement of sediment from dredging of East Bay, Centerville River and an offshore borrow site, which has helped absorb storm surge. Long Beach Road is a low-lying, barrier beach residential area subject to still water flooding. The Craigville Beach area, along with the Centerville Village Center, is designated as a District of Critical Planning Concern (DCPC). Among the planning issues addressed by the DCPC is development and redevelopment within flood zones. In addition, the Multi-Hazard Mitigation Plan will continue to identify properties subject to repeated flood damage for acquisition. An update of the Multi-Hazard Mitigation Plan was initiated in 2016.

In 2014 the Town conducted a Climate Change Risk Assessment in collaboration with the New England Climate Adaptation Project. The

¹³ Barnstable Multi-Hazard Mitigation Plan

assessment engaged members of the community in a process of understanding the likely effects of Sea Level Rise, assessing risk to public and private properties, and exploring possible risk management strategies.

From the standpoint of open space, coastal flooding and erosion underscores the importance of land purchases on or near shore, and of maintaining the natural functioning of coastal landforms and marshes, which provide critical storm damage prevention and contribute to the scenic landscape.

4.12.4 Pond Water Quality and Stewardship

The Town's 61 freshwater lakes and ponds, including 26 Great Ponds, are a vital recreational and ecological resource. A 2017 Pond Water Quality Assessment conducted by the School for Marine Science and Technology at UMass Dartmouth analyzed water quality data for 23 ponds. The assessment concluded that eight of the ponds are mesotrophic, meaning there is an increasing probability of anoxic (low dissolved oxygen) conditions in the summer. Another eight ponds are eutrophic, which means they are anoxic.

High levels of cyanobacteria measured in Lake Wequaquet, Bearses Pond among others is another public health concern. The incidence of aquatic invasive species has also become a challenging management issue. On-going study, and management of these trends in water quality and invasive species are a significant environmental challenge.

Since 2010 the Conservation Division has continued lake and pond restoration. Annual invasive removal occurred at the following waterbodies: Hydrilla was removed at Long Pond, Centerville and Mystic Lake and Middle Pond, Marstons Mills, using Sonar (herbicide). Fanwort was removed at Wequaquet Lake, Bearse Pond, and Gooseberry Cove, Centerville, by mechanical means.

Alum treatment was used to control algal blooms at Lovell's Pond (2014) and Hamblin Pond (2015) in Marstons Mills.

The Town's first SolarBee (water circulator) was successfully deployed to combat cyanobacteria in Schoolhouse Pond (2016).

From an open space management perspective, opportunities to purchase land in the watersheds of sensitive or impaired water bodies, particularly as buffers between the water body and surrounding land uses, whether fresh or marine, can minimize pollution threats.

4.12.4 Biodiversity and Habitat Fragmentation

According to the Cape Cod Wildlife Conservation Project, Barnstable has nineteen significant habitat classifications. Some habitat types, such as salt marsh or ponds/lakes are found in relative abundance compared with sandplain grassland or red maple swamp. Each significant habitat has features that make it hospitable to a different suite of plant and animal species. This variety of habitat types constitutes the community's biodiversity. Open space planning for resource protection, therefore, must consider ways to preserve or protect enough of each type of habitat in order to ensure the vitality and longevity of the variety of species each supports.

Ongoing development poses a major threat to the protection of significant habitats. Of particular concern is the subdivision of large tracts of land for residences, which replace native vegetation with impervious surfaces and lawns. The Town has undertaken measures to address this threat, including:

- Implementing the Resource Protection Overlay District which increased the minimum lot size of two acres in most areas of Town;
- Promoting Open Space Residential Design subdivisions in place of grid subdivisions; and
- Mapping Sensitive Habitat Areas and using the map as a guide for review and permitting development in affected areas.

4.12.6 Scenic Road Protection

Much of what a visitor or resident sees of a town is from the street. Views and vistas are influenced by roadway width and layout, the presence or absence of setbacks and sidewalks, local architecture and dominant trees and vegetation. Barnstable is a member town of the Old Kings Highway District Commission, which reviews development along scenic and historic Route 6A. However, other scenic areas of Town do not have this careful oversight. Maintaining large trees and native vegetation wherever possible is a planning objective in the review of roadway projects and residential subdivisions.

Many mature public trees along Route 6A, a designated scenic road, are threatened or affected by disease. As many as 80 trees are being reviewed for removal within Barnstable. The Town and the Tree Warden are working with MassHighway to develop a removal and replacement plan for the affected trees.

4.12.7 Tidally Restricted Wetlands

Table 10 lists the nineteen sites in Barnstable identified in the Cape Cod Atlas of Tidally Restricted Salt Marshes compiled by the Cape Cod Commission. The restrictions are due primarily to inappropriately sized culverts and pipes, which run under roadways. In some cases the restrictions impair shellfish resources or anadromous fish runs, or lead to issues of degraded water quality.

Two restricted sites, BA-2 and BA-3, have been restored by the Town. The Bridge Creek Salt Marsh project (BA-3) restored 40 acres of degraded marsh in West Barnstable. The project enlisted a wide range of partners including the Town of Barnstable, USDA Natural Resources Conservation Service, NOAA/Gulf of Maine, Conservation Law Foundation, Commonwealth of Massachusetts, Corporate Wetlands Restoration Partnership, Ducks Unlimited, the Barnstable Land Trust and others. The Town received \$1.5 to restore tidal flow into the critical wetland by enlarging the two culverts. The project was completed in 2005 and was recognized by the President's Council on Environmental Quality.

Seven other tidal restrictions have been implemented since the 2010 OSRP and monitoring is underway to assess results.

BA-10 Barrier Beach restriction of Rushy Marsh Pond in Cotuit – The goal of the project was to improve tidal exchange between the pond and Nantucket Sound to address water quality issues, improve marine fisheries, relieve flooding, and reduce the threat of mosquito-borne illnesses. This project was not deemed successful and no further monitoring is warranted.

- BA-17 Ocean Avenue restriction of Stewart's Creek - The Stewart's Creek Restoration Project goal was to restore 4 acres

of salt marsh, 4.5 acres of open water, and 1.5 acres of intertidal flat that serves as critical fish and wildlife habitat. The project included replacement of the culvert under Ocean Street, dredging, and salt marsh restoration.

- BA-19 Ocean Street restriction of Snows Creek – This project has gone through permitting with the Conservation Division under the auspices of the Barnstable Department of Public Works.
- BA-5 Millway Road restriction of Maraspin Creek - The bridge was reconstructed. There is an area of boulders and cement where an old dam was breached could be looked into further for removal.

Table 10. Tidally Restricted Salt Marshes in Barnstable

| | | |
|---|---|--|
| BA-1 Rt 6A at Scorton Creek | BA-8 Keveney Lane /Mill Lane restriction of Mill Creek & Halletts Mill Pd | BA-15 Hyannisport Golf Club cart path over Halls Creek |
| BA-2 Penn Central Railroad restriction of Bridge Creek | BA-9 Quinaquissett Rd/School St restriction of Santuit River | BA-16 Marchant’s Mill Rd restriction of Halls Creek |
| BA-3 Rt 6A restriction of Bridge Creek | BA-10 Barrier Beach restriction of Rushy Marsh Pond | BA-17 Ocean Avenue restriction of Stewart’s Creek |
| BA-4 Penn Central Railroad restriction of Brickyard Creek | BA-11 East Bay Road restriction of an unnamed creek | BA-18 Hawes Avenue restriction of unnamed creek |
| BA-5 Millway Rd restriction of Maraspin Creek | BA -12 Bay Lane restriction of channel of Bumps River | BA-19 Ocean Street restriction of Snows Creek |
| BA-6 Commerce Rd restriction of Maraspin | BA-13 Craigville Beach Rd restriction of Centerville River | |

| | | |
|--|--|--|
| Creek | | |
| BA-7 Jeep trail restriction of channel off Wells Creek | BA-14 Pleasant St restriction of channel to Lake Elizabeth | |

Source: Cape Cod Atlas of Tidally Restricted Salt Marsh

- BA-13 Craigville Beach Road Bridge went under reconstruction in 2001, but there were no plans to widen the bridge span. The Town would have to acquire funding to address the widening the bridge span further.
- BA-14 Pleasant St. /Prospect Ave - In 2011 the concrete and corrugated metal pipe was replaced with concrete box culvert. This improved the restriction at this point. This is located on private property. The work was completed by Red Lilly Pond Association.

In the future, DPW will be completing a Horizontal Asset Inventory. It is that time that any of the remaining restrictions, located on town roads, will be reviewed in coordination with DPW and Conservation for possible remediation during road upgrades.

It should be noted that the following restrictions remaining on the chart have unique situations of their own.

- BA-1 Rt 6A at Scorton Creek - This is located within MA Highway Department Road Layout.
- BA-4 Penn Central Railroad restriction of Brickyard Creek – Located on railroad layout.
- BA-7 Jeep trail restriction of channel off Wells Creek – The existing culvert was constructed in 2000. The restriction only

occurs at peak high tide flows and then the water finds its way around the culvert and retaining walls and over the jeep trail. (lower priority)

- BA-9 Quinaquissett Rd./School St. restriction of Santuit River – The bridge was reconstructed in 2000 by the MA Highway Department. Unfortunately the reconstruction did not include increasing the width of the span to allow increase of flow. (low priority)
- BA-10 Barrier Beach restriction of Rushy Marsh Pond – attempt was made, however the project was unsuccessful.
- BA-11 East Bay Road restriction of an unnamed creek – careful consideration should be taken prior to culvert expansion at this location, as it could potentially impact surrounding private property.
- BA-15 Hyannisport Golf Club cart path over Halls Creek and BA-16 Marchant’s Mill Rd. restriction of Halls Creek. These are located within a private golf course and private road.

Opportunities to purchase land adjacent to tidally restricted salt marshes can lend additional protection to these resource areas, which often are associated with fish runs or other unique habitat features. This is another issue addressed in the Town’s Multi-Hazard Mitigation Plan.

4.12.8 Illegal Activities and Dumping on Conservation Lands

Resource management problems include illegal trash dumping, drug paraphernalia, unauthorized motorized off-road vehicle use, and vandalism on conservation and other open space parcels. The pick-up and disposal of illegally dumped material is a nuisance and an

added cost burden to the Town. Such activities also pose environmental hazards. While dumping can adversely impact any parcel, wellfield lands remain the most susceptible to harm due to potential pollution of drinking water supplies. The Conservation Division instituted an Illegal Dumping Management Plan in 2004.

Unauthorized vehicle use, such as dirt bikes and ATVs, is an increasing problem in conservation areas and open space parcels. Despite enforcement efforts by the Natural Resources Program and Police Department, unauthorized vehicle use is a continuing problem. Two areas that have sustained damage to trails and noise pollution from vehicles are West Barnstable Conservation Area and the Santuit Preserve.

The larger conservation parcels that have trails, parking areas, gates and signs suffer the most vandalism. Observation decks have been burned to the ground and steel gates removed from the hinges and tossed into a lake. There are unofficial and illegal dumping sites in the Town, and agencies remain vigilant in their monitoring at these sites and in prosecution of violators. The Conservation Commission and Conservation Division, as well as the Property Management Division have been very proactive in protecting conservation and open space lands from unauthorized vehicular access and illegal dumping with locked gates and large boulders.

4.12.9 Hazardous Waste Sites

According to monitoring data from the Massachusetts Department of Environmental Protection, there are 24 confirmed active sites that handle hazardous materials in the Town of Barnstable. Additionally, there are 30 sites or release locations that continue to be monitored or investigated by Massachusetts Department of

Environmental Protection. There are 194 sites (Response Action Outcome sites) where a hazardous material release may have occurred, but response actions were sufficient to establish that no significant risk of hazardous materials release is present or no substantial hazard exists.

The Town's three groundwater protection overlay districts restrict the establishment or expansion of uses connected with the generation, treatment, or storage of hazardous materials. See Section 4.5 *Groundwater* for a discussion of the overlay districts and groundwater protection. The Town has adopted two additional ordinances regulating hazardous materials: Chapter 108: *Hazardous Materials* and Chapter 326: *Fuel and Chemical Storage Tanks*. The ordinances' function is to educate private sector employees and business owners about proper storing, handling, and disposal methods for hazardous materials where permitted. The Health Department conducts unannounced site inspections at businesses that handle hazardous materials at least once per year with follow-up inspections to ensure that any violations of these ordinances are corrected.

4.12.10 Landfills

The Town's sanitary landfill, located at Osterville-West Barnstable Road and Flint Drive in Marstons Mills, was closed in 1997 to protect groundwater from further contamination. The landfill was capped and extensive site remediation was conducted; the site is perpetually monitored for potential groundwater contamination by the Department of Public Works. The capped landfill site encompasses approximately 64 acres.

Solid waste is now handled at the Barnstable Solid Waste Transfer Station and Recycling Facility, located at the capped landfill site. The Town cooperates with the Town of Yarmouth and SEMASS to dispose of solid waste. The Town also has a municipal recycling program in place to support the State's initiative to remove banned wastes from the waste stream.

4.12.11 Sedimentation

In the Town of Barnstable, harbor channels are the area's most prone to sedimentation. The shifting currents cause channels to fill in at rapid rates, necessitating frequent maintenance dredging. The sandy and gravelly soils on the upland portions of the Town drain well enough that sedimentation is not a problem.

4.12.12 Environmental Equity

As discussed in Section 3, there are several mapped Environmental Justice areas in Barnstable, all within the village of Hyannis. The Environmental Justice areas are some of the most densely populated areas in Town, with a significantly higher percentage of residents living in multi-family or attached single family housing than elsewhere in Barnstable. Efforts to actively engage residents of these areas in open space and recreation planning are essential to ensuring that the development of new recreational programs and facilities will meet their needs.

Past open space and recreation planning efforts by the Town have recognized to need to equitably serve the residents of Hyannis and engage them in open space and recreation planning. The Hyannis Youth and Community Center, which opened in 2009, is located in a

mapped Environmental Justice area and provides affordable recreational opportunities in a safe environment for children and adults. Highlights of the facility include a teen center, after-school study room, open gym time, and public ice skating.

The PDD is currently exploring development of a comprehensive parks plan for the Hyannis area, including the Environmental Justice areas. One of the first efforts has been a planning process focused on revitalizing an underutilized green space in a developed neighborhood referred to as Ridgewood Park. The Town has engaged the community in this Environmental Justice area to transform two open space lots from a public safety and aesthetic

liability into a recreational, social, and ecological asset for the neighborhood. An in-depth neighborhood outreach program to determine future improvements for the park is ongoing.

SECTION 5

Inventory of Conservation & Recreation Lands



Section 5. Inventory of Conservation & Recreation Lands

5.1 Introduction

This section reviews the community goals met by protecting open space, and by what means open space is protected. The balance of this section summarizes the inventory of conservation and recreation lands throughout the Town.

5.1.1 Importance of Protecting Open Space

Open space protection is an important and multi-faceted community planning goal in Barnstable. The protection of open space enhances community character by creating or preserving appealing views, landscapes and vistas. Open space preserves or creates opportunities for passive and active recreation, as afforded by trails, parks and fields. Beyond community character and recreation values, protected open space also serves critical ecological functions which, if lost or degraded, would be difficult or very costly to replicate. These include water recharge for drinking water protection and stormwater management; and pollution attenuation, erosion control and diverse habitats provided by wetlands. The ecological functions of protected open space can partially offset needs for costly infrastructure improvements. Protecting open space also limits development potential in sensitive resource areas, which helps to minimize negative resource impacts associated with some types of development. Open space can offset

Table 11. Summary of Open Space and Recreation Land

| Protected Open Space | 2010 | 2017 | Change |
|---|------------------|------------------|----------------|
| Conservation Land | 6,349.26 | 6,531.14 | 181.88 |
| Land Bank/CPA | 960.06 | 998.39 | 38.33 |
| Private Open Space | 1,181.51 | 1,271.16 | 89.65 |
| State land | 447.35 | 422.89 | -24.46 |
| Conservation Restriction Only | 438.39 | 448.58 | 10.19 |
| Municipal Water District | 233.51 | 237.91 | 4.40 |
| Non-municipal Water Districts | 1,188.60 | 1,188.74 | 0.14 |
| Total Protected | 10,798.68 | 11,098.81 | 300.13 |
| Recreation Land, Other Open Space and Public Land | | | |
| Town Cemeteries | 166.07 | 166.07 | 0.00 |
| Public Trusts | 79.17 | 51.20 | -27.97 |
| Town Recreation Land & Facilities | 112.94 | 107.47 | -5.47 |
| Beaches & Public Landings | 145.14 | 145.14 | 0.00 |
| Municipal use | 934.46 | 814.17 | -120.29 |
| Schools | 289.73 | 280.23 | -9.50 |
| Airport | 602.77 | 619.80 | 17.03 |
| Housing Authority | 54.50 | 52.19 | -2.31 |
| Barnstable County Land & Facilities | 123.11 | 135.11 | 12.00 |
| State Land | 192.22 | 192.81 | 0.59 |
| Federal Land | 1.15 | 1.15 | 0.00 |
| Total Recreation and Other | 2,701.26 | 2,565.34 | -135.92 |
| Private Agriculture & Recreation | | | |
| Chapter 61 | 15.96 | 15.96 | 0.00 |
| Chapter 61A Agricultural | 628.13 | 712.64 | 84.51 |
| Barnstable County Farm | 91.73 | 106.50 | 14.77 |
| Chapter 61B Recreation | 626.70 | 648.62 | 21.92 |
| Total Agriculture & Recreation | 1,362.52 | 1,483.72 | 121.20 |

Source: Barnstable Planning and Development Department and GIS Department
 As noted in the text, many changes in acreage are due to reclassifications of parcels by the Assessing Department

climate change, by providing forests and salt marshes for carbon storage. A strong case can be made that open space protection is good for the local economy by offsetting infrastructure costs, and by enhancing the community's quality of life. These open space benefits bolster property values and the Town's ability to attract visitors. Studies have shown that entrepreneurs in clean,

knowledge-based industries choose where to locate their businesses based, in part, on quality of life factors. All of these benefits of open space protection are considered as part of the 2018 OSRP.

5.1.2 Definition of Protection

Protection of open space ensures that land will remain open space and not be used for another future purpose. The degree of protection afforded to an open space parcel may be influenced by many factors: applicable laws and regulations, use, ownership, how it was purchased, transferred or improved, and the sources of funds used in the transaction. As a result of these many factors, different open space lands may have varying degrees of protection.

For this reason, the 2018 OSRP identifies three categories of open space protection. These categories of protection are used to organize the open space summary information found in Table 11.

Protected Open Space refers to land that has a legal form of protection. This includes land purchased with Land Bank or Community Preservation Act (CPA) funds, the terms of which require a permanent deed restriction. This category also includes all town and private conservation lands, which are protected by deed and often by conservation restriction. Water district land is included in this category because it is protected by district enabling legislation, and the terms of regulatory permits. Article 97 is a state law that protects all land that is dedicated for protection by a Town Council order, which includes land purchased via Land Bank or CPA funds, town conservation land, and publicly-owned water district land. Changing the use of land that qualifies for protection under

Article 97 requires votes of approval from the Conservation Commission and Town Council, and from two-thirds of the state legislature.

Recreation Land, Other Open Space and Public Land is a category of open space that is protected in a sense by its current ownership and use. The open space status of land in this category is deemed highly unlikely to change due to its public ownership and use. The continuity of status is assumed even though the land is not protected by a deed restriction, conservation restriction or other legal instrument. For instance, schools, cemeteries, airport and Housing Authority properties are deemed likely to remain intact due to long-term community needs and planning goals. Disposition of these properties is not anticipated in the foreseeable future, and not within the scope of this OSRP. The public beaches and landings in this category include any such properties that are not already counted under town conservation lands above.

Private Agriculture and Recreation includes all properties that are designated under Chapter 61, 61A or 61B. These properties are dedicated to an agricultural or recreational use, and any change in their status would require a repayment of property tax relief provided under Chapter 61. Any proposed sale would also trigger the Town's right of first refusal to purchase. The requirements associated with a change of use or disposition of property under Chapter 61 are a disincentive to altering their status. The County Farm is listed under this category because it is subject to a long-term lease as an organic farm.

5.1.3 Status of Open Space Protection in Barnstable

As the largest town on Cape Cod, Barnstable covers sixty square miles or roughly 38,500 acres. Of that total land area,

11,098.81 acres (29% of total land area) is protected open space, up 300.13 acres since 2010. Protected open space is shown on Map 9A. Another 2,565.34 acres (7% of total land area) is other public open space, recreation land or other public land, a decrease of 135.92 acres since 2010. Recreation lands, unprotected open space and other public lands are shown on Map 9B. Lands in public or private ownership dedicated to agricultural or recreational uses account for 1,490.30 acres (4% of total land area), up 121.2 acres since 2010. Private agriculture and recreation lands are shown on Map 9C. Overall, the number of acres and variety of lands summarized in Table 11 demonstrate a strong commitment to protecting land for open space and recreation in Barnstable. Additional detail on the inventory of open space and recreation parcels is found in the following appendices:

- Appendix C provides a detailed parcel inventory of all open space and recreation parcels with map and parcel number, management entity, protection status, improvement status, town ownership status, zoning district, and whether it is in a groundwater protection district or Zone 2;
- Appendix D provides a table of Public Access, Recreation and Conservation areas that are a subset of parcels in Appendix C. The table indicates the village, size, management entity, improvements, recreation potential, acquisition funding source and the funding source for improvements and maintenance for these properties.

Over the past several decades the Town's strong commitment to planning for open space and recreation has been guided by a corridors and greenways strategy. The priority upland greenway is the east-west oriented glacial moraine, which roughly follows Route 6. This area is valued for its hilly terrain, forest cover, and wildlife habitat. Many of the Town's significant conservation parcels are located along this greenbelt, including the West Barnstable, Old Jail Lane, Hathaway's Pond, Hyannis Ponds, and Otis Atwood Conservation Areas. The Town's two golf courses add to the significant open space acreage along the corridor. These acquisitions along Route 6 make up the "backbone" of the Town's conservation lands and contribute to regional green infrastructure and Cape Cod Pathways goals.

Additional conservation efforts continue to focus on smaller corridors running north-south and linking to the larger conservation greenway along the moraine. Numerous parcels along the Marstons Mills River, Centerville River, Maraspin Creek, Little River and other sensitive riparian corridors have been preserved. Property acquisitions along Barnstable coastlines support highly productive ecosystems, provide popular recreation opportunities, and preserve the scenic quality of the seashore. Collectively, the conservation of these parcels is essential to the health of Barnstable's coastal resources.

An equally important long-range objective has been the preservation of the Great Marshes in West Barnstable, which are part of the Sandy Neck Area of Critical Environmental Concern (ACEC). In the Great Marshes, large tracts are held as town conservation land; the Barnstable Land Trust, Orenda Wildlife Trust, and Massachusetts Audubon Society also have important holdings in this area. Incremental parcel acquisitions north of Route 6A by

the Town and private conservation groups have contributed to the preservation of this environmentally sensitive area.

Other major open space needs have guided preservation efforts. Lands held by the water districts for drinking water protection represent a large portion of the undeveloped land in Barnstable. Working landscapes, including local farms and cranberry bogs, also are an integral part of Barnstable's landscape.

Collectively, these properties represent a long history of conservation efforts in Barnstable that have produced a varied and well-connected network of open spaces throughout the Town.

5.1.4 Open Space Equity

Ensuring that the Town's open space and recreational facilities and programs are accessible to all areas and populations in town is an important goal of the 2018 OSRP. Barnstable is a large, socially and geographically diverse community. Its seven villages each have a unique character and history of development, and vary in the type and amount of open space and recreation they provide. The Town has a diverse population, including families with small children, young adults, single adults, seniors, people with limited mobility, and people with special socio-economic needs. Each of these groups have different open space and recreation needs, and may have different access constraints.

To ensure open space equity among villages, the 2018 OSRP evaluates open space and recreation needs and opportunities in all seven villages, and identifies priority projects in villages across the Town. The recommendations in the 2010 OSRP complement the

seven village plans contained in the *Implementation Plan for the 2008 Barnstable Comprehensive Plan*. Each village plan addresses similar open space, recreation, scenic character, historic resources, and natural resource protection issues identified in the 2018 OSRP. The village plans represent a comprehensive and equitable approach to addressing the issues unique to each village.

The Town is actively taking steps to ensure that Environmental Justice populations experience fully the benefits of open space protection and community recreation. These populations, due to income constraints or language barriers, may not have open space and recreation opportunities in close proximity to their homes, or may face challenges when accessing open space and recreation facilities in other areas of Town. The newly built Hyannis Youth and Community Center is located in an area mapped as an Environmental Justice area. Hyannis is also the most densely developed of Barnstable's villages and an area identified by Town growth management policies for future mixed-use infill development and redevelopment. Sufficient park and recreation space is needed to support additional growth and accommodate residents, employees, and visitors. A Hyannis parks plan is proposed to address the open space needs of village residents, many of whom are Environmental Justice populations, and to augment an emerging vibrant, mixed-use downtown.

5.1.5 Accessibility of Open Space and Recreation Lands

Under state law municipalities must provide ADA compliant access at town-owned recreation and conservation areas. The Town's

considerable commitment to ADA compliance is demonstrated by the numerous access improvements described in Section 7.3.4. Improvements to access for people with disabilities have been completed or are underway at conservation areas, local beaches, playgrounds and public facilities. Continuing to enhance ADA compliance is identified as an ongoing need in the 2018 OSRP, and steps to accomplish this are addressed in the action plan found in Section 9. The Town has completed an updated ADA Access Self-Evaluation, found in Appendix E. Part II Section I of the Self-Evaluation includes a list of accessibility projects completed by the Town between 2010 and 2017. These include numerous improvements to enhance access and utilization of conservation areas, beaches and recreational facilities.

5.2 Protected Open Space

5.2.1 Conservation Land

The Town Conservation Division develops and updates land management plans for conservation lands under Conservation Commission jurisdiction. Management Plans are reviewed and approved by the Conservation Commission. The Division manages a total of 6531.14 acres¹⁴. Of this, 6,524.56 acres is comprised of 420 parcels of conservation lands and conservation areas, and 6.58 acres is the John Jenkins Forest, which was in private ownership and is now owned by the Town. As shown on Map 9A, conservation land

¹⁴ Table 12 shows 6,349 acres under Conservation Lands. The difference is Sandy Neck, which is conservation land but is not managed by the Conservation Division.

is located throughout the Town and is almost exclusively zoned residential. The increase in conservation land compared with 2010 is largely due to a reclassification of several large parcels at Sandy Neck that previously had been categorized as municipal use, but were re-classified as conservation.

Conservation lands are used for a wide variety of passive recreational activities, including walking, hiking, biking, bird-watching, and cross-country skiing. Hiking trails and pathways found in Conservation areas are shown on Map 10A *Green Infrastructure*. Many of the trails are improved with overlooks, benches and picnic areas. In addition, the Conservation Division has developed interpretive guides for a number of the trails. At the West Barnstable Conservation Area, there is a public shooting range, which is currently closed. The Town is currently evaluating the environmental impacts of lead at the site. Once the process is complete the Town can proceed with appropriate action relative to the lead, and proceed with environmental permitting. A memorandum of agreement is needed between the Town and the state.

5.2.1.1 Sandy Neck Area of Critical Environmental Concern (ACEC)

Sandy Neck Park encompasses 4,700 acres of extensive barrier beach that is accessible via boat or ORV, including the nine acres on the far west side of the Park categorized by the Assessing Department as a beach. Sandy Neck Park is part of the Sandy Neck Area of Critical Environmental Concern petitioned by the Towns of Barnstable and Sandwich and designated by the State in 1978. Sandy Neck Park acreage is apportioned in Table 12 as follows:

- Land Bank/CPA – 33.01 acres;
- Town Beach - 9.1 acres;
- Municipal Property - 135.95 acres;
- Private Open Space – 62.55 acres;
- Conservation – remainder.

A management plan for the Park was developed in 2000. Management activities are overseen by the Sandy Neck Board with staff support from the Town Marine and Environmental Affairs Division.

5.2.2 Land Bank and Community Preservation Act

Land Bank and subsequently Community Preservation Act (CPA) funds have leveraged the purchase of 998.39 acres. The vast majority (932.66 acres) was purchased using Land Bank funds. Since 2010, the Town spent \$1.6 million to purchase or protect with a conservation restriction 51.24 acres (\$31,000/acre). These purchases are summarized on Table 12. Approximately 34.07 acres are open space acquisitions and 17.17 are conservation restrictions.

Table 12. Open Space and CR Acquisitions 2010-16

| Location | Year | Acres | Cost |
|--------------------------------------|------|-------|-------------|
| Baypoint, Cotuit (Perpetual Esmt) | 2010 | 1.05 | \$137,500 |
| Cobb Trust - Hyannis (CPA) | 2011 | 2.50 | \$43,340 |
| Nyes Neck - Centerville - (Gift CPA) | 2011 | -- | 0 |
| Herring Run-Marstons Mills (CR) | 2013 | 1.17 | \$150,000 |
| Tyburski-Centerville (CPA) | 2014 | 2.20 | \$41,000 |
| Harju-Marstons Mills (CPA) | 2014 | 1.05 | \$125,000 |
| Korkuch-Barnstable (CPA) | 2014 | 8.48 | \$265,125 |
| Lowell Park, Cotuit (CR) | 2015 | 16 | \$250,000 |
| Prince Ave – Marstons Mills (CPA) | 2015 | 2.56 | \$275,000 |
| Sandy Neck, Barnstable (CPA) | 2015 | 14.12 | \$295,000 |
| Amaral-Old Colony, Hyannis (CPA) | 2016 | 2.11 | \$8,000 |
| Totals | | 51.24 | \$1,589,965 |

Source: Planning and Development Department

5.2.3 Private Protected Open Space

Private land and resource protection organizations are a significant force in preserving open space in Barnstable and account for a total of 1271.16 acres, an increase of 89.65 acres since 2010. Leading this effort is the Barnstable Land Trust with 731.49, an increase of 69.26 acres from 2010, (and now including the 150.51 acres of the former Mary Barton Land Trust.) Other significant private open space land holdings (unchanged since 2005) include:

- Three Bays Preservation, Inc. – 83.75 acres;
- The Nature Conservancy – 12 acres;
- Massachusetts Audubon Society – 414.10 acres (an increase of 8.15 acres since 2010);
- Orenda Wildlife Trust – 29.82 (an increase of 8.15 acres since 2010), including the Smith’s Dock and Brick Factory sanctuaries.

5.2.4 State Land

State-owned protected open space accounts for 422.89 acres, a decrease of 24.46 acres since 2010. This decrease is due to a correction in the acreage of a large parcel owned by the Massachusetts Division of Fisheries and Wildlife (MDFW). The error in recorded acreage was corrected based on new deed research. Of the total state holdings, 57.37 acres are owned by the Department of Environmental Management, Division of Conservation and Recreation (MDCR), including two forested parcels at Old Stage Road in Centerville and at Route 132 and Mid-Cape Highway in West Barnstable. MDFW owns 365.54 acres that comprise the Hyannis Ponds Wildlife Management Area, along with a six-acre holding at Wequaquet Lake. MDFW also holds a wildlife

conservation easement over the Santuit Pond Conservation Area, which is located in Barnstable and Mashpee.

5.2.5 Conservation Restrictions

Conservation restrictions protect 651.12 acres in the Town. Of this amount, of 448.58 acres are protected solely by a conservation restriction, an increase in 10.19 acres since 2010. Private land with a conservation restriction held by the Barnstable Land trust accounts for 208.09 acres, and private land with a conservation restriction held by the Town accounts for 182.71 acres. The Trustees of Reservations holds a conservation restriction on 57.78 acres.

In addition, there are 202.54 acres of already protected public and private open space with the added protection of a conservation restriction:

- The Town holds a conservation restriction on 57.04 acres of Barnstable Land Trust land;
- The Town holds a conservation restriction on 20.47 acres of water/fire district land;
- The Barnstable Land Trust holds a conservation restriction on 1.02 acres of land owned by Massachusetts Audubon, and on 12.24 acres owned by Orenda Wildlife Trust;
- The Barnstable Land Trust holds a conservation restriction on 100.62 acres of Town-owned open space;
- The Town holds a conservation restriction on 9.13 acres of town conservation land.

5.2.6 Fire and Water District Lands

Five non-municipal fire and/or water districts own 1,188.74 acres of land, an increase of .14 acres since 2010. The districts are:

- Centerville-Osterville-Marstons Mills Fire and Water District;
- Cotuit Fire and Water District;
- Barnstable Fire and Water District;
- Hyannis Fire District;
- West Barnstable Fire and Water District.

Oversight of water districts is provided by a district board of directors and by ratepayers. Each district must hold an annual meeting with ratepayers. Decisions about land acquisition or disposition must be decided by ratepayers and the board of directors at an annual meeting. Water district land is protected by district enabling legislation and the terms of their regulatory permits. Any land disposition would need to be found consistent with these regulations and may also require an Article 97 release.

The Hyannis Water District, the only district owned by the Town, holds 237.91 acres, an increase of 4.4 acres since 2010. The district is managed by the Water Supply Division, an enterprise account-funded division under the Department of Public Works. The Hyannis Water Supply Division was created by action of the Town Council following the acquisition by the Town of Barnstable of the assets of the Barnstable Water Company in May 2005. This Division is responsible for management of the water distribution system primarily utilized by the residents and businesses in Hyannis.

5.3 Other Open Space and Public Land

There are 2565.34 acres of land that function as open space, recreation facilities or other town property but may not have the same degree of protection afforded the protected open space categories noted above. This represents a decrease of 135.92 acres since 2010. These categories of land holdings are described below.

5.3.1 Town Recreation Land and Facilities

Town recreation lands account for 107.47 112.94 acres, a decrease of 5.47 acres since 2010. The decrease is the result of a transfer of the Lowell Park property to the Barnstable Land Trust, which was then transferred back to the Town as municipal land with a conservation restriction. Recreation properties include playgrounds, skate parks, athletic fields not located on school grounds, skating rinks, and community centers. Popular recreational open spaces include Burgess Park in Marstons Mills, which has frontage on Hamblin Pond, picnic areas, an 18-hole Frisbee golf course, and playground equipment. Hathaway's Pond in Barnstable Village includes public swimming areas, trails popular with dog-walkers, picnic tables, and hosts a number of Recreation Division events and classes.

The Recreation Division controls waterfront property at Hamblin Pond, Hathaway's Pond, Crooked Pond, and Long Pond. The Recreation Department also manages additional property classified by the Town Assessor as town beaches.

There are two town-owned 18-hole golf courses in Barnstable. Together, the two courses account for more than 280 acres of open

space used for recreation. The Hyannis Golf Course was acquired with Land Bank funds in 2005, and is classified in the inventory as Land Bank property. The land under Olde Barnstable Fairgrounds in Marstons Mills, was acquired in 1989 with a General Fund loan, is classified as general municipal . The course was built in 1991 and opened in 1992. Since 2007 the golf courses have been managed by the Golf Division, which operates as an enterprise fund, with the support of the Golf Committee.

5.3.2 Beaches and Public Landings

There have been no changes in the number or size of beaches and landings in the Town since 2010. There are 88 public ways to water in Barnstable, including beaches, landings, and other access ways. Town-owned beaches and landings account for 145.14 acres. Of this amount, beaches account for 132.75 acres and public landings, 12.39 acres. Tables 13 and 14, respectively, show beaches and landings as listed in the Assessor’s database. Some of the properties function as both beach and landing, or serve as a beach but are part of a conservation area.

Most beaches and landings are residentially zoned. Notable exceptions are the Marine Business District, which includes Barnstable Harbor, and the Hyannis Harbor District, which includes Hyannis Inner Harbor. Some have protection by deed or by gift, association with the Town or by other means.

Other properties used as beaches but not listed as such in the Assessor’s database include:

- Ropes Beach (also a landing),
- Hathaway’s Pond,

- Lovell’s Pond,
- Long Beach Conservation Area,
- Crocker Neck Conservation Area, and
- Long Pond Beach in Centerville.

Beaches managed by the Recreation Division include: Covells, Craigville, Dowses, Hamblin Pond, Hathaway’s Pond, Joshua’s Pond, Kalmus, Loop, Lovell’s Pond, Millway, Keyes Memorial, Veteran’s Park and Lake Wequaquet. Conservation areas used as beaches are managed by the Conservation Division. Town landings, ramps and marinas are managed by the Marine and Environmental Affairs Division and Harbormaster.

| | |
|-----------------------|-------------------------|
| Covell’s Beach* | Keyes Memorial Beach* |
| Craigville Beach* | Sandy Neck (9.1 acres)* |
| Loop Beach* | Millway Beach* |
| Dowses Beach* | Wequaquet Lake* |
| Hamblin Pond* | Veteran’s Park Beach* |
| Joshua’s Pond* | Kalmus Beach* |
| Eugenia Fortes Beach* | Ocean Avenue Beach* |

Sources: Barnstable Ways to Water Program Map

*Listed as a beach in Assessor’s database

| Table 14. Barnstable Town Landings, Boat Ramps, Marinas | |
|---|----------------------------------|
| Hamblins Pond Landing* | Scudder's Lane Boat Ramp* |
| Hayward Landing* | Shubeal Pond – Willimantic Drive |
| Hoopers Landing | Navigation Road |
| Lewis Bay Landing | Wequaquet Lake Boat Ramp |
| Little River Landing* | Bay Shore Road Boat Ramp* |
| Lovell's Pd Boat Ramp* | Gateway Marina |
| Middle Pond Landing* | Millway Boat Ramp* |
| Blish Point Boat Ramp | East Bay Road Boat Ramp* |
| Marina at Prince Cove* | Daisy Hill Landing* |
| Cotuit Town Dock* | Cordwood Landing* |
| Pleasant Street Dock | Bismore Park Marina |
| Ropes Beach* | Bay Street Boat Ramp* |
| Round Pond Landing* | Red Lily Pond* |
| Santuit Road Landing* | Barnstable Marina* |
| School Street Bulkhead | Long Pond – Marstons Mills* |
| Meadow La/Smith Creek* | Wianno Avenue |
| Garrett's Pond at Oak St* | Hyannis Harbor |

Sources: Barnstable Ways to Water Program Map *Listed as a landing by Assessor

5.3.3 Other Town Land and Facilities

Land categorized as municipal use declined by slightly more than 120 acres compared with 2010. This is largely due to corrections on several large parcels on Sandy Neck and at the Bridge Creek Conservation Area that were previously shown as Town Municipal, but were actually Town Conservation. Another parcel formerly listed as municipal was added to cemetery use.

The Town holds other land and facilities that include large areas that are currently include open space or recreation facilities. These include:

- *Barnstable Municipal Airport* – 619.80 acres, an increase of 17.03 acres compared with 2010. The municipal airport is Cape Cod's largest airport with scheduled passenger service. Of the total area, a significant amount of open acreage exists around the airport terminal and runways. The airport is managed by the Barnstable Airport Commission, the members of which are appointed by the Town Council.
- *Barnstable Schools* – 280.23 acres, a decrease of 9.5 acres compared with 2010. The decrease is largely due to the reclassification of the Senior Center parcel that had previously been listed as a school property. School properties include school buildings and grounds, encompassing numerous athletic and playing fields. The property is under management by the School Department and elected School Committee.
- *Other Municipal Property* – 814.17 acres, a decrease of 120.29 acres since 2010. This land consists of other town properties

and buildings located throughout town and under the management of the Town Council and Town Manager.

5.3.4 Public Trusts

The Town holds 51.20 acres of land in two trusts established by bequests for designated community purposes. The Lombard Trust totals 42.13 acres in West Barnstable. The trust was established in 1794 with the land intended to be rented out and the rental income used to benefit the poor. The Town leases the publicly used portions of the land from the trust and the income is used to offset utility costs and other expenses for economically disadvantaged citizens. These lands are held in trust in perpetuity.

The Cobb Trust was established by the will of Enoch T. Cobb in 1876. The purpose of the trust is to provide special benefits for public school students of the Town of Barnstable. Cobb Trust land is leased out at fair-market value and the resulting revenue is invested, with the interest distributed to the public schools. Cobb Trust land consists of 9.07 acres, a decrease of 27.97 acres compared with 2010. The decrease is likely due to a recent transfer of land from the Trust to the Community Preservation Committee for housing, recreation and open space purposes; as well as the sale of trust parcels to a private developer at the site of the former Mitchells Steak House. The remaining land in Barnstable is under the purview of the Cobb Trustee, with oversight by the Probate Court.

5.3.5 Barnstable County

Barnstable County has 135.11 acres of land and buildings in the Town, an increase of 12 acres compared with 2010. This includes the County Complex of Superior and District Courthouses, Cape Cod Commission property, Registry of Deeds and Probate Courthouse, District Attorney's Office, and former Barnstable County Jail. This number does not include the Barnstable County Farm/Cape Cod Organic Farm, which is included below as land with agricultural use protection. Lease or disposition of County property is subject to the Uniform Procurement Act, M.G.L. Chapter 30B; the three elected County Commissioners must vote to declare property as surplus prior to disposition.

5.3.6 State and Federal

State unprotected land includes 192.81 acres in 30 parcels owned by the state. The Cape Cod Community College is built on 89 acres of state-owned land in Barnstable and West Barnstable. The Hyannis Transportation Center is on more than 14 acres of state-owned land in the Hyannis Transportation District (TD). Additional state-owned land includes the Massachusetts Department of Public Works properties at the Route 6/Route 132 interchange. The only federally owned property is the 1.15-acre Hyannis Post Office.

5.4 Lands Under Agricultural or Recreation Protection

There are 1,490.30 acres of land in Barnstable under protection for agricultural or recreational use, an increase of 114.62 since 2010.

The majority of this amount, 1,377.22 acres, is forest, agriculture or recreation land protected under Chapter 61, 61A or 61B, respectively. The remaining 113.08 acres are dedicated to agricultural use. There are no properties participating in the MDAR Agricultural Preservation Restriction Program in the Town of Barnstable.

5.4.1 Barnstable County /Cape Cod Organic Farm

The Barnstable County Farm consists of 106.50 acres located east of the County court complex. The farm had been used for growing by inmates when the County jail was in use. In 2009 the County entered into a three-year contract with Cape Cod Organic Farm, a certified organic farm, to lease a portion of the site in exchange for making improvements to the property. The County Cooperative Extension Service still uses a portion of the property as a tree farm.¹⁵

5.4.2 MGL Chapter 61, Forestry Land

Massachusetts General Laws (MGL) Chapter 61 offers significant local tax benefits to property owners willing to make a long-term commitment to using land for forestry purposes. In exchange for tax benefits, the municipality in which the land is located is given the right to recover some of the tax benefits afforded the owner when the land is removed from classification and an option to purchase the property should the land be sold or used for non-forestry uses.

¹⁵ [Cape Cod Times](#). "Organic farmer wins lease for county land." February 27, 2009

Eligible parcels must consist of at least 10 contiguous acres of land under the same ownership and be managed under a 10-year management plan approved and certified by the State Forester. There are 15.96 acres of land protected under MGL Chapter 61.

5.4.3 MGL Chapter 61A Agricultural/Horticultural Land

Similar to MGL Chapter 61, Chapter 61A offers local tax benefits for property used for agricultural or horticultural purposes. Parcels must be at least five contiguous acres in the same ownership actively dedicated to agricultural or horticultural use. There are 712.64 acres classified under MGL Chapter 61A, an increase of 84.51 acres over what was reported in 2010. This acreage is used for cranberry growing, nurseries, a pasture, wood producing, vegetable crops, among other uses.

5.4.4 MGL Chapter 61B, Recreation Land

The recreational land classification program under MGL Chapter 61B extends the same tax benefits as provided under Chapters 61 and 61A above to property owners willing to make a long-term commitment to preserving land in an undeveloped condition or for use for outdoor activities. Property must consist of at least five contiguous acres of land under the same ownership in order to qualify for and retain classification as recreational land under Chapter 61B.

Presently there are 648.62 acres classified under Chapter 61B, an increase of 21.92 acres from 2010. The bulk of this is used for the Oyster Harbors, Wianno, Cummaquid and Hyannisport golf courses.

Another 25+/- acres is devoted to horses, and approximately 45 acres is used for nature viewing. The West Barnstable Deer Club has a 10-acre hunting preserve.

5.4.5 Shellfish Propagation

In addition to land area, the Town has established designated land under the ocean for the purposes of public and private propagation.

5.4.5.1 Private Aquaculture Grants

Currently there are 52 private aquaculture licensees that grow on approximately 152.98 acres of private licensed area. Private propagation efforts focus on growing quahogs and oysters for commercial sale. Shellfish grant areas are closed to the public for the purposes of recreational shellfishing.

5.4.5.2 Shellfish Relay Areas and Recreational Shellfishing Areas

Public propagation efforts include seeding of propagation areas and the successful shellfish relay programs. The relay programs take contaminated shellfish stock and relocate it to designated shellfish relay areas where they can remain protected for a period of time for depuration. After depuration the stock can be harvested.

Recreational shellfishing is permitted in all coastal areas that are not designated as private grants and are not closed due to high concentrations of seed, water quality concerns, propagation projections, or other purposes.

Relay areas and areas designated as significant shellfish habitats are currently subject to an overlay district intended to maintain public access along the shore by prohibiting the construction of new permanent docks and piers. The overlay district covers 109 acres.

5.5 Other Institutional Holdings

As noted previously, Barnstable is home to many regional institutions. The properties of institutions not included in the previous categories are not considered open space or recreation lands. However they may be significant due to size or location and should be monitored for any change of use or disposition. These include:

- Barnstable Housing Authority owns 52.19 acres of land developed with subsidized housing. The decrease in acreage from 2010 is owing to a reclassified parcel that belongs to the Hyannis Water Department;
- Cape Cod Community College has an 89-acre campus in Barnstable and West Barnstable. This property is owned by the state;
- Cape Cod YMCA is located in a newly renovated building on a 19.2-acre parcel of land in West Barnstable leased from the Town;
- Cape Cod Hospital covers 15.99 acres in the Hyannis Growth Incentive Zone, and an additional 40.58 acres on Attucks Way permitted for development of an ambulatory care center;
- Cape Cod Conservatory of Music and Arts has a 14-acre parcel in West Barnstable with structures owned by the private non-profit.

SECTION 6

Community Vision



Section 6. Community Vision

6.1 Overview

A strong community vision can imbue a plan with purpose and provide the forward momentum needed for effective implementation. It can be a challenge to discern a unified community vision for open space and recreation needs when there are a number of diverse community interests and perspectives based on age, location, income, interests and mobility, among other factors. Add to this difficulty the fact that some stakeholders are unable or not inclined to participate in outreach efforts designed to garner their input and perspective. For these reasons the community vision for the 2018 OSRP is framed as a set of broad principles, which in turn provide the basis for the more defined goals, objectives and action items articulated in the subsequent sections of this plan.

A purposeful vision is not simply a wish list, but rather is a pragmatic assessment of future potential rooted in an informed awareness of community needs and an understanding of inherent tradeoffs. The Town of Barnstable undertook a multi-faceted approach to articulating a community vision for the 2018 OSRP. This approach involved outreach to town committees working on related topics, an in-depth and widely circulated community survey, detailed review by the LAPC which has broad-based community representation, and consideration of locally-approved planning documents that provide a consistent context and interrelated goals to guide open space and recreation planning.

6.2 Goals of Preceding Town Planning Documents

The [Barnstable Local Comprehensive Plan](#) articulates a clear land use vision, which concentrates future development in centers where infrastructure is or can be put in place, and directs growth away from open space and sensitive natural resource areas.

The 2014 [Community Preservation Handbook](#) identifies specific goals for the use of CPA funds that are relevant to the OSRP. CPA goals for open space include protecting land bordering wetlands, permanently protecting significant wildlife habitat, preserving scenic, agricultural, archaeological or wooded character, protecting wildlife corridors, and enhancing public access. The handbook lists as recreation goals support for diverse user groups, providing multi-generational recreation activities and facilities, maximizing the utility of town land and facilities, and providing pathways for safe non-motorized transport.

The 2009 [Coastal Resource Management Plan for Three Bays and Centerville River](#) calls for protection of sensitive coastal resources, and recognizes the need to balance enhanced public access opportunities with measures to protect sensitive resource areas from over use and encroachment. The Town's wastewater management plans set forth action items for protecting ground and surface water quality.

The 2010 [Barnstable Preservation Plan Update](#) provides an inventory and promotes the protection of the Town's historic, cultural and scenic resources. This plan expands on many of the same historic preservation goals outlined in the CPA Handbook.

The illumination of issues and goals by these related plans makes it possible to focus the vision and purpose of the 2010 OSRP on

specific open space and recreation needs of a diverse and growing community. A key first step in understanding those needs was the community survey.

In addition to the guidance provided by these reports, the LAPC maintains a list of criteria it applies to the prioritization of parcels for open space protection. These criteria, which complement those used by the Community Preservation Committee, are listed below in no particular order of priority:

Community Character: Historical/Archaeological/Scenic

- Special Historical/Archaeological/Scenic feature
- Significant scenic vista
- Ancient Native American or historic site
- Geological importance

Drinking Water Protection

- Adjacent to a public or private water supply
- Area in high density residential development on private wells
- Protect present drinking water quality for future
- 400-ft radius to zone of contribution
- Potential for upgrading water supply

Recreation: Passive and/or Active

- Includes active recreational uses such as playing fields
- Includes passive recreational uses such as hiking, walking trails, horseback riding, bike riding, bird watching (ATV and similar uses excluded)

- Compatibility and proximity to existing systems such as Cape Cod Pathway
- Endorsement from recreation division or commission
- Provision for public access

Proximity to Inland and Coastal Water Bodies

- Implications for groundwater protection including indications of nutrient enrichment to water bodies
- Preservation of land or marsh adjacent to river, pond or lake
- Wildlife access to a fresh water source
- Public access to water (parking, trail access, portage) for boaters, fishermen, etc.
- Likelihood of sewerage in next ten years
- Distance from the water body

Urban Greenspace

- Primarily serving residents in Town's more densely developed neighborhoods
- Accommodates general public in defined mini-parks and similar small areas

Wildlife Protection

- Includes wetlands, marsh, existing woodland, forests, meadows, farmland, herring runs, vernal pools, etc.
- Contiguous to other parcels protecting habitat
- Protects either "general" habitat or a specific habitat for rare/endangered threatened species
- Consideration for significant size of parcel

6.3 Results of the Community Survey

An online community survey was available and responses were accepted over a sixty-day period, from June 12 through August 15, 2017. At the end of this period there were 570 completed surveys for tabulation. Among survey respondents, 79 percent identified themselves as year round residents, 11 percent as part-time residents, and 28 percent as people who work in Barnstable. Many steps were taken to encourage broad participation in the survey. A link to the survey was posted prominently on the Town of Barnstable website home page and town Facebook page. The Town Manager included several messages about participation in the survey in his weekly newsletter. Other steps taken to encourage survey participation from a broad cross section of citizens included:

- Sending an announcement of the survey to all seven civic associations, the Hyannis Area Chamber of Commerce, the Hyannis Business Improvement District and all town employees;
- Leaving copies of the survey announcement at the town Senior Center;
- Sending an announcement to local radio and print media in the vicinity and ensuring notice in the Barnstable Patriot, a widely read local paper;
- Posting an informational slide about the survey on the local cable access channel; and
- Discussing the survey on local televised shows, Barnstable Today and Barnstable This Morning.

Three-quarters of respondents to the survey indicated that they are in households without children, 70 percent are fifty years or older, and 35 percent are retired. Roughly one quarter of respondents are between the ages of eighteen and forty-nine.

Some but not all of the survey questions were carried forward from the 2010 survey. In those cases, survey results are compared. Additional questions about pathways and recreation programs were included in the recent survey.

Some of the key survey findings are summarized below. The survey question and tabulated responses are found in appendix A.

Protection of open space to meet multiple community purposes continues to be of definitive importance.

An overwhelming 88 percent of respondents feel there is a need to preserve additional open space in the Town, down slightly from 90 percent in 2010.

Respondents were asked to rank the importance of different purposes of open space protection. The *protection of drinking water* was ranked as the highest priority for open space protection. *Preserving land from development* and *protecting environmental resources* were closely ranked second and third, respectively; *providing wildlife habitat and biodiversity* was ranked fourth and *providing recreational opportunities* was ranked fifth.

Water access for swimming, boating, shellfishing/fishing, or kayaking continues to be the most frequently used open space and recreation resource in Town. Waterfront areas and natural open spaces and trails are the most frequently used open space and recreation areas among respondents. Swimming at a beach and walking for pleasure are activities most frequently undertaken among respondents

Nearly 75 percent of respondents visit waterfront areas one or more times per week; 40 percent visit natural open spaces and trails

that frequently, and 31 percent said they use sports fields, tennis courts and golf facilities one or more times per week.

When asked to indicate three activities they participate in, 56 percent of respondents said walking for pleasure, 23 percent said hiking, 51 percent said swimming at a beach, and 36 percent said biking. Other waterfront activities with frequent participation were fishing (17 percent), boating (45 percent), and shellfishing (15 percent). A wide range of other activities received lower indications of participation.

When asked to indicate what types of activities they would most like to participate in if facilities are available at no cost and with easy transportation, the distribution of desirable activities did not change appreciably. This seems to indicate that respondents do not see availability of facilities, money or transportation as barriers to enjoying desired activities.

Survey respondents are somewhat less satisfied with the condition of fields and facilities for various user groups compared with respondents in 2010.

43 percent indicated they were satisfied with the facilities/places for youth under age 18 to play, while 15 percent said they are not satisfied and 41 percent don't know. This response seems to reflect the large number of households without children represented among respondents, and is significantly different from 2010 when nearly 73 percent of respondents said they were satisfied.

53 percent are satisfied with places in Town for adults to play and recreate, and 30 percent said no, and 17 percent don't know. 63

percent said they were generally satisfied with the condition of recreation facilities they or their family members use, down from 79 percent in 2010.

In order to improve the condition of recreational facilities, respondents support maintenance or upgrading of existing facilities over building of new facilities by a margin of 2 to 1.

Respondents identified barriers to using existing pathways in town, and indicated support for prioritizing development of multi-purpose pathways over single use pathways.

Respondents indicated that lack of trails and connections, lack of knowledge of where trails are located, and lack of signage and trail markers were the most significant barriers to trail use. When asked to prioritize a type of trail for development, 80 percent indicated development of multi-use trails, while 50 percent responded bike routes and nature trails, respectively (respondents could choose all that apply)

Respondents are not heavy users of town recreation programs, but most respondents indicate that such programs should be funded mostly from tax dollars with some funds from user fees.

Respondents indicated 1 or 2 participants in town programs across age groups, however only 2/3 of survey respondents answered this question. When asked how town recreation programs should be funded, 45 percent indicated they should be funded mostly from tax dollars with some user fees, while 29 percent thought that user fees should account for most of the cost with some funds from tax

dollars. Only 10 percent or fewer thought such programs should be funded solely from tax dollars or solely from user fees.

Survey respondents were provided an opportunity for open comments. The comments generally reinforced the responses to survey questions: some expressed concern about excessive town expenditures, the need for programs to address opioids, the need for affordable housing, comments about programs and facilities maintenance, the need for more and safer bike lanes and bike friendly improvements, and the re-opening a gun range.

6.4 Planning Principles Guiding the 2018 OSRP

Based on the survey responses, the contributions of local officials and facilities managers, and in consideration of approved local plans and programs, the following principles provide the guiding vision for the 2018 OSRP:

- 1. Preservation of open space for protection of drinking water resources, and for the protection of other natural, historic and scenic resources is a community-wide priority.***
- 2. Protection of open space should continue to be an integral component of the Town's efforts to manage land use and the resulting effects of wastewater and congestion. Acquisition of appropriate parcels for municipal wastewater treatment should be prioritized in this effort.***
- 3. Public access to fresh and marine waterfront areas, for the purpose of enjoying a variety of activities, is a high community priority. The Town should seek to expand those opportunities.***
- 4. The Town should continue to expand and improve facilities and programs to accommodate active and passive recreation opportunities for a diverse, multi-generational community.***
- 5. Opportunities for protection or restoration of land dedicated to farming and agricultural uses, and for market development of locally grown products, should be preserved and encouraged.***



SECTION 7
Assessment of Needs

Section 7. Assessment of Needs

7.1 Summary of Resource Protection Needs

7.1.1 Protection of Public Water Supply

Barnstable has taken a strong regulatory stance to protect the public water supply from the harmful effects of nutrient loading. The Groundwater Protection Overlay District established minimum lot sizes to limit build-out and protect groundwater. Town health regulations limit the number of bedrooms for residential development and redevelopment in watersheds of estuaries with established nitrogen thresholds. These regulatory measures are intended to control the negative effects development can have on water quality. However, these efforts will need to be augmented by acquisition and land management activities to continue to protect the quality and supply of public drinking water.

According to best available information, continued land acquisition is needed to achieve compliance with the MassDEP requirement for a 400-foot protective barrier around all wells in a Zone I. Eleven of twelve wells in the Hyannis Water District and one well in the COMM District do not meet the 400-foot protective barrier required by MassDEP. The Hyannis Water and COMM districts are actively seeking out new property to enhance their supply capabilities. The Cotuit Fire District and BFD are not actively seeking new property, although that could change based on demand or other changing conditions.

The protection status is not known for all land within the fire and water districts. At present, most water district land is not protected by a conservation restriction. However, in most cases water district land is protected by state drinking water laws and by Article 97. For the private districts, and any disposition must be consistent with the respective district's enabling legislation and approved by a vote of the rate-payers at an annual meeting. The Hyannis Water Department is a town department and therefore any land disposition requires a vote of Town Council. These requirements, in combinations with the aforementioned state and local regulatory measures, provide for the protection of public drinking water resources.

The Hyannis Water system needs legal research conducted on land it owns to determine the terms under which parcels were purchased, any allowances or limitations on use, any easements or restrictions, and whether parcels are available for any form of disposition. In the future, the department may consider limited disposition of land without wellhead protection value to acquire more sensitive or strategically important parcels.

In April 2011, the Hyannis Water Department conducted a water quality study. The preliminary results were:

- Zone I's that are not owned by the Town should be acquired;
- The Barnstable County Fire Training Academy continues to present a significant danger to water quality as do some of the commercial uses off Old Yarmouth Road;
- Sewering should happen around the Straightway and Hyannisport wells due to the lot size and the concentration of septic systems; and

- A list of priority properties that should be acquired to protect Hyannis’s water was generated.¹⁶

Another open space issue for water districts is the need for monitoring and management. Illegal dumping and use of motorized vehicles are persistent problems on water district lands.

Management plans and implementing resources are needed to:

- Explore use of conservation restrictions to protect water district property;
- Review the Town’s Groundwater Protection Overlay Districts to determine whether revisions are needed to ensure adequate control of land uses that could be deleterious to public drinking water supply;
- Explore creative options for monitoring and enforcement, such as volunteer-based programs;
- Continue partnerships with the Town and local private land trusts for land acquisition, clean-up and stewardship;
- Protect water district lands from forest fires; and
- Clarify legal and desirable public access for non-detrimental activities.

7.1.2 Protection of Fresh and Marine Surface Water Bodies

Barnstable’s fresh and marine surface waters are valuable ecological and recreational resources and are truly important “open spaces” used and enjoyed by the community. Access to these water bodies

for passive and active uses is an integral part of community living. Heavy use of the water bodies and their shorelines, coupled with dense development in the watersheds surrounding them, can result in unintended degradation of vegetation, water quality and animal and plant life. The Town’s land use policies as well as strategies for open space acquisition and management should continue to protect the Town’s fresh and marine surface waters.

The Town’s forward progress in implementing measures to control nutrient loading from watershed sources is critical to the health of fresh and marine surface waters and should continue, in concert with the 208 Areawide Water Quality Management Plan Update developed by the Cape Cod Commission. At the same time, efforts are needed to monitor and address instances of cyanobacteria and persistent algal blooms in freshwater ponds, and to understand the potential threat caused by contaminants of emerging concern.

Continued strict adherence to the Town’s wetlands protection regulations is needed to protect bordering vegetative wetlands as well as other wetland resources and the habitat values they support.

The *Coastal Resource Management Plan: Three Bays and Centerville River Systems* contains a number of recommendations for protecting natural resource values associated with marine surface waters. Swift implementation of the plan’s recommendations is needed, including recommendations to:

- Protect coastal landforms from erosion;
- Prepare for impacts associated with relative sea level rise;
- Promote open space and habitat protection;

¹⁶ Deb Krau, former Chair, Hyannis Water Board, personal communication, September 8, 2017

- Promote land stewardship and Best Management Practices (BMPs) for site alteration;
- Develop BMPs to eradicate invasive species.

Freshwater ponds and lakes are sometimes referred to as windows to the groundwater aquifer. Data collected for the Town by the UMASS-Dartmouth School for Marine Science and Technology document mesotrophic or eutrophic conditions in roughly half of the ponds tested. At a minimum, consistent long-term monitoring data are needed to track the health of ponds and lakes and should continue.

The Town Coastal Health Resource Coordinator monitors water quality in ponds from May through October. In addition, the Town has undertaken special studies and remediation measures in some ponds, such as Lovell’s Pond, Lake Wequaquet and Bearses Pond. Ongoing monitoring will also enable the Town to assess the effectiveness of measures to remediate eutrophic or other conditions that pose a threat to public health.

The degree of impairment in some ponds is significant and requires long-term action; and the number of water bodies that need to be addressed through management or remediation is growing. These factors place a strain on town resources and departments involved in lake and pond management and remediation. Coordination among these departments is a priority. As a first step, standards are needed to assist town departments in prioritizing freshwater bodies in need of remediation.

7.1.3 Protection and Enhancement of Wildlife Habitat

The BCP defines green infrastructure as “an interconnected network of environmentally significant areas, protected open space, other open lands and working landscapes that retain ecological functions, protect water quality, support the growth management strategies of [the Barnstable Comprehensive] plan and contribute to the overall quality of life in Barnstable.” Among the ecological functions enhanced by linkages between green spaces are core habitats and habitat fragments.

A comparison of protected open space in the Town with areas of sensitive habitat shows instances of fragmentation of sensitive habitat areas and encroachment into other areas. The BCP includes a *Corridors and Centers Concept Map* that envisions green corridors to restore linkages between areas of sensitive habitat or habitat fragments.

The BCP further identifies the following needs to achieve green space connections and reconnections:

- Use the BCP analysis and maps as a guide to acquiring land;
- Explore all opportunities to establish greenway linkages and reconnect habitat fragments, including easements, TDR, and undevelopment as well as purchase of open undeveloped land; and
- To develop a green infrastructure plan that will identify and prioritize opportunities for green linkages and habitat connections and will provide strategies and identify resources for achieving priority linkages.

Section 4 summarizes some of Barnstable’s extensive wildlife resources that exist despite intense development and fragmentation of habitat in some areas of the Town. Additional needs associated with the protection and enhancement of wildlife that should be addressed in the Town’s open space planning efforts include:

- Ensuring that management plans for conservation areas and for other large open spaces include strategies to protect and enhance wildlife habitat; and
- Ensuring that all projects subject to permit review by the Town, not just those in wetlands jurisdiction, comply with requirements for protection of Rare and Estimated Habitats as defined and mapped by the MA NHESP.

7.1.4 Land Protection

Public and private funding sources available for land acquisition face constraints imposed by economic conditions as well as competing community needs. To ensure the most effective use of limited resources, land protection decisions should be based on clear criteria reflecting community needs, and should fully consider the full range of protection strategies.

7.1.4.1 Land Protection Criteria

Given scarce resources and competing needs, the process and criteria for prioritizing the Town’s land acquisition and protection decisions should reflect a comprehensive evaluation of recreation, conservation and resource protection needs.

Community Preservation Act (CPA) funds administered by the Town’s Community Preservation Committee (CPC) continue to be the main municipal financial resource for open space protection. The CPC uses the following criteria in assessing open space protection proposals purchased with CPA funds. Acquisition proposals that address as many of the following specific criteria as possible will receive preference in allocating CPA open space funds:

- Protecting land bordering on wetlands in order to assist in minimizing or eliminating eutrophication of habitats;
- Permanently protect important wildlife habitat, including areas that are of local significance for biodiversity,
- Contain a variety of habitats, with a diversity of geologic features and types of vegetation,
- Contain a native habitat type that is in danger of vanishing from Barnstable,
- Preserve habitat for threatened or endangered species of wildlife
- Preserve scenic, agricultural, historic, archeological or wooded character;
- Provide opportunities for passive recreation and environmental education;
- Protect or enhance wildlife corridors, promote connectivity of habitat or prevent fragmentation of habitats;
- Provide connections with existing trails or potential trail linkages;
- Preserve scenic vistas and qualities of lands bordering a scenic road;
- Protect embayments or coastal water quality or salt surface water quality;
- Protect drinking water sources including wellhead protection area Zone I as defined in 310 CMR 22.00;
- Provide flood control/storage;

- Preserve important surface water bodies, including wetlands, vernal pools or riparian zones;
- Provide public access; and
- Provide pocket parks and urban open space.

While comprehensive, this list of criteria should be periodically reviewed to ensure that it fully reflects community needs.

7.1.4.2 Land Protection Strategies

In addition to use of limited CPA funds, a full range of, regulatory and non-regulatory land acquisition strategies will continue to be necessary to maximize open space protection opportunities. These include:

1. Fee Acquisition

- Expanding use of alternative methods to acquire fee interest in open space including: donation, bequest, bargain sale, tax title transfer, and use of a reverter clause;

2. Less than Fee Acquisition

- Expanding use of measures to protect open space with less than fee interest: conservation restrictions, easements, options to purchase, rights of first refusal, tax deferral programs, lease arrangements and other tax incentive programs to encourage private property owners to protect their property;

3. Regulatory

- Incorporating open space protection measures in regulatory reviews of residential and commercial development and redevelopment projects;
- Seeking removal of existing built structures on key public and private parcels for open space protection, traffic mitigation or aesthetic benefits;

4. Property Tax Relief

- Use of Chapter 61 designation or other form of differential tax assessment;

5. Private Land Conservation Organizations and Landowners

- Continue working with local land conservation organizations to identify, track and undertake land protection and stewardship; and
- Undertaking public education to ensure that individual private landowners are aware of the full array of opportunities available to protect their land. The Town could work with local and regional land conservation organizations to compile a publicize a fact sheet regarding the full range of land protection tools available to property owners interested in land conservation.

7.1.5 Opportunities for Agriculture

Preserving land for farmlands was identified as very important or important to seventy percent of community survey respondents. The Town has a number of active farms, notably the 90-plus acre Cape Cod Organic Farm. Renewed interest in buying local produce

has led to the success of the *Osterville Farmers Market* and the *Happy Hour Meets Farmers Market* that take place each week during growing season. The Town Agricultural Commission had previously expressed interest in developing a *Right to Farm* ordinance that would promote agriculture-based economic opportunities, and protect farmlands within the Town by allowing agricultural uses and related activities to function with minimal conflict with abutters and Town agencies.

Stemming the loss of agricultural activity and expanding the amount of land available for farming is an issue of regional importance. The Association to Preserve Cape Cod (APCC) has been working for several years to promote agricultural activity on Cape Cod. APCC reports that Cape Cod has lost seventy percent of its working farmlands since the 1950's, from 21,000 acres of farmland in 1950 to less than 6,000 acres today. The Barnstable County Cooperative Extension Service sponsors a Cape Cod Buy Fresh Buy Local website to support market opportunities for local growers. The Cape and Islands Farm Bureau is focused on developing opportunities to make farming more profitable. With strong community interest, prime agricultural soils and large open areas in the western part of Town, Barnstable is poised to take advantage of regional interest and opportunities to re-energize agricultural activity in Town.

Horticulture

Horticulture as an important and expanding passive recreational activity in Barnstable. Distinct from farming and agriculture, gardening is recognized as an immensely popular and beneficial form of recreation locally and nationally, with potential for nutrition and health benefits.

Barnstable's passion for gardening is reflected in the many businesses, garden clubs, educational events and activities that gardening enthusiasts support. The Cape Cod Hydrangea Festival has become an important annual event. The Festival successfully increases interest in horticulture, creates important business opportunities and benefits non-profits as well.

The Cooperative Extension Program, located in Barnstable Village, provides valuable information and technical advice for gardeners. The popularity of the Master Gardener Program and the Buy Fresh Buy Local initiative also reflect the strong interest in horticultural education and resources.

At the residential level, the benefits of community gardening should be expanded, to allow opportunities for community garden plots in each village, and particularly near Environmental Justice communities. A "Barnstable Grows" initiative would network current horticultural resources and organizations, expand school gardening programs, link to appropriate cape health care initiatives, promote multigenerational gardening opportunities, develop a community garden system for our seven villages and develop supportive gardening programs for environmental justice populations.

7.2 Summary of Community Open Space and Recreation Needs

The 2017 Statewide Comprehensive Outdoor Recreation Program (SCORP) survey provides an assessment of the supply and demand of open space and recreation facilities for the state and for its sub-regions, including the Cape and Islands.

The SCORP provides important information about needs of special groups such as middle and high school students and underserved populations. One of the Outdoor Recreation goals identified in the SCORP is to provide increased access to populations with special needs, including youth, seniors and people with disabilities. Middle and high school students surveyed for the SCORP identified the following most common recreational pursuits: walking, running and jogging; swimming; and biking. Youth survey respondents were asked to indicate what would increase outdoor activity. The top three answers were to provide more opportunities close to home, provide equipment for sports activities, and provide spaces just for people their age. The survey results also indicated support for more beaches and hiking trails accessible to youth. Facilities for team sports are also important, particularly for male youth and younger children. Overall the SCORP survey found that youth and adults are looking for more water-based recreation opportunities and more trails.

The SCORP provides a regional assessment and should be augmented with information specific to the Town. The community survey is one source of information about local recreation needs. The SCORP findings comport with many of the findings of the Barnstable community survey, which are described below and in Section 6. For instance, the importance of ensuring that youth have

access to recreation facilities within walking distance of home is consistent with anecdotal feedback from town recreation staff.

The GRASP (Geo-Referenced Amenities Standards Program) analysis is an alternative approach to assessing facilities needs that is being applied in some communities across the country. In addition to addressing capacity, the GRASP analysis evaluates quality, condition, location, comfort, convenience (accessibility) and ambiance. The Trust for Public Land offers a *Greenprinting* service which uses community data and a GIS mapping model to identify community open space needs.¹⁷ The model considers community conservation priorities, park gap analysis, watershed protection, fragmentation modeling, trail linkages and development potential. In either approach, the blend of qualitative and quantitative factors may yield a fuller picture of a community's facility's needs, and could help to factor in considerations such as accessibility for people with disabilities and economic justice populations.

In 2012, the Recreation Commission conducted a facilities assessment. The Commission visited all seven villages and over 80 recreation facilities, including school fields and playgrounds that fall under Recreation under the Town charter after 3 pm and when school is not in session. The facilities examined included beaches, playgrounds, handicap-accessible playgrounds, several buildings that house numerous recreation activities, bathhouses, soccer fields, baseball fields, lacrosse fields, field hockey fields, basketball courts, the skate park, community gardens, multi-purpose fields, tennis courts, the disc golf course, picnic grounds, blacktop game areas, a horse farm, various walking trails and more.

¹⁷Trust for Public Land

The purpose of the review was to identify needed improvement projects and prioritize the projects with the intent of applying for Community Preservation Act (CPA) funds for such capital improvements. Projects were therefore prioritized in terms of criteria for use of CPA funds: does the use of these funds serve more than one purpose such as safety needs, historical needs, Disability Act requirements and increased recreational use. The Commission also considered equity among villages as a criteria. Based on this review the Commission identified the following priority projects. Progress in addressing each project is also noted:

- Craigville Beach House (Centerville) - work commenced in 2017 and is ongoing
- Lombard Field (West Barnstable) – work is in progress
- Osterville Bay Fields, playground, tennis courts (Osterville) – work is in progress
- Skate Park (Hyannis) –completed
- Lopes Field (Hyannis) – nearly completed
- Veteran’s Park Beach Playground & Other (Hyannis) – playground is complete and study is underway
- Barnstable West Barnstable Tennis Courts (West Barnstable) – tennis courts resurfaced for tennis/pickle ball
- Tennis Courts (Cotuit) – completed

The results of the survey conducted for this plan asked respondents to list facilities not currently provided that they, their families or visitors would use. Although some of the items mentioned are currently provided in the Town, their inclusion in responses implies that respondents feel they are not provided sufficiently. Most frequent answers included:

- More biking trails;

- A gun range;
- More water access;
- Trails and parks accessible for dogs.

7.2.1 Public Access to the Water

Being able to access the water for beach-going, shellfishing, boating or nature viewing is an essential part of the Cape Cod life. Yet like many towns, Barnstable is challenged to provide an adequate number of water access opportunities to meet demand, and to maintain the associated support infrastructure such as parking, boat ramps and comfort facilities.

Public access to the water for residents and visitors is an on-going and growing open space and recreation need in the Town. Anecdotal reports from the Recreation Department responsible for managing town beaches indicate that town beach parking lots are reaching capacity by as early as 9 or 10 in the morning, and crowding on beaches has led to more user conflicts.

By a wide margin, public access to water bodies for bathing, fishing and hand carried boating is the most used type of recreation facility among respondents to the community survey. The Town’s eighty-eight public-owned ways to water are shown on Map 11. The total land area accounted for by ways to water relatively small and the vast majority of shorefront is privately owned. Many public waterfront access sites are small parcels, some no more than a road width with very limited parking. For example, the Town’s public landings, a subset of ways to water, account for only twelve acres. Of the 170 miles of coastal shoreline in the Town, only 9.4 miles are publicly controlled. If less accessible areas such as Sandy Neck (5.1

miles) and Sampson’s Island/Dead Neck (1.9) are excluded, only 2.4 miles of coastal shoreline in the Town is publicly controlled and easily accessible. The *Coastal Resource Management Plan: Three Bays and Centerville River Systems* found that parcels providing public access to the water account for two percent of the land in the study area.

Since the 2010 plan, there have been no additional opportunities created for fresh and marine water access, and the need for additional waters access is still considered a high priority need.

Recognizing that greater demand for public access to the waterfront and for use of waterways must be balanced with the sustainability of fragile coastal and shoreline resources, the Town’s on-going efforts to preserve and expand water access to fresh and marine waterbodies in town include:

- Cataloguing all town ways to water and describe allowed uses;
- Determining the level of service, cost of service and on-going maintenance needs for each way to water;
- Compiling all the documents associated with each way to water, (i.e., deed, title, land plan) and create a map and parcel for each to be electronically linked to the Town’s database mapping system;
- Conducting regular site visits to each way to water; and
- Placing all compiled information, including photos, directions and types of allowed uses, on the Town website.

7.2.2 Athletic Field Space

The Town Recreation Division’s recreation field mission statement states that the Division “is committed to providing quality passive

and active recreational opportunities through outdoor recreation facilities in order to improve the quality of life for Town residents, tax payers and visitors.”

The Department of Public Works, in concert with the Recreation Department, is overseeing an ongoing Comprehensive Athletic Field Study for the Town. The purpose of the study is to determine the types of athletic fields that will be needed in the future based on demographics and input from user groups, and then integrate that information into the inventory and condition of existing fields and available parcels for future field development.

The study result will be a draft plan for capital expenditure and recommendations for future field development. This will serve as a roadmap for future capital improvement plan budget requests.

The study will:

- Examine the demand (current and future) for the Town’s fields (baseball, softball, soccer, football, etc.);
- Inventory and evaluate existing fields and condition;
- Ascertain the appropriateness of existing fields (based on location, size vs. regulation, neighborhood concerns, parking issues, regulatory issues, etc.);
- Determine if there is excess capacity and/or predict if there will be unmet future demand for fields, and if the existing capacity is appropriately located;
- Identify if there are any required recreation facilities/components that are or will be needed and proposed locations as such; and
- Develop a strategic plan for the next 20 years.

The results of the community survey conducted for this OSRP update provide some insight into perceived community needs.

2017 survey respondents are somewhat less satisfied with the condition of fields and facilities for various user groups compared with respondents in 2010. 43% indicated they were satisfied with the facilities/places for youth under age 18 to play, while 15% said they are not satisfied and 41% don't know. This response seems to reflect the large number of households without children represented among respondents, and is significantly different from 2010 when nearly 73% of respondents said they were satisfied.

53% are satisfied with places in Town for adults to play and recreate, and 30% said no, and 17% don't know. 63% said they were generally satisfied with the condition of recreation facilities they or their family members use, down from 79% in 2010.

In order to improve the condition of recreational facilities, respondents support maintenance or upgrading of existing facilities over building of new facilities by a margin of 2 to 1.

In assessing needs and objectives for the OSRP, the Recreation Division provided an update on the status of field improvements and additions recommended in the 2010 plan. These include:

- The 2010 plan identified a preliminary plan to develop an athletic complex on thirty-six acres of land adjacent to the Hyannis Golf course (McManus property) was stalled when projected costs were determined to be infeasible. An assessment of how future needs could be met at the site are being addressed in a comprehensive athletic fields assessment;
- The 2010 plan identified a proposal to develop a Little League field on the town-owned former Childs property. It was determined that the property did not have adequate size. Two additional playing fields were added behind the Barnstable

Community Horace Mann Charter School (Hyannis East). However, Hyannis North, close to the HYCC, has been left without rectangular playing fields. Soccer is the most popular sport among local youth in that area, many of who do not have safe transportation to fields in other parts of Town.

- The Town has invested significant funds in a variety of field upgrade and maintenance projects, including Lombard Field and Osterville Bay Fields. The Town DPW has hired a fulltime foreman dedicated to field maintenance.
- Tennis courts in Centerville were completely redone, the Barnstable/West Barnstable and Cotuit Tennis Court project has been completed with tennis and pickle ball options. Osterville tennis court improvements have been funded and will be completed by next summer. Marstons Mills tennis courts are currently closed and the Town is looking to move them to town-owned property so that they can be used by the public during school hours.

7.2.3 Hyannis Youth and Community Center

The Hyannis Youth and Community Center (HYCC) is a jewel among the Town's recreation facilities. HYCC is a 105,000 square foot, full service, year-round community center that serves residents of all ages. The facility was purposely located in an area with underserved populations, including the Town's Environmental Justice populations. The Recreation Division provides financial aid for low-income residents seeking to participate in recreation programs at HYCC, as well as lunches during summer programs. HYCC offers multi-cultural programming that serves as a "resource center for information and programs with a multi-cultural,

international community theme that encourages cultural exchange and understanding.”¹⁸

Needs important to the continued success of HYCC include:

- Promoting year-round use. With two rinks, HYCC is fully utilized by regional hockey leagues from fall through spring. HYCC has branched out to regional groups to ensure year round use and diverse activities that appeal to a broad range of residents. Year round use is critical because HYCC is Enterprise funded and revenues are needed to repay debt service;
- Balancing regional use with local needs and facility capacity. As regional use of HYCC expands, it will be necessary to ensure that critical local programming and access is not displaced;
- Maintaining a high quality concessions and pro shop. This is an important source of revenue for the facility and valued services to many HYCC user groups.

7.2.4 Hyannis Parks

Hyannis is the most densely developed of Barnstable’s villages, and an area identified by Town growth management policies as an area of future mixed-use infill development and redevelopment. Part of the infrastructure needed to support additional growth is the availability of sufficient park and recreation space to accommodate residents, employees, and visitors. As noted in Section 3, the “Walkway to the Sea” connects Hyannis Main Street to Hyannis Harbor and offers passive and active recreation areas as well as much-needed visual relief near the waterfront. The area has a number of small parks including Aselton, Bismore and Pleasant

Street Parks on the Harbor, the park at 725 Main Street, Ridgewood Park as well as the Town Green.

The 2010 plan noted that additional green space was needed south of Route 28 where some of the most densely developed neighborhoods are located. Since the 2010 Open Space Plan, two Hyannis parks were added or rehabilitated:

- Ridgewood Park involved the rehabilitation of existing open space in the “tree streets” of Hyannis. A portion of Maple Street was closed permanently to join two separate open space blocks into one larger park. The new park space was upgraded with paths, extensive plantings and gardens and new play equipment. The park, which was dedicated in 2015, was funded by a \$200,000 grant from the Gateways Park Program;
- A new pocket park on the former Stone’s Antiques property;
- Upgrades were completed for Veteran’s Park Beach Playgrounds;
- The HYCC Skate Park has been completely upgraded;

7.2.5 Public Golf Courses

The Golf Division is proposing restoration of the 45-year old Hyannis GC for over 5 years. It was in poor condition when purchased by the Town and is in desperate need of major infrastructure replacement. A Master Plan was created and supported by a Market analysis. The following improvements have been made in the last five years:

- ADA compliant restrooms installed at Hyannis Golf Course - \$250,000;

¹⁸ HYCC website and interview with Lynne Poyant, Director of Community Services

- Interior stairwell replaced at clubhouse building at Hyannis Golf Course to meet code - \$75,000;
- Exterior deck to replaced to meet code Hyannis Golf Course including awning - \$175,000;
- Handicap ramp replaced to meet code Hyannis Golf Course - \$25,000;
- Roof replaced at Hyannis clubhouse facility - \$40,000;
- Hyannis Golf Course Restoration Master Plan was developed - \$35,000;
- Market analysis for Hyannis Golf Course was conducted - \$30,000;
- Roof replaced at Olde Barnstable Golf Course - \$45,000;
- Doors and windows, awnings, exterior trim, replaced; HVAC system upgraded, and interior and exterior painting of building at Olde Barnstable Fairgrounds Golf Course - \$257,000.

7.3 Summary of Management Needs

7.3.1 Field Management and Maintenance

Responsibilities for managing and maintaining the Town’s athletic fields have not changed since 2010:

- Barnstable Recreation permits out town fields all day and school fields at night (except BHS Fields);
- Structures and Grounds maintains town fields;
- School Department maintains school fields;
- Little League maintains a few fields in town;
- Hyannis Harbor Hawks maintain McKeon Park and the Cotuit Kettleers maintain Lowell Park.

In some cases management responsibilities involve more than one organization. A prime example is the maintenance of field on public school grounds. The Recreation Division is responsible for maintenance except when the school is not in session or when it is being used for school purposes. The Comprehensive Athletic Field Study should provide additional recommendations to coordinate shared field maintenance decisions.

7.3.2 Management of Conservation Areas

Presently there are 5,330 acres under active management by the Conservation Division, of which 2,025 acres are managed for public passive recreation.

The Town Conservation Division has developed management plans for thirteen conservation areas that included 35 miles of trails and parking lot improvements:

- Hathaway’s Pond Conservation Area,
- Crocker Neck Conservation Area,
- Whelan Conservation Area,
- Long Pond Conservation Area,
- West Barnstable Conservation Area,
- Old Jail Lane Conservation Area,
- Bridge Creek Conservation Area,
- Otis Conservation Area.
- Seabury Farm Conservation Area
- Santuit River Conservation Area
- Childs Property
- Meetinghouse Farm Conservation Area
- Lumbert Pond Conservation Area

All thirteen plans have been implemented. The Conservation Division includes as a recommendation to update the plans every five years, and due to resource constraints this has not been possible. However, the validity of the plans does not diminish over time and the plans continue to provide the basis for numerous grants to address fire management, trail upgrades and invasive species removal, among other management topics. Necessary management actions are undertaken whether or not they are included in a plan.

7.3.3 Illegal Activities on Water District Land

Illegal waste disposal on water district lands is an on-going problem that needs to be addressed through coordinated action involving the Water Districts, Police Department, and DPW, respectively. Wellfield properties are in need of monitoring and management resources beyond what district budgets currently are able to provide. Illegal dumping, motorized all-terrain vehicle (ATVs) use and wildfires are among the management concerns. Many of the districts post “no trespassing” signs to keep people off district property, but there is some question as to whether some degree of access for passive access may be helpful in providing additional eyes and ears to report damage or illegal activity.

7.3.4 Roadside Litter

Beyond concerns about illegal trash disposal in open space and recreational properties, the accumulation of roadside litter has reached a tipping point in Barnstable. The degradation of the aesthetic environment negatively impacts the Town’s appeal as a tourist destination and diminishes the quality of life for residents and visitors. More importantly, litter poses a threat to wildlife and

to water quality of lakes, ponds and coastal waters. Most recently, roadside litter has also become a health concern due to the disposal of drug related paraphernalia.

7.3.5 Reducing and Eliminating Barriers to Accessibility

Based on 2000 census data, 18% of Barnstable’s non-institutionalized population over the age of 5 is disabled, the same as for the County.¹⁹ Although there are no unusual concentrations of disabled people, the largest concentration of disabled persons, 2,435 or 34%, is in Hyannis. In addition, Barnstable has a high percentage of older residents, some of whom may have mobility issues. These facts suggest a needed emphasis on ensuring that facilities are accessible to a broad range of the population and should strive to meet ADA standards.

Assessments of Town facilities are conducted by the Barnstable Disability Commission (BDC), a group of up to 11 citizen volunteers, the majority of whom consist either of persons with disabilities, persons in an immediate family of a person with a disability, or persons who have extensive experience in the field of disabilities. The BDC routinely conducts assessments on Town facilities, including conservation and recreation areas, and maintains goals and an implementation plan for achieving compliance.

From 2010-2017, the following ADA improvements were made to Town conservation, recreation and public Facilities:

¹⁹ Town of Barnstable Community Development Block Grant Program Draft Five Year Consolidated Plan and One-Year Action Plan, 2010.

Projects funded through CDGB:

- CHIPS Elevator project, benefiting 5 tenants w/ improved access;
- Lyndon Center Economic Development Project, 1 building was made accessible, creating 40 hours of work with job training for 12 disabled adults;
- ADA improvement to CapeAbilities Farm
- 23 Park Ave Improvements, benefiting 9 tenants in one building and 64 units in 4 other buildings with improved access;
- 200 Stevens Street ADA Improvements, improved access.

Projects funded through CIP:

- Town Hall interior improvements include ADA access to main floor and upgrade public counters to meet ADA requirements (FY 13);
- Centerville Community Center – upgrade restrooms to meet ADA requirements (FY13);
- Old Town Hall repair includes renovating 2nd floor restrooms to meet ADA requirements (FY 13);
- MEA Facility improvements includes renovating restrooms to meet ADA requirements (FY 14);
- Town Hall interior renovations include ADA restrooms (FY14);
- Lombard Reconstruction includes improvements to parking area next to ADA ramp into the building (FY 14);
- Hyannis Golf course ADA restrooms (FY 15);
- Centerville Recreation Building ADA compliant restrooms (FY 15);
- Burgess House improvements include installation of ADA restrooms (FY15);
- Lombard Field improvements include ADA improvements throughout (FY 17).

Projects funded through CPC:

- Cotuit Library: vertical lift to all three levels of the library; an ADA restroom on the first floor and an ADA compliant doorway (2016);
- Paine Black House, a town-owned historic property: ADA compliant grading and accessibility onsite (2015).


Projects funded by Barnstable Disability Commission:

- Scholarship program for graduating high school seniors;
- Purchased surf chair for beaches;
- Funded ramp for BWB polling location;
- Funded curb cuts for Barnstable High School;
- Funded hand rails for bath house at Kalmus Beach;
- Funded modifications at Hyannis Golf Club;
- Donation to Recreation Department for accessible chairs;
- Grant to Challenger Club for \$1,500;
- Funded structural change at Hyannis Police Annex;
- Grant for new ramp at Loop Beach;
- Grant for \$5,371 to Community Services at Recreation Department for purchase of new van for safety features;
- Funded Veterans' Park Beach playground;
- Town accepted gift of Pathway to the Water at Loop Beach;
- \$35,000 in funding to pay for playground equipment and safety features for Enoch Cobb Early Learning Center at Hyannis West;
- \$2,500 Grant for Sight Loss Services programs;
- Grant for \$1,750 Parkinson's Support Network for "Joy of Singing" conducted by Hyannis Conservatory;

- \$3,581 for Path Mat at Sandy Neck for access to water;
- Granted Challenger \$5,000 for the softball program;
- Funded a series of educational newspaper notices regarding awareness of BDC in the Community and Americans with Disabilities Act \$5,000;
- Granted \$1,000 for Yoga with Parkinson's through PSN at HYCC;

- Granted Sail Cape Cod \$1,000 for their program; and
- Granted \$4,000 to Sight Loss Prevention for continuing programs.

Detail on ADA compliance surveys and proposed actions is found in Appendix E. ADA Access Self-Evaluation.



SECTION 8

Goals and Objectives

Section 8. Goals and Objectives

8.1 Overview

The goals of the 2018 OSRP articulate the community's aspirations for protecting open space and providing recreational opportunities for residents and visitors. The goals are the broad outcomes the community hopes to achieve over the coming five years, and the objectives are conceptual steps taken to achieve goals. Specific actions to realize objectives are detailed in Section 9, *Action Plan*.

The goals and objectives described below were crafted to reflect and refine the broad goals discussed in Section 6, *Community Vision*, in consideration of the *Assessment of Needs* articulated in Section 7. The goals and objectives are also intended to be compatible with other related community plans, including: Barnstable's Comprehensive Plan, Historic Preservation Plan, Multi-Hazard Mitigation Plan, and Coastal Resource Management Plan, as well as the Cape Cod Commission Regional Policy Plan.

8.2 Goals and Objectives

Goal 1: Protect and maintain a maximum amount of open space to enhance environmental protection, recreational opportunities and community character.

1.1 Continue to apply criteria for prioritizing land acquisition and protection decisions. The criteria reflect a comprehensive and up-

to-date evaluation of recreation, conservation and resource protection needs.

1.2 Continue the Town's strong commitment to acquiring open space, consistent with the criteria used to evaluate and guide land protection decisions.

1.3 Promote policy and regulatory measures to protect open space.

1.4 Promote non-regulatory measures to preserve open space.

1.5 Promote stewardship of protected open spaces, including expanded use of volunteers and community organizations to augment limited town resources.

Goal 2: Plan, coordinate and execute open space protection measures that complement community efforts to protect water supply, protect fresh and marine surface waters, preserve historic, scenic and cultural resources, and provide opportunities for farming and agriculture.

2.1 Coordinate open space protection measures with efforts to protect the Town's groundwater supply for current and future needs.

2.2 Coordinate open space protection measures with efforts to protect wildlife habitat and augment the Town's green corridors and spaces.

2.3 Coordinate open space protection measures with efforts to protect fresh and marine wetlands and surface waters.

2.4 Preserve opportunities to protect land available for farming (including community gardens) in balance with groundwater protection, and support market development of locally grown produce.

Goal 3: Provide diverse recreational opportunities and access throughout Barnstable and ensure that the current and future needs of all user groups are met appropriately.

3.1 Explore ways to ensure sustained funding for recreation facility maintenance, including athletic fields, playgrounds and public golf courses;

3.2 Support the operation of the Hyannis Youth and Community Center;

3.3 Provide adequate active recreation facilities for youth, adults, and seniors;

3.4 With support and input from residents, pursue recreation facilities improvements in each village;

3.5 Provide adequate passive recreation facilities and programs;

3.6 Coordinate planning for the Town's greenway network to maximize opportunities for trailways, bikeways, Cape Cod Pathways, and connections between open spaces;

3.7 Explore opportunities for expanding park and recreation space in Hyannis south of Route 28, and in other villages as appropriate.

Goal 4: Provide adequate public access to and safe enjoyment of the Town's open space and recreational resources and programs, particularly its shoreline areas and fresh and marine waterways. Access should be provided in balance with resource sustainability.

4.1 Pursue opportunities to enhance coastal and freshwater access;

4.2 Continue to reduce or eliminate architectural barriers to public buildings and services, including beaches and major conservation and recreation areas, to sustain independent living for our seniors and disabled population;

4.3 Enhance access to open space and recreation programs and facilities by Environmental Justice populations.

Goal 5: Promote greater coordination and communication about community open space and recreation needs within government and among stakeholder groups in the Town.

5.1 Establish an implementation process for the 2018 OSRP, to include annual progress reporting;

5.2 Establish regular coordination and communication among municipal and private organizations and stakeholders involved in open space protection;

5.3 Promote public awareness of and support for measures to protect open space and enhance recreation resources;

5.4 Pursue coordinated efforts to eliminate roadside litter through a combination of public education, town and village based initiatives, and business and tourist organization support.

5.5 Update the OSRP for approval in 2023.



SECTION 9
Action Plan

Section 9. Action Plan

9.1 Overview

The 2018 OSRP provides a comprehensive approach to meeting the Town's open space protection and recreational facilities needs over the coming seven years. The OSRP identifies goals, objectives and actions. The actions cut across many different disciplines, and involve the work of numerous town departments, boards and committees, as well as private stakeholder groups and state and federal agencies. In addition to laying out goals, objectives and actions, the OSRP must identify an implementation structure capable of coordinating the extensive parties and resources necessary to undertake the recommended actions.

9.2 Coordination, Resources, Priorities, Timeframes

Once the OSRP is updated and approved, the Planning and Development Department will coordinate and monitor implementation activities. This involves annual action plan setting, and reporting annual progress to stakeholders. In addition to the Planning and Development Department and Planning Board, key OSRP stakeholders include the Land Acquisition and Preservation Committee (LAPC), Conservation Division and Commission, Fire and Water Districts, Recreation Division and Commission, Department of Public Works and Disability Commission, as well as private land

trusts and village civic associations, among others. Other town departments or boards should be consulted on issues or projects as needed.

The implementation process involves:

- Developing an annual action plan;
- Ensuring that recommended actions are integrated with departmental work plans or undertaken as special projects;
- Coordinating with the Town Manager on funding or approvals necessary for implementation;
- Compiling information on projects and accomplishments;
- Coordinating special multi-disciplinary projects; and
- Providing annual progress updates to the Town Manager and stakeholders.

The 2018 OSRP prioritizes recommended actions to guide implementation activities. The priority of recommended actions is rated as follows:

- Priority 1: Of priority importance such that inaction could threaten resource health or quality of life in the community;
- Priority 2: Of emerging importance such that sustained inattention could pose harm to resource health or quality of life if not systematically addressed;
- Priority 3: Longer range opportunities or challenges that will not generate immediate benefits but should be initiated to benefit from long-range opportunities or to avoid long-range threats.

Map 12 represents geographically based proposed actions.

Section 9.3 below provides a listing of goals, objectives and associated action items to implement the 2018 OSRP. Action items cover a broad spectrum of activities, including inventories and assessments, development of management plans, public outreach and education, and remediation projects, land improvements and policy development. Some actions will be carried out by one or more Town departments or committees, while others will require outside resources. A list of potential funding sources is provided to ensure that sufficient resources for implementation activities are planned for and available. Potential funding sources are grouped as follows:

- Town Department – this indicates that the task or action will be accomplished as part of the budgeted work program for one or more town departments or committees;
- Town Council Action or Appropriation – this indicates that the task will be funded by the Town but requires a special appropriation or vote by the Town Council;
- Grant – this indicates that a grant will be sought to complete the work or to augment Town resources directed toward the task. Potential eligible grant sources may be indicated.
- Other – this indicates a source of funding other than as specified above, and may be indicated.

9.3 Goals, Objectives and Actions

Goal 1: Protect and maintain a maximum amount of open space to enhance environmental protection, recreational opportunities and community character.

| Objective | Action | Parties (Key p.130) | Priority | Funding |
|--|---|---|----------|-----------------|
| 1.1 Continue to apply criteria for prioritizing land acquisition and protection decisions. The criteria reflect a comprehensive and up-to-date evaluation of recreation, conservation and resource protection needs. | 1.1.A Refine criteria to reflect a comprehensive evaluation of recreation, conservation and resource protection needs. Factors to be considered include: <ul style="list-style-type: none"> - Adjacency to protected or potential open space parcels; - Adjacency to surface waters, vernal pools or other wetlands resources; - Location within a mapped critical habitat area or other habitat protection value; - Value for public water supply protection; - Value for recreational purposes such as trails, bike paths; - Conservation restrictions that are not perpetual; - Value for farmland; - Priority status indicated by private land trusts or local/regional entity. | PDD, CPC, TM, LAPC | 1 | Town Department |
| | 1.1.B Develop a list of priority areas for acquisition and a set of measures to benchmark progress. Priority areas could include water resource protection, completion of the Cape Cod Pathways, and other community and ecological benefits. | LAPC, CPC, ConCom, BLT | 1 | |
| | 1.1.C Review the protection status of Town Land Bank and conservation land, as well as water district land to determine | LAPC, CPC, ConCom, BLT, water districts | 1 | |

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| | need for additional protection by conservation restriction or other means. | | | |
| 1.2 Continue the Town's strong commitment to acquiring open space, consistent with the criteria used to evaluate and guide land protection decisions. | 1.2.A Continue to dedicate Town funds for acquisition consistent with the above-named goals | CPC, TM, TC | 1 | Town Council Action - Community Preservation Fund |
| | 1.2.B Establish municipal capacity (ie, re-instate town position) for proactive acquisition research, grant writing and grant administration to support open space protection and stewardship. | PDD | 1 | Town Department |
| | 1.2.C Monitor the status of land certified under Chapter 61 or 61A and consider any opportunities for purchasing land under a right of first refusal. | AD, PDD, TM | 2 | Town Department |
| | 1.2.D Continue to leverage town funding for open space protection by pursuing partnerships with private organizations, non-profits, other public entities, and community organizations. | PDD, CPC, TM | 1 | Town Department |
| 1.3 Promote policy and regulatory measures to protect open space. | 1.3.A Continue the Town land use policy of "undevelopment" for traffic mitigation and associated open space protection and develop a priority list of candidate parcels. | PDD, CPC, TM | 2 | Town Department |
| | 1.3.B Evaluate the success of the Town's Open Space Residential Development (aka "cluster") ordinance in preserving open space, and develop recommendations to | PDD, PB, TC | 3 | Town Department |

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| | revise the ordinance | | | |
| 1.4 Promote non-regulatory measures to preserve open space. | 1.4.A Identify and prioritize parcels for protection through easements, conservation restriction or other non-regulatory means. | NR, Cons, TM, PDD, LAPC, ConCom | 2 | Town Department |
| | 1.4.B Review protection status of Town Land Bank and conservation land and evaluate the need for additional protection by conservation restriction or other means if acquired for a specific purpose. For example, place a conservation restriction on all parcels purchased for water resource protection purposes. | LAPC, Cons, ConCom | 1 | Town Department |
| | 1.4.C Provide public information to land owners regarding conservation restrictions, Chapter 61, 61A, 61B and other alternative land protection strategies | LAPC, CPC, Cape Cod Compact of Conservation Trusts, Private Land Trusts | 1 | Other – private land trusts; Grant – MA Environmental Trust |
| | 1.4.D Encourage the accommodation of public access rights in conservation restrictions on non-sensitive land. Include an incentive program for landowner donations. | TM, TC, CPC, LAPC | 2 | Town Department |
| 1.5 Promote stewardship of protected open spaces, including expanded use | 1.5.A Encourage the development of a financial and management plan as a prerequisite to new open space acquisitions. The plan would demonstrate funding sources for improvements and ongoing maintenance. | TM, TC, CPC | 2 | Town Department |

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| of volunteers and community organizations to augment limited town resources. | 1.5.B Review land management plans for town conservation areas and update as necessary to reflect implementation or changing conditions. Specific issues to consider in the review of plans include: -Best Management Practices for managing invasive species -Opportunities to enhance public access or remove barriers to access -Strategies for fire prevention | CD, NR, ConCom | 3 | Town Department, Fire Departments |
| | 1.5.C Promote coordinated management of protected open space where multiple town departments are involved; | Asset Management Team | 1 | |
| | 1.5.D Coordinate land management practices with private, state and federal landowners of significant open space in Town. | Cons, NR, MADFG, MADCR | 3 | Town Department |
| | 1.5.E Evaluate the status of completed or ongoing tidal restoration projects (ie., Stewart’s Creek, Bridge Creek), and use information for developing best practices for tidal restoration. Continue to pursue opportunities and grants to remove tidal restrictions and restore salt marshes and coastal wetlands, specifically: Rendezvous Creek, Maraspin Creek | Cons, DPW, ConCom | 1 | Coastal Pollutant Remediation (CPR) Grant Program (MCZM); Cape Cod Water Resource Restoration Program (CCWRRP); |

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| | | | | Hazard Mitigation Grant Program (FEMA) |
| | 1.5.F Identify opportunities to develop existing open spaces with self-sustaining improvements, such as the Coastal Mitigation Nursery. | PDD, NR | 2 | Grant – MA Environmental Trust |
| | 1.5.G Establish a management plan for Santuit Preserve; establish a five member management team consisting of members of the three ownership interests: Barnstable, Mashpee and the State | LAPC, TM, DPW, appropriate state agency, Property Management or Future Asset Management Dep | 1 | Town Department |
| | 1.5.H Continue to provide support for projects to reconstruct fish passages, treat stormwater and protect shellfish sites, including Hinckley’s Pond. | DPW, NR, Cons | 1 | Grant - CCWRRP; Section 319 (DEP) |
| | 1.5.I Explore eligibility of land acquisition projects under the MA Coastal and Estuarine Land Conservation Plan, in order to seek funding from the NOAA Coastal and Estuarine Land Conservation Program | PDD, LAPC, MCZM | 3 | Town Department |
| | 1.5.J Continue efforts with the Cape Cod Commission to study sea level rise. Identify ongoing studies needed to address coastal erosion and sea level rise, including further assessment of loss of sediment along the Cape Cod Bay. Implement any recommended management practices designed to preserve public access and ecosystem services. | PDD, TM | 1 | Town Department |

Goal 2: Plan, coordinate and execute open space protection measures that complement community efforts to protect water supply, protect fresh and marine surface waters, preserve historic, scenic and cultural resources, and provide opportunities for farming and agriculture.

| Objective | Action | Parties (Key p.130) | Priority | Funding |
|--|---|---------------------------------|----------|--|
| 2.1 Coordinate open space protection measure with efforts to protect the Town’s groundwater supply for current and future needs. | 2.1.A Identify and inventory the protection status of all fire and water district lands; prioritize water department parcels in need of protection through conservation restriction; place conservation restriction on all parcels purchased for water protection purposes. | PDD, DPW, F/WD, TM, HWD, LAPC | 1 | Town Department |
| | 2.1.B For the Hyannis Water District, continue the ongoing research the feasibility and strategic considerations of selling or exchanging excess property with a goal to increase ownership and control of Zone I areas. | DPW, HWD, LD | 1 | Grant – Drinking Water Supply Protection Grant Program (DEP) |
| | 2.1.C Continue to work actively and collaboratively with the Commonwealth on new well exploration. | TM, DPW, F/WD, DEP, MADFG, USGS | 1 | Various |
| | 2.1.D Provide planning support as needed to ongoing fire and water district efforts to secure lands to meet regulatory standards for buffers around all wells in a MassDEP Zone I. | PDD, DPW, F/WD, HWD | 1 | Grant – Drinking Water Supply Protection Grant Program (DEP) |

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| | <p>2.1.E Develop management plans for water district lands that encompass:</p> <ul style="list-style-type: none"> - Creative options for monitoring and enforcement of access restrictions on water district land, such as volunteer-based programs; - Partnerships with the Town and local private land trusts for land acquisition, clean-up and stewardship; - Protection of water district lands from forest fires; - Clarification on legal and desirable public access for non-detrimental activities. | DPW, F/WD, HWD | 1 | Grant – USDA NRCS Wildlife Habitat Improvement Program (WHIP) |
| | 2.1.F Evaluate the need for changes to the Town’s Groundwater Protection Overlay District to increase protection of zones of contribution to public water supply | PDD, F/WD | 1 | Town Department |
| 2.2 Coordinate open space protection measures with efforts to protect wildlife habitat and augment the Town’s green corridors and spaces. | 2.2.A Inventory parcels which, if protected or reclaimed as open space, would present opportunities to link green spaces and create or re-establish connections between fragmented forests and critical habitat areas. Use the Corridors and Centers map and analysis found in the Barnstable Comprehensive Plan as a guide to acquiring land. | PDD, NR, LAPC | 1 | Grant – USDA NRCS Wildlife Habitat Improvement Program (WHIP) |
| | 2.2.B Explore all opportunities to establish greenway linkages and reconnect habitat fragments, including easements, Transfer of Development Rights (TDR), and un-development as well as purchase of open undeveloped land. | PDD, NR, LAPC | 2 | Town Department |
| | 2.2.C Continue development of a “green infrastructure” plan to identify, prioritize, and present strategies and resources to | PDD, TC, LAPC, ConCom | 2 | Town Department; |

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| | link open spaces and areas of habitat. | | | Town Council – Community Preservation Fund |
| | 2.2.D Review and revise as necessary development permit review procedures to ensure that all projects are checked against NHESP rare and estimated habitat maps to see if they must file a request for information from NHESP. Currently only projects requiring wetlands review have this requirement. | PDD, ConDiv | 2 | Town Department |
| | 2.2.E Continue to pursue opportunities to restore herring runs, including Hinckley’s Pond, to support anadromous fish populations and coastal fisheries. | NR, DPW | 1 | Grant – Rivers and Harbors Grant Program; CCWRRP |
| 2.3 Coordinate open space protection measures with efforts to protect fresh and marine wetlands and surface waters. | 2.3.A Support continued strict application of regulations designed to protect coastal and freshwater wetlands, and in particular no build and no disturb buffer zone requirements. | ConCom, Cons | 1 | Town Department |
| | 2.3.B Seek opportunities to preserve land adjacent to anadromous fish runs. | NR, CPC, LAPC | 2 | Grant – Rivers and Harbors Grant Program |
| | 2.3.C Support local wastewater management and nutrient management plans and projects through the coordination of open space purchases for wastewater treatment and/or effluent discharge. | PDD, DPW, ConCom, ConDiv | 1 | Town Council Action |

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| | 2.3.D Promote the implementation of the 2009 Coastal Resource Management Plan recommendations that relate to public beaches and water access and natural habitat protection. | PDD, NR, Cons, ConCom | 2 | Town Departments |
| | 2.3.E Develop a coastal resource management plan for North side waters; and pursue next steps identified in the 2016 Sediment Budget for Sandwich and Barnstable Coasts of Cape Cod Bay. | TM, TC, PDD | 3 | Town Council Action |
| | 2.3.F Complete the updating of the Barnstable Multi-Hazard Mitigation Plan. | PDD, MEA, F/WD, DPW | 2 | Town Department; Grant - Hazard Mitigation Grant Program (FEMA) |
| 2.4 Preserve opportunities to protect land available for farming in balance with groundwater protection, and support market development of locally grown produce. | 2.4.A Inventory and map all lands that are currently used for agricultural purposes and all lands that have high value or potential based on soils, parcel size, or other factors. Identify parcels with high or potential agricultural value. | PDD, AgCom | 3 | Town Department |
| | 2.4.B Monitor land certified under Chapter 61A and if available under a <i>right of first refusal</i> , seek to purchase and continue its use for agricultural purposes. | AD, TM, LAPC | 3 | Town Department |
| | 2.4.C Explore <i>Right to Farm</i> ordinance. | AgCom | 3 | Town |

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| | | | | Department |
| | 2.4.D Support agricultural land use by supporting farmers markets, “buy local” promotional programs and other steps to support markets for locally grown produce. | AgCom, HyBID, RSD | 3 | Other – private or grant sources |
| | 2.4.E Increase opportunities for horticulture, including an increase in the number of community garden plots available to the public, particularly in Environmental Justice communities, and a new Barnstable Grows program | AgCom | 2 | Other – private or grant sources |
| | 2.4.F Monitor status of County Farm and seek right of first refusal in the event the County decides to dispose of the property | LD, TM, TC | 3 | |

Goal 3: Provide diverse recreational opportunities and access throughout Barnstable and ensure that current and future needs of all user groups are appropriately met.

| Objective | Actions | Parties (Key p.130) | Priority | Funding |
|---|---|---------------------|----------|-----------------|
| 3.1 Explore ways to ensure sustained funding for recreation facility maintenance. | 3.1.A Encourage the development of a financial plan as a prerequisite to land acquisition or facility development. The plan would demonstrate funding sources for start-up costs and on-going operations and/or maintenance. The 2017 Field Study will serve as a strategic resource plan for undertaking necessary improvements and maintenance of town and School Department fields and outdoor facilities. | CSD/RD, TM, TC | 1 | Town Department |

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| 3.2 Support the operation of the Hyannis Youth and Community Center. | 3.2.A Promote year-round use to engender diverse activities and generate revenues | CSD | 1 | Town Department |
| | 3.2.B Balance local recreation needs with regional use and facility capacity | CSD | 2 | Town Department |
| 3.3 Provide adequate active recreation facilities for youth, adults and seniors. | 3.3.A Update the 2012 Recreation Commission report, which took an in-depth assessment of the 88 facilities under the Recreation Division's purview. Complete any outstanding work on the prioritized locations. | RD, PDD | 3 | Town Department |
| | 3.3.C Implement the recommendations of the 2017 Athletic Field Needs Assessment prepared for the Recreation Division by Weston and Sampson for all municipal and School Department athletic fields and outdoor facilities. | RD, SD | 1 | Town Council Action - CPA; Grant - PARC |
| | 3.3.D Explore the potential for increasing or upgrading playground spaces and equipment in all villages, including tennis courts and skate board parks. Relocate the Marstons Mills Tennis Courts from School Department to Town property so they can be resurfaced for the public and available to the public during school hours. | RD, SD | 2 | Town Council Action - CPA; Grant - PARC |
| | 3.3.E Complete the priority improvements recommended in the 2012 Recreation Commission report. | RD | 2 | Town Department |
| | 3.3.F Encourage development of a town-wide bikeway network and | PDD, DPW | 2 | Town Department; |

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| | <p>-pursue inclusion of bikeways in road construction projects</p> <p>-identify opportunities for off-street paths</p> <p>-coordinate connections with the regional bikeway system</p> | | | Grant – PARC; Recreational Trails Program (MADCR) |
| | 3.3.G Continue support for the successful and popular Sail Cape Cod program which provides sailing programs for disabled individuals | CSD, CPC, DisabCom | 3 | Town Department; Other – Private or grant sources |
| | 3.3.H Provide support for implementing the restoration improvements called for in the Hyannis Golf Course master plan, and other upgrades needed for Olde Barnstable Fairgrounds Golf Course | GD, GC | 3 | Town appropriation |
| | 3.3.I "Walk Library" whereby a link (or links) on the Town website would be available for self-guided walks in a database. That is, we would have a spreadsheet with a walk described with various features, like village it is located in, length of the path, time to complete, ruggedness of terrain, etc. Then folks can search for a walk by village, time to complete, etc. Each walk would also have a map that could be downloaded on a computer or phone. | LAPC | 1 | |
| 3.4 With support and input from residents, pursue recreation | 3.4.A Find a suitable location to replace the rectangular playing field formerly behind the Barnstable Community Horace Mann School in order to provide a soccer, football, | RD | 2 | Town Council Action - CPA; Grant - PARC |

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| facilities improvements in each village. | lacrosse field in the village of Hyannis. | | | |
| | 3.4.B Identify, acquire and develop land for outdoor recreation facilities (parks, playgrounds, playing fields) in the Cummaquid area to complement private facilities | RD | 3 | Town Council Action - CPA; Grant - PARC |
| | 3.4.C In Centerville, upgrade the playground which is in disrepair, and the field space across from the Centerville Elementary School per the recommendations of the 2017 Field Study. | DPW, RD | 3 | Town Council Action - CPA; Grant - PARC |
| | 3.4.D Continue upgrades of recreation facilities in Hyannis: <ul style="list-style-type: none"> Hyannis West lost playing field with the addition of pre-school. Complete work recommended in the 2017 Field Study McKeon Field - No work has moved forward other than water going to the snack bar Lopes Field - Major work has been done and is now mid level playable. | RD | 2 | Town Council Action - CPA; Grant - PARC |
| | 3.4.E In Osterville, the 2017 Field study will assist in mobilizing resources for planned improvements. | RD | 3 | Town Council Action - CPA; Grant - PARC |
| | 3.4.F In West Barnstable, complete and maintain projects at Lombard's Field (Scorer box), and Lukes Love playground (parking and entrances and exits) | RD | 3 | Town Council Action - CPA; Grant - PARC |

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| | 3.4.G In Barnstable, acquire and develop field space for adult baseball, soccer and lacrosse and upgrade the Barnstable-West Barnstable Elementary Playground | RD, SD | 3 | Town Council Action - CPA; Grant - PARC |
| 3.5 Provide adequate passive recreation facilities and programs. | 3.5.A Complete the construction of a Dog Park currently being built at Hathaway's Park entrance on town Recreation land. | MEA, DPW | 3 | Town Department; Other – Private or grant sources |
| | 3.5.B Identify locations that have the potential to provide improved access for hand-carried boats; specifically explore locations at Barnstable Harbor, Haywards Landing, Three Bays. The Best Buddies lot the Town leases May to September would be an ideal access to set up and have rentals available. | MEA, PDD | 2 | Town Department; Grant- Boating Infrastructure Grant (BIG) (MADFG) |
| | 3.5 C Identify locations that have the potential to provide opportunities for passive recreation including: -paved walking paths and fitness trails -interpretive nature trails -expanded fitness programs (yoga, tai chi, pilates). Seek grant funds to implement. Ensure that design and materials minimize maintenance needs and advertise the availability of completed trails and programs. | CS, PDD | 3 | Grant – Recreational Trails Program (MADCR) |
| 3.6 Coordinate planning for a greenway network. | 3.6.A Maximize opportunities for trailways, bikeways, Cape Cod Pathways, and connections between open spaces | PDD, DPW, CPC, LAPC | 3 | Grant – Recreational Trails |

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| | | | | Program (MADCR) |
| | 3.6.B Continue planning and design for a connection to the regional bikeway network through the Mass Fisheries and Wildlife Hyannis Ponds property, across Route 132 and into Sandwich. | PDD, CPC, LD, DPW MassDOT, MADCR | 1 | Grant – Recreational Trails Program (MADCR), TIP, various |
| | 3.6.C Explore Rails with Trails and other opportunities to create a connection between the planned regional bikeway and downtown Hyannis. | PDD, DPW, LD, TM | 2 | Grant – Recreational Trails Program (MADCR) |
| 3.7 Explore opportunities for expanding park space in Hyannis south of Route 28, and in other villages as appropriate. | 3.7.A Increase access to open space and recreational opportunities for Environmental Justice populations | CS, PDD | 2 | Grant – Commonwealth Urban Parks Initiative (EEA) |
| | 3.7.B Develop a parks plan for Hyannis Village, in support of the Growth Incentive Zone land use objectives | PDD | 2 | Grant - Commonwealth Urban Parks Initiative (EEA) |

Goal 4: Provide adequate public access to and safe enjoyment of the Town’s open space and recreational resources and programs, particularly its shoreline areas and fresh and marine waterways. Access should be provided in balance with resource sustainability.

| Objective | Actions | Parties (Key p.130) | Priority | Funding |
|--|---|---------------------------------|----------|---|
| 4.1 Pursue opportunities to enhance coastal and freshwater access. | 4.1.A Look for opportunities to protect open space adjacent to coastal resource areas for public access and/or resource protection, through acquisition or alternative land protection tools. | MEA, PDD, CPC, LAPC | 1 | Grants – Fed Land &Water Conservation Fund |
| | 4.1.B Improve parking areas at the following locations: Covells and Craigville beach, and Prince Avenue. | MEA, DPW | 2 | Town Council Action – Capital Improvements Plan |
| | 4.1.C Upgrade and maintain trail system, bathhouse and picnic area at Hathaway’s Pond. Provide sand at Joshua's Pond & Hathaway's Pond | RD, Cons, DPW | 3 | Grant – Recreational Trails Program (MADCR) |
| | 4.1.D Identify town resources and responsibilities necessary for maintaining town Ways to Water, including the following activities: clarifying deeds and titles, improvements and maintenance, identifying grant opportunities, enhancing parking facilities and pursuing new opportunities for ways to water. | TC, LD, TM, DPW, LAPC, CPC, MEA | 2 | Town Council Action |

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| | 4.1.E Support public shellfish propagation and continued public access to designated Shellfish Recreation Areas. | MEA, Shellfish Comm, TM | 1 | Town Council Action |
| 4.2 Reduce or eliminate barriers to accessibility at major conservation and recreation areas and facilities throughout Town. | 4.2.A Develop a list of accessibility improvements at ways to water and major conservation and recreation areas, and prioritize for importance. | DisabCom/HR, PDD | 2 | Town Department |
| | 4.2.B Complete accessibility projects identified in the 2010 Beach Inventory and subsequent updates. | DPW, RD, DisabCom | 1 | Town Department |
| | 4.2.C Complete accessibility projects at the two municipal golf courses; | CSD, DisabCom | 2 | Town Department |
| | 4.2.D Build additional accessible playgrounds similar to Luke's Love in West Barnstable. Maintain the accessible playground at Veteran's Park Beach; relocate and upgrade the Luke's Love Playground. Provide accessible playgrounds at Osterville and Centerville. | CSD, DisabCom | 2 | Grant – PARC (EEA) |
| | 4.2.E Continue to improve accessibility signage at all town facilities. | DisabCom/HR | 3 | Town Department; Grant - CDBG |
| | 4.2.F Pursue CDBG and other grant funds for accessibility improvements. | PDD, DisabCom/HR | 1 | Town Department |
| 4.3 Enhance access to open space and | 4.3.A Develop an outreach and communications plan to ensure that Environmental Justice populations are aware of open | CS, PDD, RD | 1 | Town Department |

| | | | | |
|--|--|-------------|---|---|
| recreation programs and facilities by Environmental Justice populations. | space and recreational facilities located throughout the Town | | | |
| | 4.3.B Assess the supply of recreational facilities and programs in areas with significant Environmental Justice populations and determine whether additional or modified programs and facilities are called for. | CS, PDD, RD | 2 | Town Department |
| | 4.3.C Increase parks and open space in underserved areas including Hyannis, Centerville, and Barnstable Village. Increase Parks and open space in underserved areas in all villages. School playgrounds are not available during school hours and preschool and home schooled children need playgrounds and facilities for play. | PDD, RD | 1 | Grant – PARC, Commonwealth Urban Parks Initiative |

Goal 5: Promote greater coordination and communication about community open space and recreation needs within government and among stakeholder groups in the Town.

| Objective | Action | Parties (Key p.130) | Priority | Funding |
|---|--|--|----------|-----------------|
| 5.1 Establish an implementation process for the OSRP 2018. | 5.1.A Coordinate implementation through the Planning and Development Department and involve municipal departments and boards and private stakeholder groups in setting annual action plans and reporting progress. | PDD, working with LAPC and RD | 1 | Town Department |
| 5.2 Establish regular coordination and communication among municipal and private organizations involved in open space protection. | 5.2.A Convene meetings of water/fire districts, LAPC, conservation, private land trusts to review land management and acquisition and protection priorities. | PDD, LAPC, F/WD, Cons, Private Land Trusts | 2 | Town Department |

| | | | | |
|--|---|-------------------------------------|---|-----------------------------|
| 5.3 Promote public awareness and support for open space acquisition. | 5.3.A Use local media, outreach and other forums to convey information about benefits of open space protection, including environmental and aesthetic benefits and boost to property values and local economy | LAPC, CPC, CSD, Private Land Trusts | 1 | Grant – local grant sources |
| 5.4 Reduce roadside litter | 5.4 Pursue coordinated efforts to eliminate roadside litter through a combination of public education, town and village based initiatives, and business and tourist organization support. | Community Organizations, Town | 2 | Grant – local grant sources |
| 5.5 Update the OSRP for approval in 2023. | 5.4.A Begin process of updating the OSRP in 2023 | PDD, LAPC | 3 | Town Department |

AD – Assessing Division

AgCom – Agricultural Commission

ConCom – Conservation Commission

DisabCom – Disabilities Commission

CSD – Community Services

DPW- Department of Public Works

Cons – Conservation Division (Town Staff)F/WD – Fire and Water Districts

GD - Golf Division

GC – Golf Committee

HistCom – Historic Commission

HWD – Hyannis Water District

HyBID – Hyannis Business Improvement District

HR – Human Resources

LAPC – Land Acquisition and Preservation Committee

LD – Legal Department

MCZM – MA Coastal Zone Management

CDBG – Community Development Block Grant

CPC – Community Preservation Committee

MADFG – MA Department of Fish and Game

MADCR – MA Division of Conservation and Recreation

DEP – MA Department of Environmental Protection

USGS – United States Geological Survey

MEA – Marine and Environmental Affairs Division

NR - Natural Resources

PB – Planning Board

PDD – Planning and Development Department

RD – Recreation Division

SD – School Department

Shellfish Comm – Shellfish Committee

TC – Town Council

TM – Town Manager



SECTION 10
Public Comments

Section 10. Public Comments

10.1 Overview of Public Review

The public comment period for the public comment draft version of 2018 OSRP was initiated on when the full draft plan including all maps was posted on the Town of Barnstable.

An announcement with a link to plan was sent to Town boards, committees, and privates stakeholder groups:

Planning Board,

Community Preservation Committee,

Conservation Commission,

Recreation Commission,

(in addition, notice was sent to the Town Council representatives to those Boards.)

Cape Cod Commission,

Barnstable Land Trust,

Orenda Land Trust,

Barnstable Clean Water Alliance,

Hyannis Main Street BID,

Hyannis Area Chamber of Commerce,

Indian Pond Association,

All Civic Association Presidents,

Hyannis Water District,

Hyannis Youth and Community Center (through Amy Harwood for distribution through contacts),

Mass Audubon Society,

Friends of Barnstable Harbor.

Additional steps taken to notify the public of the availability of the draft plan for review and comment included:

- A press release announcing the plan’s availability and the public hearing;
- A posting on the town Facebook page;
- An announcement on the local cable access channel; and
- A posting on the Town of Barnstable homepage.

The following meetings with boards and committees took place to address the draft plan and receive comments:

LAPC;

Disability Commission;

Recreation Commission;

Conservation Commission;

Community Preservation Committee.

Some of the groups listed above were requested to provide a letter of support to accompany submission of a final draft 2018 OSRP to the Division of Conservation Services. Letters of support were provided by:

- Mark Ells, Town Manager,
- Barnstable Land Trust,
- Barnstable Land Acquisition and Preservation Committee,
- Cape Cod Commission (regional planning agency).

It should be noted that the Community Preservation Committee had been requested to submit a letter of support but their meeting schedule did not allow for that letter to be provided in time for submission. Any additional support letters will be submitted to DCS upon receipt by the Planning and Development Department.

The period for written (or emailed) public comments extended from February 16, 2018 through noon on March 12, 2018. During this period a public hearing was held at Barnstable Town Hall, on March 8, 2018. The number of public comments received at the hearing and during the public comment period reflect a deep concern for open space and resource protection as well as a range of recreation needs and interests.

All comments received during the public comment period or delivered at the public hearing were reviewed and, as appropriate, integrated into a final draft plan.

This section summarizes public comments received at the public hearing, as well as comments submitted to the Planning and Development Department during the public comment period. Letters of support are included at the end of the section.

10.2 Summary of 2018 Open Space and Recreation Plan Comments

10.2.1 Public Hearing

A public hearing was held on March 8th and was attended by approximately twenty residents. A summary of testimony follows:

- Comments from the Golf Committee. There are no funds to improve courses. Tried CPC funding. Need \$4 Million for new irrigation system and improved public access. Should be listed separately in the Plan – not lumped in with other open space. These courses are important to residents of all ages as well as tourists. Asked to change references on pages 79 and 80. This plan should emphasize the importance of these courses.
- One attendee asked about the degree of focus for agricultural lands. Would like specific actions.
- One attendee asked about the 208 Plan and why it wasn't mentioned. The OSRP could boost the 208 Plan.

- One attendee recommended bringing in the Senior Center because they have recreational activities for all ages.
- There was a discussion on listing actual parcels that the town wants to purchase for protecting groundwater (Zone 1 and Zone 2). Others stated that we should list actual parcels but priority areas. Suggested an action item.
- One attendee recommended that the town reactivate the Water Resources Advisory Committee.
- One attendee suggested adding “Air Quality”/”Noise Pollution” to the plan. Her example was vehicles idling at the beach parking lots. It affects quality of life in open spaces.
- There was a general discussion about litter including nips and debris and cigarette butts. Embarrassing to the residents. There should be some sort of initiative to clean up our environment. Recommended updating the “Comprehensive Litter Study”.
- One attendee suggested expanding the horticulture importance in the Plan. There are benefits such as Community Gardens.

Every Village should have a Community Garden and is important in the Environmental Justice communities.

- One attendee brought up protecting and expanding forests. They reduce your carbon footprint. There was a general agreement that the importance of reducing your carbon footprint should be in the Plan.
- Also, one attendee brought up the economic benefits of open space and suggested that be mentioned in the Plan. It’s good for tourism and healthy living. Suggested an action item to update the Cost of Services Study which shows the net benefit of open space.
- There was a general discussion about the maintenance of open space and how it’s not adequate. There is a disconnected about responsibility and lack of funding. Would like a focus on management plans. Volunteers and college students could be engaged.

Additional written comments and letters of support that were mailed or emailed to the PDD are provided in Appendix F.

SECTION 11
Sources



Section 11. Sources

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Appendices

- A. **Community Survey Results**
- B. **Town Council Charge to Land Acquisition and Preservation Committee**
- C. **Inventory of Open Space and Recreation Parcels**
- D. **Inventory of Public Access, Conservation and Recreation Areas**
- E. **ADA Self Evaluation**
- F. **Public Comments and Letters of Support**

A. Community Survey Results

B. Town Council Charge to Land Acquisition and Preservation Committee

C. Inventory of Open Space and Recreation Parcels

D. Inventory of Public Access, Conservation and Recreation Areas

E. ADA Self Evaluation

F. Public Comments and Letters of Support