

TOWN OF BARNSTABLE

Open Space and Recreation Plan

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TABLE OF CONTENTS

| | | |
|----------|---|-----------|
| 1 | Plan Summary | 1 |
| 2 | Introduction | 2 |
| | 2A Statement of Purpose | 3 |
| | 2B Planning Process and Public Participation | |
| 3 | Community Setting | 4 |
| | 3A Regional Context | 7 |
| | 3B Community History | 8 |
| | 3C Population Characteristics | |
| | 3D Growth and Development Patterns: | 9 |
| | 3D-1 Patterns and Trends | 10 |
| | 3D-2 Infrastructure | 10 |
| | 3D-3 Long-term Development Patterns | |
| 4 | Environmental Inventory and Analysis | 12 |
| | 4A Geology, Soils and Topography | 18 |
| | 4B Landscape Character | 20 |
| | 4C Water Resources | 24 |
| | 4D Vegetation | 27 |
| | 4E Fisheries and Wildlife | |
| | 4F Scenic Resources and Unique Environments: | 32 |
| | 4F-1 Scenic Landscapes | 33 |
| | 4F-2 Unusual Geologic Features | 34 |
| | 4F-3 Cultural and Historic Areas | 35 |
| | 4F-4 Areas of Critical Environmental Concern | 36 |
| | 4G Environmental Problems | |
| 5 | Inventory of Conservation and Recreation Lands | 39 |
| 6 | Community Goals | 44 |
| | 6A Description of Process | 44 |
| | 6B Open Space and Recreation Goals | |
| 7 | Analysis of Needs | 46 |
| | 7A Summary of Resource Protection Needs | 47 |
| | 7B Summary of Community's Needs | 49 |
| | 7C Management Needs | |
| 8 | Goals and Objectives | 52 |

| | | |
|-----------|---|-----------|
| 9 | Five-Year Action Plan | 56 |
| 10 | Public Comments | 59 |
| 11 | References | 59 |
| 12 | Appendices | |
| | A. Open Space and Recreation Lands in Barnstable | |
| | B. Maps | |
| | C. Section 504 Disabled Access | |
| | D. 1997 Town of Barnstable Local Comprehensive Plan: Open Space and Recreation Element | |

SECTION 1 - PLAN SUMMARY

Twenty years after a comprehensive open space plan was drafted for the Town of Barnstable, the competing interests of development and open space remain a matter of contention, sometimes divisive, for Town officials and residents. This plan is an attempt to offer some guidance as the people of the Town work to preserve for future generations those attributes that make Barnstable a special place to live and visit.

The plan includes: an analysis of the Town's natural and cultural resources (including scenic resources, unique environments and environmental problems); an inventory of conservation and recreation lands currently owned by the Town and nonprofit groups; an analysis of community open space and recreation goals and needs.

The Five-Year Plan listed in Section 9 describes in detail the goals that we have set -- objectives that we hope balance the desire to use open spaces for recreation purposes and the desire to protect open spaces for wilderness. We hope this plan will allow Barnstable to maintain as much of the rural character that drew people here as possible, while allowing the Town's expanding population the joys of active and passive recreation.

SECTION 2 - INTRODUCTION

Section 2A: Statement of Purpose

Recent years have seen a slowing in Barnstable's growth rate, allowing the Town's leaders and citizens an opportunity to evaluate past attempts at planning the Town's growth before the next, inevitable growth spurt. This plan will guide the Town to best take advantage of what may be our last opportunity to acquire the remaining significant parcels.

A common theme in Barnstable's previous open space plans is that the natural resource base of the Town is threatened by rapid development. Twenty-two years after the Town's first open space plan, that threat remains extant. 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) by previous Town committees; and *Coastal Resources Management Plan: Town of Barnstable* by Camp, Dresser and McKee (1990).

Building booms during the 1970s and '80s cleared and segmented thousands of acres, leaving only a few unbroken areas. Many of the impacts predicted by the 1981 study have come to pass: an increasingly suburban character to the landscape, increasing highway strip development, groundwater pollution, and destruction of unique and irreplaceable resources such as shellfish beds.

Even so, the Town has made great strides in open space acquisition. At the urging of the 1984 plan, the Town pursued a major acquisition package, buying 492 acres for conservation, recreation and other municipal purposes, with a price tag of \$17.2 million. Town taxpayers overwhelmingly supported this purchase via Town meeting approval in 1985 and a subsequent vote to exempt funding from the constraints of Proposition 2-1/2.

Other major acquisitions include the Race Lane horse farm (for open space in 1985), a portion of Independence Park (\$5 million for 67 acres for well protection in 1985), the Old Jail Lane property (\$6.2 million for 180 acres for open space in 1987), the Burgess property (for recreation in 1989), and, most recently, the Hathaway's Pond property (\$375,000 for 37.5 acres for conservation in 1992). In recent years, the Centerville-Osterville-Marstons Mills water district and the Cotuit water district have purchased lands for new wellfields.

Private land purchases have also helped protect undeveloped lands. Since its inception in 1983, the Barnstable Land Trust (formerly the Barnstable Conservation Foundation) has preserved 308 acres throughout the Town, protecting river corridors and wetlands and filling in gaps in the Town's green belt. In 1992, the Mary Barton Trust purchased the 16-acre Little River property in Cotuit for conservation purposes.

Despite these efforts, many of the goals from past plans remain unfulfilled and are re-stated here, along with new ideas developed through workgroup brainstorming and energetic outreach for public input.

The warning bell sounded by the 1973 plan still holds true: "Steps toward preserving open space should begin now before the most valuable natural and visual resources that exist today are lost forever."

Section 2B: Planning Process and Public Participation

The Open Space and Recreation Work Group of the Town of Barnstable first met in February of 1992 to begin creating a new Open Space and Recreation Plan. The work group included representatives from the Town's Conservation Commission, the Recreation Commission, the Planning and Development Department, a local private land trust, and the community at large.

During the spring and fall of 1992, the group met approximately twice a month to assign tasks and review drafts. Research was completed by individual members, with frequent reference to Town surveys. In January 1993, a draft of the plan had been completed and was submitted for review to the Town manager, the Joint Village Association, and others.

Public hearings were held on February 16 and March 3, 1993, and input was sought from Town citizens and officials. The second draft, completed on May 21, 1993, was submitted to the Town Manager, Town Council, Town Planning Board, and County Commission for letters of review. Copies of the draft were sent to all public libraries in the Town.

After waiting for completion of the Town's local comprehensive plan, the final draft of this plan was completed in June 1996.

SECTION 3 - COMMUNITY SETTING

Section 3A: Regional Context

Introduction: Barnstable is a "Mid-Cape" town, centrally located on the peninsula known as Cape Cod. Located approximately 70 miles from Boston and 250 miles from New York, Barnstable is situated 15 miles from the Cape Cod Canal.

The Town, at 60.16 square miles, has the largest land area of any town on the Cape, and is the third largest town in the Commonwealth. Barnstable is bounded by the towns of Mashpee and Sandwich to the west, the cool waters of Cape Cod Bay to the north, the town of Yarmouth to the east, and the warm waters of Nantucket Sound to the south. Barnstable's diversity of water-related natural resources, proximity to Boston and other population centers of the Northeast, and location near the center of Cape Cod has fostered its development as a major tourist attraction, makes it a popular site for second homes and retirement homes, and has resulted in its becoming the commercial and service "hub" of the Cape.

The Town of Barnstable is divided into seven village areas: Hyannis, Centerville, Osterville, Cotuit, Marstons Mills, West Barnstable and Barnstable Village. Each has a dynamic history of development and a unique village character. The Town's historic development dates back over 350 years, during which dramatic changes have occurred.

Hyannis is the largest village in terms of population, and serves as the commercial and transportation center of the Cape and Islands region. It contains major shopping centers, the Barnstable Municipal Airport, Cape Cod Hospital, and Hyannis Harbor, the terminus of boat traffic to Nantucket and Martha's Vineyard. The political seat of Barnstable County is located in Barnstable village on the north side.

Formation of the Landscape: The configuration and natural conditions of the Town are owed to the advances and retreats of the Wisconsin glacial stage (14,000 years ago) of the last North American Ice Age. As the glacial sheet withdrew, it deposited the Sandwich Moraine, a high ridge line of boulders and stones that today forms the backbone of the Cape and the highest land in Barnstable. To the south, the moraine deposited an outwash plain, areas of sedimentation that lead from the moraine to Nantucket Sound. To the north of the moraine, the landscape was created by ice contact deposits, or segments of materials left from the glacier retreat. Over this landscape, the ice sheet also left pieces of itself that imbedded into the lands and, over time, melted, forming a series of kettle holes, which are now inland ponds and lakes.

Evolution of the Landscape: Over time, the natural processes of the wind and water sculpted barrier beaches, sand dunes, marsh land, inland lakes and ponds. One of the most distinctive features of Barnstable, the barrier beach system of Sandy Neck and the Great Marshes, developed on the bay side. Vegetation stabilized the dunes, and invaded and defined the marshlands and tidal creeks. Inland forests took hold and climaxed in hardwood associations of beech, oak, birch and sweet gums. At the forest edges, pines stabilized the soils from wind and water.

Human Development: It was on this landscape setting that humans arrived. First to arrive were the native American game hunters, followed by the settling tribes and European colonists. The Native Americans, living off the sea and land, left only scattered traces of their existence buried along the sea shoreline and along inland waterways. The European settlers, however, impacted the landscape much more dramatically, first by deforesting land areas for field cultivation, fuel and building materials. In the process, the land was laid barren, subject again to the forces of nature. The open fields evolved into today's softwood associations of scrub oak and pine. The European settlers also made use of sand for glass, clay for bricks, bog areas for cultivating cranberries and the sea for salt, shell fish, finfish and whales.

The location of the peninsula made it a natural port for shipping along the coastline and seafaring. The growth of the Cape's ports and agriculture spurred the need for rail transit, and correspondingly opened the Cape to tourism and second "seasonal" homes.

As seaport importance declined, the vacation and recreation opportunities of the Cape increased in economic importance. Barnstable, especially Hyannis, located at the center of the Cape became the focal point for commercial, residential and industrial growth.

Cape Cod flourished as a seacoast resort get-away and as a retirement community. Tourism, combined with the industrial and commercial boom of the 1980s dramatically impacted Barnstable. Subdivisions were continuously carved from the "wood lots", construction reached all time highs, land values skyrocketed and both year-round and seasonal populations increased. Today Cape Cod is the destination of millions of travelers each year.

Regional Center: The Town of Barnstable, especially the village area of Hyannis, has emerged as the economic, retail, institutional and transportation center for all of Cape Cod. While the other six villages (Centerville, Osterville, Cotuit, Marstons Mills, and Barnstable Village and West Barnstable) have retained their historic charm, they have been greatly affected by recent development.

Government Center: Barnstable Village has always been the County Seat of Government, and hosts the Cape's court system. The County complex, located in the village center along historic Route 6A, serves all 15 Cape Cod towns. Hyannis, being the population center, hosts federal and state government services including the Department of Employment and Training and the Registry of Motor Vehicles.

Transportation Center: Barnstable Municipal Airport, located in Hyannis, is the region's busiest airport, serving as the Cape's commercial and vacation air link to Boston, New York City, and the islands of Martha's Vineyard and Nantucket. Amtrak operates in Hyannis during the summer months, providing weekend commuter rail service for summer residents and tourists to and from New York City and Washington, DC. The Steamship Authority and Hy-Line boat services in Hyannis Harbor link the Cape with the islands of Nantucket and Martha's Vineyard, and serve as a conduit for commuters, tourists and freight.

Institutional Center: The Cape Cod Hospital, located in Hyannis, is the largest hospital on Cape Cod. To meet expanding needs, the hospital is undergoing a major redevelopment of its emergency room. Cape Cod Community College, located in West Barnstable, serves the higher educational needs of the Cape and provides linkages to the educational and research institutions of greater Boston.

Cultural Center: Cultural pursuits for the entire Cape flourish in Barnstable through the Cape Cod Performing Arts Center, the performing stage of the Cape Cod Symphony and the home of the Cape Cod Ballet Society.

Social Service Center: The Cape Cod YMCA facilities are located adjacent to the Performing Arts Center and across from the college. Many of Cape Cod's human service organizations are headquartered in Hyannis, including the Red Cross, Big Brothers/Big Sisters, the Salvation Army, and Cape and Island Legal Services.

Regionally Shared Natural Resources: Cape Cod, due to its location and natural features, shares considerable attributes among its towns, most importantly a sole source aquifer. This aquifer is the only source of potable water, with rainfall and melting snow the only sources of natural recharge. The aquifer encompasses the entire length of the Cape. The groundwater is a dynamic system which overlaps into neighboring towns. It is in constant change, interacting with surface water, and affected by human use and disposal.

All of the Cape towns share a dynamic coastline with access either to Cape Cod Bay, Nantucket Sound or the Atlantic Ocean. The nearby Stellwagen Bank and its overlying waters

are a designated federal Marine Sanctuary shared not only by the towns of Cape Cod but by the nation and the world. The dynamics of littoral drift, in response to net direction of longshore currents, alter the sands, building new land in some cases and taking it away in others.

Barnstable also shares some of its harbors with neighboring towns: Popponesset Bay with Mashpee, Hyannis Harbor and Lewis Bay with Yarmouth, and Barnstable Harbor and its Great Marshes with Yarmouth and Sandwich.

Regionally Shared Cultural Resources & Problems: Cape Cod, being only 250 square miles, shares in the cultural or man-made attributes, as well as their associated problems. Construction and tourism, the major sources of employment, are also the major impacts on the economy and land use of the Cape and Barnstable. Recreational areas, such as beaches, trails, and lodging facilities, are regionally shared. Most tourists visit several towns, creating Cape-wide problems in traffic circulation.

As the Cape has grown in popularity as a vacation and retirement area, permanent population growth has impacted all of the Cape's towns and their natural resources. Rapid development has changed the character of the Cape. The demand for drinking water may soon surpass supply. Disposal of waste outweighs the land's ability to absorb the impact and cleanse itself.

Country roads have been widened and strip commercial development has proliferated. Historic structures have been demolished or "modernized" at an alarming rate. The state responded in 1973 by creating the Old King's Highway Regional Historic District along the north side of Cape Cod. For the Town of Barnstable, this designation has meant the preservation of character for most of Barnstable village and West Barnstable and an accompanying increase in historic tourism.

Section 3B: Community History

Archeological sites scattered throughout the Town indicate that Barnstable has been inhabited since the end of the Ice Age. From bands of big game hunters to the Wampanoag tribe to European settlers, humans have lived on the sandy shores and on the woodlands of the Town for over 10,000 years.

The first European settlement took place at what is now Barnstable Village in the late 1630s, and the Town was formally established in 1639. The importance of Barnstable as a

regional administrative center 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 settlement 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 and Barnstable Village, while the southern branch to Hyannis assured its subsequent growth as the primary local center, and as a south shore port of regional importance.

Turn of the 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, later, Osterville's Grand Island (Oyster Harbors). The resort boom, coupled with the continued expansion of Hyannis as a regional commercial center, was furthered by 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, while Marstons Mills and West Barnstable best preserve the Town's early agricultural character.

Intensive post-war development of Barnstable has continued, stimulated by completion of a high-speed Route 6 (Mid-Cape Highway) corridor and expansion of a regional shopping mall and commercial center on Route 132 in Hyannis. Widespread suburban growth, including tract developments and condominium communities, has been intense in the last two decades. This growth has encroached upon the traditional historic landscape, which is characterized by six dense and distinct village settlements, along with the scattered pastoral development of Marstons Mills, widely separated by interceding rural and forested lands.

Section 3C: Population Characteristics

Barnstable's population has grown at a remarkable and steady rate since 1930, expanding from a small coastal Town of 7,271 to an urban center with 40,949 people in 1990. Population indicators tell us this growth will continue for a considerable period of time, placing added stress on undeveloped land, remaining wildlife, existing recreational opportunities, and the quantity and quality of the Town's groundwater.

Projections by the Town planning and development department, the Cape Cod Commission and the Massachusetts Institute for Social and Economic Research at the University of Massachusetts, Amherst, estimate the Town's population will grow by an additional 5,000-10,500 by the year 2000.

Although the Town's retired population (20.2 percent of the total) is considerably higher than the statewide rate (13.6 percent), the largest segment of the population is in the childbearing years - 36.7 percent are in the 20-to-44 age bracket - followed by a large group that will reach childbearing years in 10 to 15 years. By vote, the residents recently approved a property tax increase to fund a second middle school to house the growing numbers of students.

The seasonal summer population and the influx of overnight tourists, centered in Hyannis and Centerville, brought the Town's summer population to 74,197 in 1984, the most recent figure available. Summer tourism has fallen off in recent years due to the economy, but there are no indications that vacation-home ownership is on the decline. There are no projections regarding growth in seasonal residents and visitors.

As a result of the 1990 US Census, much of Barnstable, as well as parts of neighboring Cape Cod towns, was designated an urbanized area with the densely populated Hyannis village at its core. In December 1992, the federal Office of Management and Budget listed ten Cape towns as the Barnstable-Yarmouth Metropolitan Statistical Area, with Barnstable and Yarmouth cited as the "central cities." These designations recognize past growth but make no prediction for the future. Because such designations focus the attention of national advertisers and bring eligibility for state and federal dollars, it would appear likely that the Town population will continue to expand.

Although the economic downturn of the early 1900s drove out some businesses, jobs and people are still moving to the Town. Given the cyclical nature of economics, an upturn will come again, and with it another surge in growth.

Section 3D: Growth and Development Patterns

Section 3D-1: Patterns and Trends

From its origin in 1639, the Town of Barnstable has evolved from an agricultural, fishing and shipping society to its present mixture of summer resort, retirement community and regional commercial, transportation and shopping center, with a smattering of agriculture, shell fishing and light manufacturing. Fundamental, too, is the distinctive personality of the seven "villages." Each

has its own concentration of one or more of the characteristics of the Town as a whole, and each in its own way is striving to maintain its historic character. (See section 3B, Community History, for further description of growth patterns.)

Section 3D-2: Infrastructure

Historically, the harbors at Barnstable, Cotuit, Osterville, Centerville and Hyannis, the northside road now known as Route 6A, and the southside road now known as Route 28 had much to do with the development of the Town. Routes 6A and 28 still account for major vehicular traffic, along with Route 6, a limited access highway traversing the Town. A network of north-south routes completes the major road system.

The Plymouth & Brockton Bus Company provides regular bus service to Boston and towns en route, as well as to upper and lower Cape destinations. The bus terminal also provides service via Trailways, Peter Pan and Greyhound to the rest of the country. Buses operated by the Cape Cod Regional Transit Authority provide a variety of local and on-demand services.

Amtrak provides passenger rail service to New York on summer weekends, and rail freight service is available year-round. Ferry service is available year-round from Hyannis to Nantucket and Martha's Vineyard. The Barnstable County Airport is the Cape's hub for air traffic to Boston, New York, the Islands, and to other New England destinations.

Barnstable residents are served by three water districts and one private water company. The only municipal sewer service available is in downtown Hyannis, with plans underway to extend service to Independence Park, the Town's industrial zone. The rest of the Town's commercial and residential areas depend on private septic systems.

Section 3D-3: Long-term Development Patterns

Today the Town is experiencing the boom and bust cycle brought on by the development rush of the 1980s followed by the economic bust of the initial years of the 1990s. The regulation and control of growth is a priority, but this is also a period of time when the Town is attempting to play "catch-up" in developing infrastructure and services needed to serve the development boom of the 1980s.

The Town is also experiencing a shift from continuous development to redevelopment. Planning and design efforts are in progress for revitalizing downtown Hyannis. Business and community leaders within each of the other villages are also directing their future by helping to develop the Town's comprehensive plan. That comprehensive planning process was brought on

by the establishment of the Cape Cod Commission, a county wide planning regulatory agency, in 1989. The Commission was established in response to the public recognition of open space and community character needs in the face of rapid land development without effective local controls. The Commission has initiated Cape-wide coordination of development that poses regional impacts. A Regional Policy Plan, developed for Cape Cod by the Cape Cod Commission in cooperation with each of the Cape's towns, serves as a template for future growth through the development of individual town master plans.

The villages played an integral part in the Town's evolution. Due to 1950s zoning by villages, Barnstable today has 13 Residential Zoning Districts, with 33,106 acres (91.04% of the land area of Barnstable) zoned for residential use.

Due to long-standing concerns for the flavor of the individual village centers and more recent concern with the over intensification of commercial property fronting the major roads of Routes 132 and 28, additional commercial zoning districts were created. Today 11 commercial zoning districts are applied across the Town. They encompass 1,468 acres of land (4.04% of the land area).

Industrial zoning occupies 1,700 acres (4.67% of the Town's area). About two-thirds of this industrial zoned land is undeveloped and vacant at this time. However, the permitted uses within the industrial zone are non-exclusive, allowing most other uses including offices, retail and wholesale, commercial and warehousing activities and multi-family apartments.

A small, unique zoning district for Professional Residential use, surrounding the Cape Cod Hospital in Hyannis, consists of 90.14 acres (0.25% of the land area). And in May of 1996, a special zoning district for the Cape Cod Mall was established.

SECTION 4 - ENVIRONMENTAL INVENTORY AND ANALYSIS

Section 4A: Geology, Soils and Topography

GEOLOGY: Like all of Cape Cod, the present physiography of the Town of Barnstable is, in geologic terms, a relatively recent phenomenon. It is the result of glacial activity during the Wisconsin stage of the Pleistocene epoch, some 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 the 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.

Two major types of drift formations were left behind by the glacier: 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 of Barnstable, 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. Numerous ponds and lakes were formed within the outwash plain when blocks of ice left behind by the glacier melted.

North of the moraine, along the north shore of the Town, the present terrain is the result of meltwater deposits in a glacial lake that formed between the ice front and Cape Cod during the northward retreat of the glacier from Cape Cod Bay. In the deeper parts of the lake, fine silts and clays were deposited, resulting in the heavy soils that characterize many areas of the north shore.

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. This followed sea level rise of approximately 40 feet during the glacial period.

From a planning standpoint, the various geologic formations of the Town have been a major determinant of land use patterns. The difficult topography of the "knob and kettle" landscape of the moraine, along with problematic availability of 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 preserve, remain undeveloped.

The poorly-drained soils that characterize the glacial lake deposits of the north shore limit on-site sewage disposal, posing major constraints to development. Although this area was historically the first to be settled within the Town, development has been concentrated in central and southern portions of the Town. 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, has resulted in extensive development from the nineteenth century onward. This growth was centered primarily along the south shore and in the villages, but spread out to more inland areas in recent decades.

The importance of the Sandy Neck barrier beach and the Great Marshes as natural protection for settlements along the north shore was recognized relatively early in the Town's history, with conservation measures to protect these resources being passed as far back as the late seventeenth century. The early settlement at Barnstable village was chosen largely for the presence of extensive salt marshes along the edge of a good harbor. Sandy Neck and the Great Marshes continue to be managed primarily for conservation and recreation. Barrier beach systems along the south shore, such as Dowse's Beach and Dead Neck/Sampson's Isle in Osterville, a portion of Long Beach in Centerville, and Kalmus Beach in Hyannis, have similarly been preserved as conservation or recreation areas. The most extensive development on a barrier beach has occurred on the eastern portion of Long Beach.

Several excellent publications dealing with the geology of Cape Cod have been written, including *A Geologist's View of Cape Cod*, by Arthur N. Strahler, and *A Cape Cod Environmental Atlas*, edited by Arthur H. Brownlow. Dr. Arthur C. Redfield of the Woods Hole Oceanographic Institute has mapped the evolution of the Sandy Neck barrier spit and Great Marshes. In addition, Robert N. Oldale of the U.S. Geological Survey has compiled maps of the geological formations of each of the 7 1/2-minute quadrangles of Cape Cod, including the Hyannis, Cotuit and Sandwich quadrangles for the Town of Barnstable. Finally, the U.S. Department of Agriculture Soil Conservation Service has comprehensively profiled edaphic conditions of both the Town of Barnstable and Cape Cod in considerable detail in *Soils and Their Interpretations for Various Land Uses: Town of Barnstable, MA* (1973) and *Barnstable County MA Interim Soil Survey Report* (1987), respectively.

SOILS: Soil types for the Town of Barnstable have been mapped by the U.S. Department of Agriculture Soil Conservation Service. Fifty-nine naturally occurring soil types are

described for the Town, classified according to composition (relative amounts of stone, sand, loam and silt), degree of slope, and other factors affecting their use and management. Maps and interpretative data indicating the limitations of individual soils for different land uses such as on-site sewage disposal, homesites, and woodlands, is available for review through the Soil Conservation Service or through the Conservation Commission office in Barnstable Town Hall.

In general terms, five major soil associations are found within the Town, corresponding closely to the geologic formations described above.

Plymouth-Barnstable Association - drouthy, very stony and extremely stony and bouldery soils on moderate to steep slopes. Soils of this association are characteristic of the moraine. According to SCS criteria, these soils are generally suitable for upland wildlife and for recreational uses such as hiking and nature trails; on the other hand, Plymouth-Barnstable soils 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 - drouthy, 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. However, these soils provide for little filtration of sewage effluent, potentially resulting in contamination of groundwater, surface water bodies and coastal waters.

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 unvegetated and 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, although the underlying sands and gravels are poor filters and, therefore, present the possibility of groundwater and surface water contamination.

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. When abandoned, agricultural fields tend to become overgrown with a diversity of vegetation that provides excellent food and cover for wildlife. 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 drouthy 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% of this association; dune sand and coastal beach about 25%; and muck and peat soils the remainder. This soil association in general provides excellent wildlife habitat, with tidal marshes fulfilling a particularly critical role, both as wetland wildlife habitat and in the food chain for finfish and shellfish resources. The importance of inland wetland functions such as groundwater recharge and flood control has been well documented. On the Cape, and within the Town of Barnstable, many peat soils have been developed into cranberry bogs. Beaches and dune systems are major attractions as recreational areas, although pedestrian and vehicular uses can severely impact dune vegetation. All of these soils have severe limitations for residential or other intensive uses, and should be managed only for conservation and recreation purposes.

TABLE 1. Approximate acreages and percentages of the general soil areas in the Town of Barnstable.

| General Soil Areas | Acres | Percent |
|---|---------------|----------------|
| Carver-Windsor-Hinckley association | 20,708 | 51 |
| Plymouth-Barnstable association | 6,948 | 18 |
| Tidal marsh-Dune sand-Sanded muck association | 6,846 | 17 |
| Enfield-Agawam association | 3,741 | 9 |
| Belgrade-Raynham-Hinesburg association | 1,911 | 5 |
| Total | 40,154 | 100 |

Source: Soils and their Interpretations for Various Land Uses: Town of Barnstable, Massachusetts, by U.S. Department of Agriculture Soil Conservation Service in cooperation with Barnstable Conservation District, February 1973. See also USDA Soil Conservation Service Barnstable County MA Interim Soil Survey Report, 1987.

Barnstable contains a significant proportion of soils which are potentially productive for agricultural purposes. These soils, which have been inventoried by the Soil Conservation Service, should be preserved wherever possible for future food production. According to SCS criteria, 10,482 acres, or 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, therefore, 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.

Several other maps interpreting Barnstable's soils have been developed. The Regional Field Service in *Land Resource Analysis* and *A Plan for Open Space* mapped the Town's soils according to the United States Department of Agriculture's Unified Soil System. This system, which groups soils according to their texture, was used as the basis for maps showing soil stability and vulnerability to soil erosion and surface water pollution.

**TABLE 2. Agricultural Soils of Prime State and Local Importance,
Town of Barnstable (Source: Soil Conservation Service)**

| <u>SCS CLASSIFICATION</u> | | <u>Farmland Soil Type*</u> | <u>Agricultural Capability Class**</u> | <u>Total Acreage</u> |
|---------------------------|--|--------------------------------|--|--------------------------|
| 12b | Plymouth-Barnstable loamy sand, 3-8% slopes | S | 2 | 263 |
| 12c | Plymouth-Barnstable loamy sand, 8-15% | S | 3 | 84 |
| 13b | Paxton fine sandy loam, 3-8% | P | 2 | 55 |
| 13c | Paxton fine sandy loam, 8-15% | S | 3 | 30 |
| 52a | Windsor loamy sand, 0-3% | S | 3 | 1,848 |
| 52b | Windsor loamy sand, 3-8% | S | 3 | 1,034 |
| 53a | Agawam fine sandy loam, 0-3% | P | 1 | 1,138 |
| 53b | Agawam fine sandy loam, 3-8% | P | 2 | 439 |
| 53c | Agawam fine sandy loam, 8-15% | S | 3 | 63 |
| 54a | Deerfield loamy coarse sand, 0-3% | S | 3 | 27 |
| 63a | Enfield very fine sandy loam, 0-3% | P | 1 | 1,648 |
| 63b | Enfield very fine sandy loam, 3-8% | S | 2 | 226 |
| 64a | Tisbury very fine sandy loam, 0-3% | P | 2 | 25 |
| 74a | Ninigret fine sandy loam, silty soil variable 0-3% | P | 2 | 12 |
| 74b | Hinesberg fine sandy loam, 3-8% | P | 2 | 10 |
| 84a | Belgrade silt loam, 0-3% | P | 2 | 176 |
| 84b | Belgrade silt loam, 3-8% | P | 2 | 776 |
| 85a | Raynham silt loam, 0-3% | P | 3 | 378 |
| 212b | Plymouth-Barnstable very stony loamy sand, 3-8% | S | 4 | 745 |
| 212c | Plymouth-Barnstable very stony loamy sand, 8-15% | S | 4 | 1,505 |
| Total | | | | 10,482 |

*P = Prime farmland soils; has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oil seed crops. Must meet specific criteria established by SCS.

S = Farmland soils of State or local importance; fails to meet one or more of the criteria for prime farmland, but is important for the production of food, feed, fiber or forage crops.

** 1 = High, 4 = Medium, 7 = Low

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. The moraine generally declines in altitude from west to east, to a maximum elevation of around 100 feet at the Yarmouth line. Similarly, the maximum elevation of the outwash plain declines from around 120 feet above sea level at the Sandwich line to around 50 feet at the Yarmouth line. The upper elevations of the glacial lake deposits on the north side are usually found at about 50 feet above sea level.

As previously noted, the most extensively sloping terrain is generally found within the irregular knob and kettle landscape of the moraine, which is characterized by moderate to severe slopes. The outwash plain has for the most part level to moderately sloping terrain, with the exception of the numerous glacial kettleholes, which are frequently characterized by moderate to extremely steep slopes abutting water bodies, wetlands, or occasionally dry upland bottoms. Removal of native vegetation and exposure of the underlying sandy soils on the moderate to steep slopes of the moraine and outwash plains can result in severe erosion problems. Potentially erosive soils in the Town have been mapped on the soil stability map in *A Plan for Open Space* (1973).

Where steep slopes occur adjacent to water bodies, sedimentation and pollution from surface water runoff are potential adverse effects of inappropriate land usage. Zones of vulnerability to surface water pollution have been mapped in *A Plan for Open Space* (1973).

The glacial lake deposits of the north shore are characterized by nearly level to gently sloping terrain, generally bordering salt marsh along their northern limit. Salt marsh and other wetlands occur on virtually level terrain; most inland wetlands are former ponds and lakes which have filled in with organic muck and debris. By contrast, coastal dunes are moulded by wind and wave action into ridges which are constantly changing in shape and size.

Section 4B: Landscape Character

Barnstable's landscapes vary in character from wooded upland areas covered by oaks and pines to seashore habitats of salt marshes, beach grasses and dunes. Also significant are the inland wetland areas, including pond and lakeshore areas, cranberry bogs and associated red maple and cedar swamps. As most of the prime upland has been consumed by development, there is a greater pressure to develop these sensitive areas.

Barnstable is at the heart of the Cape Cod moraine with the highest elevations in Town running slightly north of the mid-line. This area is traversed by the Mid-Cape Highway. The land to the north and south of this divide gently slopes to Cape Cod Bay and Nantucket Sound respectively. The land for several miles in each direction is currently covered by the oak/pine forests, which are slowly emerging into the climax forest of American beech. Much of this area has already been developed, but a significant amount has been preserved in a natural state by purchase for open space or by conservation restrictions. Throughout this area are many ponds and lakes with their associated streams and water courses. Most of the land surrounding these water bodies is developed into single family homesites.

To the south, the land levels off in topography and the fresh water courses connect to the numerous bays and inlets that lead to the Sound. Several of the older village centers are located along these bays. Most of this land is completely built upon and the visual and landscape character is one of continuous suburban development between small urban centers.

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 there is progress being made to re-link visually and physically the main village of Hyannis to its harbor through the use of open space, parks and pedestrian pathways and bridges.

Land north of the moraine slopes more abruptly to the ocean. Characterized by older farms that date back to the 17th century, this area is currently under protection via the Old King's Highway legislation, which is designed to protect the visual and historic character of the land north of Route 6. Development has occurred away from the scenic highway (Route 6A) in the back fields of the old farms, hidden from view. Thus much of the visual character has been maintained, especially along Route 6A. Further to the north are the Great Marshes and the barrier beach Sandy Neck, areas that have been well protected. Unfortunately, vistas of them are limited because the old farms have revegetated heavily, leaving only scattered glimpses of the marsh and Sandy Neck. Opening up several of these areas would greatly enhance the visual link between the upland areas and the harbor.

The north side of Town has fared better visually in terms of impact on the landscape than has the south side. Even public access to the shore on the south side is severely limited with existing resources already at maximum capacity during peak use times. In terms of recreational use there must be some effort to expand salt water and fresh water beaches for future generations. Also some consideration must be given to redefining village character along the south side's connecting roadways. The urban sprawl that currently exists gives travelers no visual diversity

during their passage through Town. This may be accomplished by the purchase of some of remaining parcels when possible and by working with landowners to plant visual buffers or open significant vistas to the ocean. The lead in this area is the Town's project to link downtown Hyannis to Hyannis Harbor. If this project is successful, momentum could be generated for spin-off projects in other parts of Barnstable.

Section 4C: Water Resources

Barnstable's water resources can be grouped into two broad categories: fresh water, including numerous inland surface water bodies and groundwater, which together form an interconnected and interdependent system; and marine waters, which include tidal estuaries and harbors connected to Cape Cod Bay and Nantucket Sound. Together, these two systems constitute the Town's lifeblood, as the groundwater is the source of all of its drinking water, and the abundant inland and coastal water resources are a primary reason for its great attraction as a place to live and visit. Paradoxically, this attractiveness generates great pressure on these fragile resources.

Cape Cod's sole-source aquifer in general and Barnstable's groundwater resources in particular have received considerable study, publicity, and attention since the mid-1970's (see *Water Quality Management Plan/Environmental Impact Statement for Cape Cod*, 1978, by the Cape Cod Planning and Economic Development Commission and *Groundwater and Water Resource Protection Plan for Town of Barnstable*, 1985, by SEA Consultants Inc., with update mapping in 1989), and continuing modelling and mapping through the present.

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 is known as the water table, lying at depths beneath the land ranging from over 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 shores, at the rate of approximately 350 feet per day.

The groundwater system is replenished entirely by precipitation; on the average, about 16 inches of the Town's annual precipitation is recharged to the water table. The level of the water table fluctuates seasonally due to evapotranspiration, evaporation and precipitation. Pumping for public water supply wells can cause a localized lowering of the water table known as a "cone of

depression." When groundwater elevations are lowered in times of reduced recharge (i.e. drought), and where cones of depression are found to overlap surface waters, significant drawdowns of those surface waters may be observed. The Hyannis ponds complex has recently (1991) been seasonally affected by such impact.

From a planning perspective, the amount of available groundwater within the Town appears to be adequate to serve the Town's drinking water needs for the foreseeable future.

The major concern, therefore, is contamination of that supply through unwise land use practices. The sanitary landfill in Marstons Mills (scheduled to be capped in the year 1997) and sewage treatment plant in Hyannis are two point sources of pollution which are located upgradient of public supply wells. The town's industrial zone at Independence Park resides in Hyannis' primary drinking water supply area. In addition, on-site sewage systems are a source of groundwater pollution if located in unsuitable soils, at high density, or in close proximity to water bodies or the groundwater. In *A Plan for Open Space*, the Regional Field Service identified a zone of highest vulnerability to groundwater pollution based upon a 0 to 10 foot depth to the water table combined with highly permeable soils (Carver, Enfield and associated soils of the outwash plain). In practice, many septic systems that meet the legal limits of Title V of the State Environmental Code and more stringent local Board of Health regulations are being located within this zone, and therefore are a potential source of groundwater degradation, in particular through excessive nitrogen loading.

All of Barnstable's ponds and lakes are water table ponds, i.e. areas where the groundwater table intersects the land surface. The majority of these water bodies are located on the outwash plain, having formed in depressions (kettle holes) caused when blocks of ice melted following the retreat of the glacier. In size, they range from the 654 acres of Lake Wequaquet, the third largest fresh water body on Cape Cod, to the numerous small ponds of several acres or less. These ponds are a great scenic, recreational, and wildlife habitat resource, but also provide desirable home sites, particularly as coastal waterfront lots become scarcer and more expensive. *An Inventory of the Ponds, Lakes and Reservoirs of Massachusetts: Barnstable County*, by James A. McCann, lists 55 ponds and lakes within the Town.

Section 5 of the present plan contains an inventory of Town facilities providing access to water. Improved (hard surface) boat ramps are provided at Wequaquet Lake and Lovell's Pond. Unimproved boat ramps with gravel or sand surfaces are found at Hamblin and Middle Ponds. Many freshwater ponds in Barnstable are easily accessed by the public along Town ways to water

for water-contact pursuits: fishing, swimming, canoeing, etc. Section 5 also lists the many Town freshwater bathing facilities.

The Barnstable Conservation Commission continues to sponsor studies of freshwater ponds and lakes within the Town to determine the impact of development upon water quality. In general, the studies have found the quality of water within the ponds and lakes surveyed to be good. That was the finding of a diagnostic/feasibility study of Wequaquet Lake, Bearse Pond, and Centerville's Long Pond completed in 1989 and Shallow Pond in 1991. Strategies to keep these ponds from eutrophying were advanced. Localized problems have been identified, however. For example, eutrophication of Lake Elizabeth/Red Lily Pond in Craigville and of Hamblin Pond in Marstons Mills have been observed. A diagnostic/feasibility study of Hamblin Pond was completed in 1993 and an alum treatment remediation project was completed in 1995. Remedial measures to reverse the eutrophication of Red Lily Pond are presently being considered.

There are no navigable freshwater streams or rivers within the Town of Barnstable. Several so-called rivers (for example, the Bumps, Centerville, Santuit, Marstons Mills, and Skunknett Rivers) are actually 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. These streams generally flow within broad channels which are remnants of major rivers that carried meltwater from the glacier. Along the coast, the streams mix with tidal waters and become estuarine in nature; some host anadromous fish runs, where alewives gain access to the ponds and lakes to spawn. In addition to the natural runs, several artificial ditches have been dug to serve as herring runs, and two are still in use: a 2000 foot channel running from the outlet of Middle Pond to the Marstons Mills River, and ditches connecting Lake Wequaquet, Long Pond, and the Centerville River. Dry most of the year, these ditches are opened by the Town Natural Resource Division in spring and fall during the migration periods of the herring. They also provide a means of shunting stormwater flows to reduce high lake levels. Barnstable's herring runs are mapped in *Massachusetts Coastal Regions and An Atlas of Resources*, Volume II, Chapter 5 of the Massachusetts Coastal Zone Management Plan, June 1, 1977, and in *Cape Cod Critical Habitat Atlas*, Association for the Preservation of Cape Cod, 1990.

Barnstable's streams have had their flows extensively altered and regulated by cranberry growers. Several ponds within the Town are former cranberry bogs which have been permanently flooded.

Barnstable's coastal resources are extensive. The Town contains approximately 99 miles of tidal shoreline, ranking first among the 351 cities and towns in Massachusetts. These resources are the result of the continuing interaction of the Atlantic ocean and climatic forces with the geologic landforms left by the glacier, processes which continue to shape Barnstable's coastal landscape today. Most of the Town's exposed shorelines are eroding landward from the effects of land subsidence, wave activity and a gradual rise in sea level.

Localized accretion is also occurring due to longshore sediment transport along barrier beaches, for example at the tip of Sandy Neck. Numerous groins, jetties and revetments have been built in an attempt to protect residences and to stabilize inlets and harbors for boating activities. Such structures, however, are not without environmental consequences of their own, as they starve downdrift areas of sand nourishment. Natural protection is provided by the Town's major barrier beaches: Sandy Neck, Dead Neck/Sampson's Isle, and Long Beach. Sandy Neck, together with the Great Marshes and Barnstable Harbor, was designated an Area of Critical Environmental Concern by the Commonwealth in 1978.

Development in Barnstable has historically focused along its shorelines. Coastal waters and beaches are used heavily for recreational activities such as boating, swimming, fishing and shellfishing. The harbors, bays, estuaries and tidal flats are rich in shellfish resources, yielding a variety of shellfish (softshell clams, quahogs) to both recreational and commercial harvesters. A commercial oyster culturing enterprise is carried out in Cotuit Bay, and a number of smaller commercial aquaculture ventures exist in the Town's waters. Localized water quality problems have been caused by cesspools or inadequate septic systems, storm drains and other non-point sources of pollution related to land development. Increased boating activities associated with accelerated growth and lack of pumpout facilities have also contributed to local coastal pollution from various sources, such as outboard motor combustion, boat sewage, fueling spills, prop scour, etc. The proliferation of private piers in the Barnstable's many embayments has eliminated or fragmented an appreciable amount of extant shellfish habitat. In 1991, a total of 1,093 acres were closed to shellfish harvest due to contamination. Water quality at most of the Town's beaches remains excellent for swimming.

An inventory of Town facilities providing access to salt water is provided in Section 5. Improved launching ramps or facilities are provided at Hyannis Inner Harbor, Barnstable Harbor (at Scudder Lane and Millway Beach), Lewis Bay, Centerville River, East Bay, North Bay (at Bay Street, Osterville) and Prince Cove; most are badly in need of enhancement. Frequent boat launching also occurs at the Town's facilities at West Bay at Bridge Street, Osterville and at Cotuit Bay at Ropes Beach.

Barnstable's many sheltered embayments and coastal harbors provide excellent boating, sailing and water-dependent recreation such as swimming, fishing, skiing (North Bay), shellfishing and boardsailing. The adjacent waters of Nantucket Sound to the south and Cape Cod Bay to the north further delineate Barnstable as a place inextricably linked to its marine environment. For many, these calm- and clean-water environs are a unique and unparalleled recreational resource. For a few, these waters provide a bounty (shellfish, finfish) which enables a special kind of livelihood.

The Town's coastal resources are well mapped in *Massachusetts Coastal Regions and An Atlas of Resources*, and in *Cape Cod Critical Habitat Atlas*. They are also delineated in the *Coastal Resources Management Plan*. The one hundred year coastal floodplain, the area that has the statistical probability of being flooded by major storm, events that occur on the average once every one hundred years, has been mapped by the Federal Emergency Management Agency, and comprises approximately 20% of the land area of the Town. Ideally, most development should be excluded from the floodplain in order to minimize storm damage; in actuality, the floodplain has been extensively developed, primarily for residential homes. The floodplain zoning by-law sets standards for new construction within floodplains.

Barnstable's barrier beaches have been mapped in *Massachusetts Barrier Beaches*, a 1982 inventory compiled by the Massachusetts Coastal Zone Management Program.

Section 4D: Vegetation

Barnstable contains a number of diverse plant communities which are ecologically significant, and which help to define the visual character of the Town. There is a wide diversity in the size, successional stage, and vulnerability to development of these plant communities or associations. Most development is occurring in wooded upland areas characterized by a prevalent oak-pine association. These areas are generally suitable for development, due to adequate soil conditions and depth to groundwater. The visual impact of development in wooded areas can be reduced if attempts are made to preserve existing vegetation and to establish buffers from adjacent land uses. As the available buildable land is consumed, however, more development is taking place in transitional areas characterized by high groundwater, poor soil conditions, and a mixture of upland and wetland associations known as 'transitional zones.' Wetland communities and water bodies are substantially protected by State and local wetland statutes. Development adjacent to these areas, however, can have a detrimental effect upon these resources, if not carefully regulated.

Vegetation communities perform many critical environmental 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. The value of wetlands has been well documented, and includes flood control, storm damage prevention, and prevention and attenuation of pollutants. 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 the visual quality of the Town's landscape.

The stability of an ecosystem is dependent upon several factors, including the maintenance of genetic diversity within it. An abundance of species within a plant association is preferable to dominance by one or a few species. In *A Plan for Open Space* (1973), vegetation communities are ranked according to complexity, a combination of uniqueness, diversity and sensitivity. Since Barnstable contains a number of unique and diverse plant communities, emphasis should be placed upon their protection. Some of these communities are protected by wetlands statutes and/or are contained within conservation areas. Others are highly vulnerable to development or degradation from unharmonious land use.

Several areas of Barnstable, notably sections of Independence Park and Sandy Neck, contain rare plant communities. The Natural Heritage Program (a branch of the Massachusetts Division of Fisheries, Wildlife and Environmental Law Enforcement) has mapped these areas based on current available information.

There are several ways in which plant associations can be categorized. The general categories that are listed here can be subdivided into smaller, more specifically defined groups. *Land Resource Analysis* (1972) lists sixteen separate vegetation associations. However, the following categories should suffice for the purposes of this open space plan. Only the most characteristic plants are listed for each category.

Seashore and Sand Dune - The dominant species in these areas is American beachgrass (*Ammophila breviligulata*), 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 (*Solidago sempervirens*), salt-spray rose (*Rosa rugosa*), bayberry (*Myrica pensylvanica*), and beach plum (*Prunus maritima*).

Salt Marsh - Cordgrasses (*Spartina alterniflora* and *S. Patens*) are the dominant plants here. Salt marshes have a very high productivity and are the nurseries for a multitude of finfish and shellfish species. They also are important for the protection of freshwater supplies from salt water intrusion, and act as barriers to protect uplands from coastal and storm erosion.

Freshwater - This category can be divided into several plant associations. Pond, stream and lake margins are populated by the yellow pond-lily (*Nuphar variegata*), and the white water-lily (*Numphaea odorata*). Adjacent wooded swamps contain red maple (*Acer rubrum*), tupelo (*Nyssa sylvatica*), and/or white cedar (*Chamaecyparis thyoides*), with sweet pepperbush (*Clethra alnifolia*) a common understory plant. Freshwater bogs are common throughout the Town and contain the commercially important cranberry (*Vaccinium macrocarpon*), highbush blueberry (*Vaccinium corymbosum*), and the swamp azalea (*Rhododendron viscosum*). Land surrounding these freshwater plant associations is increasingly subject to development.

Woodlands - Woodland areas are characterized by a mixed oak-pine association dominated by several species of oak (*Quercus sp.*) and pine, principally pitch pine (*Pinus rigida*). Pitch pine is dominant in areas where fires have been frequent over the years, since it is extremely fire resistant. Areas covered by pitch pine forests have, however, declined in recent years, as fire prevention methods have improved. Other trees characteristic of the mixed oak association are: American holly (*Ilex opaca*), hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), and white pine (*Pinus strobus*), although these species were more prevalent in the original forest prior to the arrival of the Europeans. Many sections of woodlands in Barnstable have been developed, and further construction in these areas is expected.

Old Fields and Disturbed Areas - Former agricultural areas, including abandoned fields, meadows and pastures, and other areas disturbed by human activity, are important habitats for a wide diversity of weed-like plants and wildflowers. Pokeweed (*Phytolacca americana*), wild morning-glory (*Convolvulus sepina*), chicory (*Cichorium intybus*), Queen Anne's Lace (*Daucus carota*), and the common milkweed (*Asclepias syriaca*) are common throughout these areas. Wild species of herbs, grasses and roses may also inhabit such places. These habitats are in an intermediate stage of succession, and if left undisturbed are replaced by a variety of woody vegetation, including eastern red cedar (*Juniperus virginiana*) and wild cherry (*Prunus serotina*). Like woodlands, these areas are frequently developed. Relict sand plain grasslands persist at several locations in Barnstable, notably at the Old Fairgrounds golf course in Marstons Mills.

RARE SPECIES HABITATS IN BARNSTABLE

Source = Massachusetts Natural Heritage Program, February 1984

| <u>Map #, Area</u> | <u>Importance</u> |
|----------------------------------|--|
| 1 Sandy Neck/Great Marshes | 2 current rare plant species; 1 current rare reptile species; 1 historical rare plant species |
| 2 Meetinghouse Way | 1 current rare plant species |
| 3 Cape Cod Airport | 1 current rare plant species |
| 4. Moraine east of Woodside Road | 1 significant natural community with 2 current rare plant species |
| 5 Round Pond | 1 historical rare plant species |

| | |
|--|---|
| 6 Mary Dunn Pond complex (Hyannis Ponds) | 2 significant natural communities with 13 current rare plant species; current rare animal species; historical rare plant species |
| 7 Hathaway Ponds | 2 historical rare plant species |
| 8 Wequaquet Lake, Shallow Pond | 3 current rare plant species; 3 historical rare plant species |
| 9 Centerville | 2 historical rare plant species |
| 10 Long Pond | 1 historical rare plant species |
| 11 Craigville, Craigville Beach, Long Beach | 2 tern colonies with 2 current rare bird species; 1 historical rare reptile species |
| 12 Bumps River Road Cranberry Bog | 1 historical rare amphibian species |
| 13 Hyannis | 3 historical rare plant species |
| 14 Hyannisport | 1 current rare plant species; 2 historical rare plant species |
| 15 Osterville | 1 historical rare plant species |
| 16 Osterville Grand Island | 1 historical rare plant species |
| 17 Sampson's Island/Dead Neck | 2 bird colonies with 4 current rare bird species |
| 18 Dunbar Point | 1 tern colony with 1 current rare bird species |
| 19 Garrett's Pond | 1 historical rare plant species |
| 20 Prince Cove | 1 historical rare reptile species |
| 21 Hamblin Pond | 1 current rare plant species |

Section 4E: Fisheries and Wildlife

The shrinkage of large undeveloped land areas has diminished Barnstable's wildlife resources, but due to a diversity of upland, wetland and water habitats they are still abundant. Deer, fox, otters, pheasants, hawks and quail are only a few among dozens of types of upland wildlife found within the Town. Wildlife is an important recreational and educational resource, and represents a rich, natural heritage which helps to define the basic character of the Town. It adds interest and variety to the landscape, plays an important role in controlling pest infestation, and in general is a barometer of the ecological health of the community. In addition, hunting has

historically been and continues to be an important recreational activity, particularly on the salt marshes and in the West Barnstable Conservation Area.

As throughout all of Cape Cod, land development in Barnstable places increasing pressures on wildlife resources. The rapid spread of roads and subdivisions has reduced and greatly fragmented the habitat of many native wildlife species which cannot easily survive. Many of these species have already been replaced with species which have adapted to suburban environments; others remain threatened by development.

Barnstable's wildlife species were analyzed in *Land Resource Analysis* (1972) and broken down into three major groups: Group 1, song birds, birds of prey, and water fowl; Group 2, upland game birds, marsh birds and small waders, long-legged waders, and shore birds; and Group 3, small game and deer. These groups were then compared with different plant communities to determine the relative value of these communities as habitat for wildlife. In addition, major habitat and breeding areas were mapped.

The present Open Space Plan recognizes shellfish and finfish as important wildlife resources in Barnstable, and their subtidal and intertidal habitats and adjacent saltmarsh resources as important wildlife habitats. In addition, the present plan recognizes interior wetlands, streams, and surface waterbodies as important wildlife habitats. An additional upland wildlife habitat resource which should be mentioned is utility company right of ways. These areas provide ideal edge conditions and browse for upland wildlife.

In 1992 many of the habitat areas identified 20 years ago, primarily on the north side, in *Land Resource Analysis* (1972) remained intact. Sandy Neck, the Great Marshes, an area of upland adjacent to the Great Marshes in the area of Navigation Road, and the Bridge Creek conservation area remain prime wildlife habitat and breeding areas. The bulk of the moraine along both sides of the mid-Cape highway, particularly in the western half of the Town, remains primary wildlife habitat. Particularly important are the West Barnstable conservation area; the area east of this conservation area from Route 149 to Oak Street; and the area on the north side of the mid-Cape from Cape Cod Community College to the Old Jail Lane conservation area. In the eastern

portion of Town, the critical habitats of the Hyannis Ponds area have been protected through the recent acquisition by the MA Department of Environmental Management.

Although development has proceeded comparatively slowly along the moraine compared to the outwash plain, increasing encroachment on primary wildlife habitat is continually evident. Wildlife habitat areas on the south side of Town have almost without exception been greatly diminished in size or eliminated due to extensive land development during the last 20 years. In particular, the primary wildlife habitat mapped in the Marstons Mills west of the Indian Lakes has been utilized for major residential subdivisions. Isolated areas adjacent to the Sandwich town line and the area around the Centerville/Osterville Water Company's Hayden wellfield and Old Post Road north of Route 28 remain intact.

The accompanying map, developed with the assistance of the Natural Resource Division, illustrates wildlife habitat areas identified in *A Plan for Open Space* (1973) which have been lost to development during the last twenty years. Not included are areas which have been recently subdivided and are targeted for development in the near future. These include, in particular, several large parcels within the triangle of land in West Barnstable and Marstons Mills bounded by the Service Road to the north, Old Stage Road to the west, and Oak Street to the east. Diminishment of the Town's wildlife resources is an inevitable by-product of growth and development. A heightened effort to maintain and improve the wildlife habitat value of extant open space parcels is essential, as is the continued acquisition of critical areas to enhance existing habitat. These resources will disappear if action is not taken to identify, preserve, and improve critical habitat areas to accommodate viable populations of wildlife for generations to come.

SHELLFISH RESOURCES: The Town of Barnstable has roughly 100 miles of coastline, including estuaries and marshes. There are approximately 6,178 acres of shellfishing area within the town. Of this area, 809 acres are classified as prohibited or seasonally prohibited by the Division of Marine Fisheries (D.M.F); 264 acres are under management closures or are classified as prohibited by D.M.F. along with North and South Coastal areas.

BARNSTABLE HARBOR / GREAT MARSHES / SCORTON CREEK: The topography of Barnstable Harbor and its marshes is varied. The harbor is comprised of shifting tidal flats and bars, peat marshes, and extensive tidal creeks. As such, it is considered prime shellfish habitat.

Species harvested from the area include soft shell clams (*Mya arenaria*), quahogs (*Mercenaria mercenaria*), sea clams (*Spisula solidissima*), razor clams (*Ensis directus*), blue mussels (*Mytilus edulis*) and scallops (*Aequipecten irradians*). The most abundant of these species are soft shell clams, quahogs, and blue mussels.

The cord grass (*Spartina alterniflora*), serves as a natural method of capturing "sets" of soft shell clams seed, making the Great Marsh, Huckins Is., Little Thatch Is., and Great Thatch Is. ideal for soft shell clamming. The banks and flats of tidal creeks such as Bass Creek, Broad Sound, Brickyard Creek and Scorton Creek also serve as prime habitat.

Natural quahogs are also found in the Eel Grass Cove, Mussel Point and Calves Pasture areas. The natural sets of "pot hole" quahogs have been hard hit as a result of increased fishing pressure caused by water quality closures in other areas. There is a quahog relay area at Scudder Lane.

Natural mussels beds are found off Mussel Point and Bone Hill. These beds are subject to forces of nature such as ice flows and predation by waterfowl. Large ice flows can uproot exposed mussel beds. These beds are extensively used by large flocks of eider ducks.

NORTHBAY, MARSTONS MILLS RIVER, PRINCE COVE / WEST BAY, COTUIT BAY / SEAPUIT RIVER: The southern shoreline of North Bay and West Bay is characterized by sandy substrate. Moving northward in West Bay and Cotuit Bay, the soils become interspersed with peat marshes and small sandy beaches. Grand Island, which borders the shoreline of Cotuit Bay and West Bay, is also mixed peat and sand substrates. The northern half of North Bay and Marstons Mills River is surrounded by low-lying tidal marshes.

Species harvested from the area include soft shell clams, quahogs, and scallops. The sandy substrate combined with protected banks in the Seapuit River make this area well-known

for its soft shell clams. Unfortunately, a portion of the river is currently under a State D.M.F. water quality closure. The waterfowl population seems to play a large part in this closure. An Audubon shorebird nesting area is located within this vicinity. Waterfowl are known to "raft" at night on the Seapuit River side of Sampsons Island and in the river itself. Fecal coliform readings in Pirate's Cove, Sampsons Island, can reach as high as 450 gms of fecal coliform per 100 ml during the summer months. Acceptable water quality for shellfishing is 14 gms/100ml.

Scallops are harvested from North Bay, Cotuit Bay and West Bay in the fall months.

There are currently (1996) nine aquaculture leases in West Bay, Cotuit Bay and North Bay totaling approximately 60 acres.

EAST BAY, CENTERVILLE RIVER / BUMPS RIVER: When one thinks of shellfishing in the Centerville River and Bumps River, memories of oysters literally lining the banks come to mind. Oysters were the most frequently harvested species in this area until 1985. It was around this time that oyster beds on the south shore and oyster grants experienced devastating oyster mortalities, due to the spread of a parasitic oyster disease identified as MSX (haplosporidan parasite *Minchinia nelsoni*).

Quahogs and soft shell clams thrived despite the effect of the MSX on the oysters. Sandy substrate and tidal flats at the river junction create a perfect habitat for both species.

Even before the MSX out-break, the shellfishermen were faced with a new problem, water quality. A full coliform pollution closure was placed on the Bumps River in 1985. During 1985, the Centerville River was closed east of the west abutment of the Bumps River bridge. In 1988 the Centerville River was closed entirely to all shellfishing. During 1994 all of East Bay was also closed to shellfishing due to pollution.

LEWIS BAY / HYANNIS HARBOR: Lewis Bay is comprised of sandy substrate. 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. A favorite quahogging area lies between Sea Street Beach and East Beach. Soft shell clams can be found on Egg Island.

Scallops are found in all areas of Lewis Bay and Hyannis Harbor. The amount of scallops being harvested has diminished due to the general decrease of the scallop resource. Independent scientists have found black lesions in the scallop tissues. Some feel it could be caused by the increasing amounts of hydrocarbons in the water. Others feel scallops run in a cycle and they are at a low point these past years.

HALLS CREEK (5TH AVE.): "5th Ave" is a tidal creek area. It is known for its soft shell clam stock. The creek itself has tidal flats at low tide and is surrounded by peat marshes. This area is under a State D.M.F. management closure and a State D.M.F. water quality closure at the time of this report.

SHOESTRING BAY / POPPONESSETT BAY: The soils of Shoestring Bay are interspersed with peat marshes. There are two large tidal flats exposed at low tide on the west side of Crocker's Neck. Soft shell clams can be found on these flats and also extending all the way around Ryefield Point. Quahogs can be found in the same general area.

CONCLUSION: In order to maintain significant shellfish resources, we must strive to protect shellfish habitat. The primary effort of the Town of Barnstable Natural Resource Division has been aimed towards habitat preservation and restoration. The Natural Resource Division works closely with various Town and State agencies in protecting against inappropriate coastal construction and pollution of shellfish areas. These two issues remain the crucial ones in the future of our Town's marine resources.

Section 4F: Scenic Resources and Unique Environments

Section 4F-1: Scenic Landscapes

The following list of areas of historic preservation and community character was developed by the Town's Planning Department.

Scenic Areas:

Sandy Neck and the Great Marsh
Maraspin Creek along Commerce Road
Harbor Point area (overlook to Barnstable Harbor)
Hallets Mill Pond area and wetlands (also in Yarmouth)
Cranberry bogs along Bog and River Roads
Fullers Marsh and Pinquickset Cove
Sampsons Island and Dead Neck Barrier Beach
Centerville Harbor Area, including Dowses, Long, Craigville and Covell's Beaches
Squaw Island and Hyannis Port Golf Course
Hyannis Harbor, including Hyannis Port, Keyes Memorial and Kalmus Beaches
Veterans Memorial Park
Pine Street and Parker Roads Area, including Whelden/Jenkins farmstead and cranberry bogs
Mills River and Prince Cove Area
Rushy Marsh Pond and Area

Scenic Vistas:

from Mid Cape Highway at Shoot Flying Hill looking over Lake Wequaquet to Centerville Harbor and overlook to Barnstable Harbor
from Craigville Center to Centerville River over wetlands
Sunset Hill overlook to Squaw Island and Hyannis Port Golf Course and Centerville Harbor

Scenic Corridors:

Route 6A (entire length)
Route 149 (entire length)

Section 4F-2: Unusual Geologic Features

The Sandwich Moraine runs west-east along the Town of Barnstable's north side, with the Mid-Cape highway (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. It is said that at Shootflying Hill near the fire tower one can almost stand on the division, with one foot on permeable soil and the other on clay.

Kettle ponds -- formed by great blocks of ice left by the glacier as it moved south, then retreated -- are numerous. Many host rare plant species, including wildflowers that attract threatened butterflies, moths and dragonflies. The ponds in Independence Park (Hyannis Ponds

complex) are considered a critical habitat by the Massachusetts Natural Heritage, and the most important natural site in the state by the U.S. Fish and Wildlife Service.

Barnstable's 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, and fin- and shell-fishing remain excellent to this day. Sandy Neck rivals Monomoy as a major barrier beach. Abundant recreational use (including off-road vehicles) makes wildlife management at Sandy Neck a considerable challenge.

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

Section 4F-3: Cultural and Historic Areas

Too many to enumerate in full here, Barnstable's cultural and historic resources offer a wealth of recreational pursuits for the Town's residents and visitors.

Every village has its unique historical assets, and each reflects the history and development of its area. To experience the flavor of Cape Cod and its noteworthy citizens of old, one can visit the many historical society museums, libraries and cemeteries throughout the Town. Some examples: The Olde Colonial Courthouse, built in 1774 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 Cahoon Museum of American Art in Cotuit records the maritime history of Barnstable. Located in the U.S. Custom House (c. 1855) and old jail (c. 1690), the Town-owned Trayser Museum focuses on the history of Barnstable County, especially the growth of industry, culture and society; a special area of emphasis is the Town's maritime and judicial history. The Cotuit Library exhibits ship models and the Historical Society of Santuit and Cotuit houses early American articles. The Osterville Historical Society displays dolls, antiques, Osterville history and boat shop exhibits. The Centerville Historical Society displays Cape Cod art, industry, domestic life, Sandwich glass, maritime artifacts and textiles.

Barnstable's art and theatre events have long been an attraction to residents and visitors. The Cape Cod Art Association fosters local artists with a teaching gallery that conducts art shows, classes and demonstrations throughout the year. The Cape Cod Symphony Orchestra and the Hyannis Ballet Company stage many theatre productions, while the Barnstable Comedy Club is the oldest amateur theatre group in New England. The Melody Tent in Hyannis was one of the early music "circuses," and continues to host famed musical performers.

Cape Cod has long been recognized for its artist colonies. Art galleries showcase local and regional talent in various mediums including oils, paints, photography and sculpture. Classes and lectures in fine and performing arts are offered at the Cape Cod Conservatory, the Cape Cod Community College, and the Cape Cod YMCA. The Arts Center at the Old Town Hall is humming with activity, with reading and writing groups, poetry, painting and drawing classes, and exhibits produced by the Heritage Group. The old Guyer Barn focuses on local arts, crafts and readings.

Other points of interest include the Cape Cod Railroad, which departs from Hyannis for 1-3/4 hours scenic excursions aboard a vintage train. The cranberry industry has many bogs to admire. Whale watching out of Barnstable harbor is a wonderful way to admire and learn about marine mammals. Barnstable also has many special-interest organizations, including bird-watching groups, sports clubs, walking groups, garden clubs and yacht clubs.

Summer in Barnstable brings many special cultural events. The pro volleyball tournament played at Craigville Beach draws many spectators. The Hyannis Street Festival, the Hyannis Harbor Festival, the Chowder Festival and the Pops By the Sea outdoor concert are splendid local events. Summer stock theatre, the Johnny Kelley road race, and the annual Figawi boat race to Nantucket provide added diversion.

Winter also brings a variety of events. Most villages sponsor Christmas festivals, plays and "strolls" down main streets. Beginning on New Year's Eve in 1991, the Town has hosted an annual First Night celebration with art shows, concerts, poetry readings, ice sculptures and a parade.

Section 4F-4: Areas of Critical Environmental Concern

In 1978, the Town of Barnstable was awarded a special status for the Sandy Neck-Barnstable Harbor area by the Executive Office of Environmental Affairs. The area includes the Sandy Neck barrier beach, Barnstable Harbor and the Great Marshes. Designated the Sandy Neck Barrier Beach System Area of Critical Environmental Concern, the diverse coastal resource

was reserved for special protection because of its quality, productivity, uniqueness and economic benefits.

Section 4G: Environmental Problems

The general over-development of the Town is an environmental liability in and of itself. The building boom of the eighties will reappear again and the Town must be ready to steer development to areas of lesser environmental impact. New building should be encouraged in areas already impacted such as unfinished building tracts. Careful review of existing zoning, setbacks and subdivision regulations is needed immediately to prepare for future growth. Rather than opening what little remaining virgin lands there are to development, these lands should be protected where appropriate for their open space value, and building concentrated in areas best suited to handle it.

Specific problem areas are as follows.

1. Hazardous waste sites. Several significant pollution plants around the village of Hyannis contribute to the overall degradation of the sole source aquifer.

The Willow Street and Route 28 section of Hyannis is considered an area of hazardous waste pollution that is causing groundwater contamination. No single source has been identified. Cleanup of nearby wellfields is just beginning.

In the Thornton Drive and Independence Park area of Hyannis, the Barnstable Water District has remediated up an illegal dumping site under an agreement recently reached with the responsible party. This is a very sensitive region for an industrial park, with many hazardous waste producers in the area. Other incidents are likely to occur.

In Cotuit, Camp Candoit, an old World War Two Army base, was leaking hydrocarbons into the nearby bay. Remedial action was undertaken by the U.S. Corps of Engineers in 1995.

The Town septic treatment plant is a major contributor to the septage plume under Hyannis. This situation is being closely monitored.

2. Landfills. The Town landfill in Marstons Mills, although recently brought into better condition through sanitary layering, is still an unlined landfill contributing to groundwater pollution. The landfill is scheduled to be closed and capped in 1997 new area of filling will be lined and used after that date to protect the groundwater from further contamination.

3. Erosion. Given the sandy nature of the Town, coastal erosion will always be a problem. Land areas will be cut and filled by the action of the sea and tides. Wise planning must allow for these inevitable changes and direct human activity to best coincide with this natural cycle. Two town-owned barrier beaches, Long Beach and Sandy Neck, are areas of constant natural erosion.

4. Chronic flooding. Long Beach Road is a low-lying, barrier beach residential area subject to frequent flooding that will be devastated if a major hurricane hits at high tide. The Town should look at a plan for step-by-step acquisition of properties on Long Beach Road as they become available as a possible solution to the long-term need for both storm-damage prevention and ocean access. As part of a long-term process of recreational beach development, these properties could be acquired and beach areas assembled over a period of decades. This type of effort has already been tried at other locations in the state, and a plan could be modeled upon those endeavors.

5. Sedimentation. In Barnstable, harbor channels are the areas most prone to sedimentation. The shifting currents cause channels across Town to fill in at rapid rates, necessitating frequent dredging. The sandy and gravelly soils on the upland portions of the Town drain so well for the most part that sedimentation is not a problem.

6. Development impact. Residential building has placed septic systems directly upon aquifer recharge areas. Zoning restrictions and outright purchase of lands to protect these areas should be a top priority.

New commercial developments, particularly in sensitive environments, should be carefully controlled. Further commercial pollution from the abutting Independence Park industrial area could be devastating to the water supply of the Town.

Since road run-off is a key pollutant to groundwater supplies, roadway and parking lot infiltration systems must be carefully planned to reduce impacts. Use of vegetated swales and stormwater retention basins should be encouraged by Town oversight agencies to accommodate and mitigate the effects of run-off.

Since Hyannis is the urban center for the entire Cape, the growth of surrounding towns places pressure on Hyannis. Hyannis needs open space to counteract this onslaught of growth on the rest of Cape Cod.

7. Ground and surface water pollution. Nitrogen loading of the aquifer is perhaps the most serious threat to groundwater in Barnstable. The current standards of Title 5 do not remove these types of pollutants from the discharge water.

Development must be tightly controlled on marginal lands with high water tables to reduce the impact on groundwater from septic systems. Areas subject to seasonal flooding, with poor soils or with a higher water table remain unsuitable for building because of the other human activities that introduce pollutants into groundwater. Alternative systems could be used to improve deleterious situations at existing homes, but should not be seen as a tool to transform lots currently "unbuildable" under existing regulations into areas suitable for development.

SECTION 5 - INVENTORY OF CONSERVATION AND RECREATION LANDS

The Recreation and Conservation Departments have compiled in **Appendix A** a tabular inventory of open space and recreation lands with key characteristics. While Appendix A covers other Public Works land and Water Company lands as well, the narrative focuses on those lands only open to the public for general active and passive recreation. Note that a copy of the Town's "Hiker's Guide to Conservation Lands and Sandy Neck", with maps and interpretive trail guides, is also included in Appendix A, section 1.

Bacon Playground, Cobb's Hill provides a 1.92 acre active recreation area to the immediate neighborhood area and is open to residents and non-residents of the Town of Barnstable.

Millway Beach is a small, 1.38 acre beach in the Village of Barnstable. It contains a bath house with restroom facilities and 23 parking spaces. A 'residents only' facility accessed by showing a \$15.00 resident sticker, the beach is patronized by approximately 150 daily visitors during the summer months.

The Centerville Recreation Building serves as a multi-purpose facility for indoor and outdoor activities. The entire parcel covers 2.71 acres which includes a softball field and playground. The two-story building provides space for community meetings and a summer recreational program. The facility primarily serves the Centerville village community.

Covell Beach in Centerville combines with the larger Craigville Beach to create the popular 17+ acre facility visited by nearly 175,000 persons per year. Open to residents and non-residents alike, a parking fee is required without the resident sticker. These facilities reach capacity parking during the height of the summer tourist season. Covell beach is served by nearby snack bars, cottages and a large Christian camp located proximate to the Craigville and Covell Beach sites. 773 parking spaces serve the two facilities as well as bath houses and restrooms.

Wequaquet Lake offers a public access to a small beach facility consisting of less than 1 acre. While a relatively new bath house has been built and a swimming program is in place, the facility is inadequate in meeting demand. The Town recently decided not to pursue a large and undeveloped parcel available on the lake for public recreational use.

Elizabeth Lowell Park serves the small Village of Cotuit with an active recreation park. Covering close to 5 acres, it is dedicated to a baseball field for amateur leagues and informal basketball. There exist no on-site parking or restroom facilities; however, the facility is adequately maintained and serves an immediate neighborhood function.

In addition to the one active recreational park Cotuit has dedicated a small pond and beach of less than one acre each. Lowell's Pond has a bath house and swimming program but suffers from erosion and the need to vigilant maintenance. Loop Beach is open to residents and non-residents at no fee, but given the capacity and up to 200 visitors daily during the summer the beach is overcrowded and inadequate to meet demand.

The Village of Hyannis is the commercial and tourism center for the Town of Barnstable. Several public beaches lie less than a mile from the Village center. the most accessible is Veterans Memorial Park, which abuts the John F. Kennedy outdoor memorial off Sea Street. A picnic area and restroom facilities provide a convenient passive recreation area to resident and non-resident alike. Included in the 13 acre site are a playground, snack bar and volleyball court. Swimming and sailing programs are offered and provide an ideal setting in the calm waters of Hyannis harbor. Veterans provides spaces for 160 automobiles. The next most accessible beach facility is Kalmus Park covering close to 50 acres and provided as a gift to the Town by a film benefactor. Natural preservation restrictions were part of the deed, so except for a bath house, snack bar and large parking area (347 spaces), the site remains in a largely undeveloped state. Kalmus provides and excellent view of the entrance to Hyannis harbor and is a popular staging area for windsurfers and small sail boards.

East Beach is a 4.3 acre swimming beach with excellent views of the Hyannis inner harbor. A small parking area serves residents-only.

Keyes Memorial Beach lies at the end of Sea Street near Hyannisport and consists of a 123 car parking area, picnic facilities, a snack bar and volleyball court. Covering 10 acres, the beach affords a view of many stately oceanfront homes in Hyannisport.

In addition to the Hyannis beach-oriented facilities, major active recreation opportunities are provided by the Kennedy Memorial Skating Rink, and the Old Colony recreation fields. The Kennedy Rink houses the Barnstable Recreation Department and numerous programs for residents, both indoor and outdoor. A recent Community Development Block Grant award will assist in the construction of a skate board park in 1998. The Old Colony recreation area is devoted primarily to softball, baseball, lacrosse and soccer matches. Over the years Old Colony has become overgrown with vegetation and has experienced extensive vandalism. A Community

Development Block Grant is planned in combination with a State of Massachusetts Urban Self-Help Program grant to reconstruct and renovate this facility. Work will consist of regaining the regional attraction of this site and its preservation as permanent recreation land.

The Village of Marstons Mills, located in the western portion of Barnstable, is home to the Town's major public golf course. The 155 acre site includes an 18-hole course with driving range and restaurant. Supported by an enterprise fund and managed by the Town, the site was formerly the Olde Barnstable Fair Grounds. The golf course currently goes by that name. Parking is available for 154 automobiles. During 1996 revenues at the golf course increased 6.5% over the previous year. Improvements continue to keep the course in competitive shape. The Junior Golf Program is nationally recognized.

Burgess Park is also located in Marston's Mills and includes 29 acres devoted to passive recreation. Frisbee golf, croquet and volleyball are available.

Hamblin Pond provides a 7 acre aquatic environment in Marstons Mills for swimming and picnicking. A bath house is also available. This facility is for residents only and during the summer months is patronized by approximately 120 visitors per day.

The Village of Osterville has Dowses Beach, which is served by local residential streets on Nantucket Sound. In addition to a small barrier-type beach there is a breakwater for fishing and a prominent bath house. While parking spaces exist for 197 automobiles, capacity is often exceeded with 517 daily summer visitors. Little or no additional off-site parking is provided. Recent plans by the Barnstable Disability Commission envisioned a handicapped accessible and usable fishing pier. Though unsuccessful in a bid for grant funding, efforts continue to provide unique and accessible recreation facilities.

In addition to Dowses Beach, Osterville includes a freshwater body, Joshua's Pond which inhabits 4.4 acres of Town land. There exist a bath house, picnic tables and swimming programs. This facility is adequate given a usage of approximately 15 daily summer visitors..

A small community center serves Osterville with a gymnasium, function room and kitchen.

West Barnstable Village covers the northwest portion of the Town of Barnstable. Most notable is Lombard Field, lying proximate to the village center and public library. The site includes a lighting softball field and some community vegetable gardens. Covering over 11 acres,

the site lies across from the West Barnstable Community Center. The latter serves primarily as a meeting and function facility.

In addition to the above, thirteen (13) public schools provide open space and active recreation facilities to the community.

There exist a large number of access points and right-of-way managed by the Barnstable Public Works Department. They consist primarily of boat launch landings and pedestrian access points to aquatic environments. On the inner harbor of Hyannis (Bismore Park) the Town maintains a dock, marina and bulkhead.

The Town of Barnstable has cooperated with the Nature Conservancy, the Barnstable Land Trust and the Association for the Preservation of Cape Cod in establishing large areas dedicated to conservation in their natural state. The State of Massachusetts has contributed as well, most recently in taking 357 acres of ecologically rich open space east of Mary Dunn Road in Hyannis. The local Barnstable Land Trust holds land in perpetuity for the benefit of all Barnstable's citizens.

Town of Barnstable Conservation lands include:

Hathaways Pond Conservation Area consists of 60 acres in Hyannis and straddles the boundary between moraine deposits to the north and outwash plain deposits to the south. A 1.2 mile walking trail involves an ascent of 70 feet. Features include a pond overlook, vernal pool and water lily basin.

Crocker Neck Conservation Area consists of 97 acres in Cotuit which were purchased in 1985, preventing an 18-unit waterfront subdivision. The 1.5 miles of walking trails introduce the visitor to pine/oak forest, salt marsh, freshwater marsh, shrub swamp, beach and estuarine flats.

Whelan Conservation Area consists of 12.91 acres in Centerville and 1.5 miles of hiking trails. A 1/2 mile interpretive trail meanders through a rare sandplain grassland.

Long Pond Conservation Area is 37 acres abutting a large pond north of Cotuit which is the site of community gardens. Approximately 2 miles of trails traverse the site, leading visitors through fields, woodlands and to two observation decks overlooking the Pond. There is an interpretive trail with 30 stops. Fishing and picnicking are allowed.

Sandy Neck Barrier Beach Ecosystem is an intensively managed, multiple use conservation area 6 miles long and up to 1/2 mile wide, and consisting of a barrier beach and

marshes along the northern coast of Barnstable. It is comprised of vast dune systems, vernal pools, maritime forests. It shelters the eight thousand-acre "Great Marsh" and Barnstable Harbor.

West Barnstable Conservation Area is the Town's largest conservation area, encompassing 1,114 acres. It is popular for hiking, horseback riding and mountain biking.

Old Jail Lane Conservation Area encompasses 180 acres in Barnstable Village, and is a major terminal moraine representing the limit of glacial advance before its retreat some 15,000 years ago.

SECTION 6 - COMMUNITY GOALS

Section 6A: Description of Process

Community attitudes about open space and recreation were evaluated from two sources: a 1990 survey done by the Town and a 1992 done by the Open Space and Recreation Plan workgroup with the assistance of the Joint Village Association. In the 1990 survey, individual residents responded to a written series of questions; the 1992 survey was completed by the individual associations (with some villages doing a survey of individual residents first).

Section 6B: Open Space and Recreation Goals

In the 1990 Town of Barnstable Resident survey, more than 85% of Town residents stated that they desire a rural or semi-rural character in their respective village. An urban character was desired by less than 1%, while about 14% thought a mixed-use character was appropriate.

When asked which policy areas were important to the, residents ranked them in this order (highest to lowest priority): education, environment/conservation, public safety, public health, human services, infrastructure, economic development and recreation/leisure.

While recreation was rated least important among these important policy areas, when residents were asked which services they would like to see increased, youth activities was at the top of the list. A smaller number of resident felt there should be more parks and more recreation opportunities; most thought the level should remain the same. Residents stated that they would like to see a decrease in the number of restaurants and shopping areas.

Among different areas of the Town government, residents strongly supported increasing transportation and school expenditures. Significant willingness to pay for increased services in conservation, recreation and beaches was also expressed.

The 1992 survey asked the village associations about their open space and recreation needs, and their willingness to commit to the acquisition, development and maintenance of lands.

Strong support was shown by the village associations for the continuation of building a townwide system of open space for resource protection, recreation, wildlife needs and aesthetics. It was also felt that more public education needed to be done to help build support for open space protection.

The village associations felt that because municipal lands afford many people their only opportunity for recreating, the Town must maintain and expand recreational opportunities, assuring that every village is served. Of utmost importance was the need for additional ballfields, ocean beach and parking facilities and walking trails. Wooded acres critical to aquifer protection, which are suitable for passive recreation such as hiking and birdwatching, must be matched by mini parks in villages not already served.

While the disparate views are not easily summarized, the prevailing view seems to be that we must improve maintenance and use of existing open space and recreation lands that the Town already owns, while seeking to increase open space and recreation holdings with well-planned acquisitions. A 1996 Town of Barnstable resident survey found that 45% of respondents expressing an opinion believed that the Town provides good to excellent access to conservation lands, while 23% believed access to be fair to poor.

SECTION 7 - ANALYSIS OF NEEDS

Section 7A: Summary of Resource Protection Needs

The fruits of the Town of Barnstable's tradition of open space acquisition continue to provide its residents and visitors unparalleled active and passive recreational opportunities. At the same time, however, the community recognizes that its resolve to protect and preserve its open space assets must be unflagging.

In implementing the Town's prior open space and recreation plans, more than 776 acres have been assembled. Emphases for acquisition have focused on the following resource areas:

- * Land within the zones of contribution of public supply wells.
- * Waterfront land, both coastal and inland, that provides enhanced recreational opportunities; and land within the recharge areas of surface water bodies.
- * Environmentally sensitive areas characterized by marginal development conditions such as steep slopes, high groundwater, poor soils, rare and endangered natural communities, and wetlands; and land adjacent to these areas.
- * Land which is important to the visual quality and character of the Town.
- * Prime wildlife habitat.

By 1993, major greenway and wetland corridors envisioned in the 1984 Open Space Plan have been reconfigured on the actual landscape due to continued land development. Certain of these corridors envisioned over a decade or more ago no longer hold potential and will be abandoned. Even so, the goal of protecting a contiguous wetland or "riparian" corridor along the Town's major surface water tributaries (i.e. Bumps, Skunknet, Little, Santuit Rivers) has met with appreciable incremental success. The acquisition of wetland tracts in completing such stream-course linkages remains a high priority. Moreover, the continued focus on acquisition of coastal wetland resources will provide an important measure of protection for these fragile resources beyond that provided by local ordinance and state statute. Continued incremental parcel acquisition in the Great Marshes of West Barnstable should continue, as should salt marsh acquisition wherever the opportunity is present.

The priority greenway located outside wetland areas remains the east-west oriented glacial moraine along Highway 6. Many of the Town's premier conservation parcels are located along this transect (i.e. Old Jail Lane, Bridge Creek, Spruce Pond, Otis Atwood, West Barnstable). Along the transect resides the best potential for a regional greenway, connecting Barnstable with Yarmouth and Sandwich. These greenspace linkages, critical from a regional context, should be acquisition imperatives for the Town.

At the same time, however, municipal budgetary constraints have rendered the linkage of certain isolated, relict open space parcels a difficult endeavor. In such cases, effective linkages may be realized by employing one or a combination of non-conventional methods such as bike trails, sidewalks, footpaths (walking easements) and scenic roads. That is, the feasibility of fee acquisition or conservation restriction as exclusive avenues for realizing open space linkages isn't optimal in all circumstances. Therein, viable and cost-effective alternatives should be applied.

Coastal intertidal areas serving as land containing shellfish and supporting our commercial and recreational shellfisheries were indicated for protection in the Town's 1990 Coastal Resource Management Plan (CRMP). Looking beyond the Osterville embayments focus to a townwide application, shellfish habitat preservation through the implementation of the prescribed CRMP's actions in private and public trustlands is fully embraced by the present open space plan.

Similarly, the CRMP has articulated the need for preserving and improving existing navigational fairways and for the closer regulation of designated mooring fields. The objectives of the CRMP actions and the intent of the present plan coincide in this regard. Just as the shellfish habitats, the watershed and navigational fairways are regarded as important recreational open spaces which need both heightened management and vigilance if their optimal utility is to be attained.

Finally, wellfield protection needs have been served by three primary methods: municipal land acquisition, Fire District/purveyor land acquisition, and Board of Health and Zoning regulations. While continued land acquisition to protect our water supply remains important, reliance on staunch regulatory postures are likely to play a more prominent role in protecting the aquifer in the five year reach of the present open space plan.

Section 7B: Summary of Community's Needs

An analysis of the SCORP publications revealed the same concerns to be held by the authors of these documents as were shown by surveys taken in the town. Supply and demand

surveys noted among others that tennis and camping facilities were lacking on the Cape. The top local planning issues for the Cape and the Islands according to this study were as follows:

- * Development and expansion of ocean access.
- * Development and expansion of water-based recreation.
- * Maintenance of recreation facilities.
- * Acquisition and protection of wildlife habitat.
- * Development and expansion of access to recreation and open space areas for the differently abled.

The state work has confirmed what our local studies have told us: the need to expand the current availability of ocean access. In order to do that the town must look at the areas where suitable land is available. The state surveys also showed respondents preferred the expansion of existing facilities to purchasing and developing entirely new areas. The criteria for improving ocean access in a recreation area would be proximity to an existing facility, availability of adjacent lands, local water quality and temperature, and potential environmental impacts of expansion. This type of expansion need not be accomplished all at once but could be phased in over a period of time. With the development of a long range land acquisition fund the town could plan for such a program.

The second point from the state study was the development and expansion of water-based recreation. Expanding the parking available to boat ramps around the town is one opportunity. The Town of Barnstable is blessed with many rights-of-way to the water. These ways are only that, however. There is little or no provision for parking at these facilities and the result is that during the height of the boating season the few available spaces are quickly filled leaving late-comers to park in the streets, on private land or make elaborate plans to store vehicle and trailer. Evidence of this is clearly seen any Saturday or Sunday morning at Routes 28 & 149 in Marston's Mills. People using Prince Cove landing must park a half mile away on the state highway layout and on private land in order to use this ramp after the six parking spaces are filled. By acquiring lots neighboring Prince Cove and similar landings, the Town would go a long way to providing increased access to the water for the boating public.

The third area to which the state study speaks is the maintenance of existing facilities. Except for boat landings, the Town's facilities have been well maintained over the years, but time

is taking its toll. The skating rink is a prime example of a major recreational operation that needs a complete overhaul. This plan looks to support that effort and the improvement of all town recreational facilities.

Wildlife habitat protection is the fourth area of concern listed by the state in its study. In the Town of Barnstable there are several habitats of critical concern that warrant immediate protection. The Hyannis Ponds, and in particular those east of Mary Dunn Road, provide unparalleled examples of globally rare pondshore communities. Fifteen rare or endangered species reside at the locus, which remains arguably the most important unprotected site for rare plant and wildlife species in Massachusetts. Recent land acquisition there by the MA Department of Environmental Management will provide the ongoing habitat protection this critical area deserves.

Critical areas surrounding the Marstons Mills river herring run are still unprotected from development. Significant sandplain grasslands south of the moraine remain open for future development and no plan exists for their protection. These are but a few examples of the kinds of habitat available for protection in Barnstable. Through imaginative acquisition techniques the Town may be able to protect large areas of significant habitat for little money.

The last of the five areas of planning concern for the state was handicap access development and expansion. Although fifth on the state's list, this area needs immediate action. As shown from the demographic data, the population of the Town is weighted towards the older generation. Coupled with the inadequacies of the existing facilities, these facts push this area of concentration to a higher priority than the state allots it. In terms of time and money this area could be addressed at an early stage of the open space and recreation plan as this type of improvement requires lesser expenditures of time and money than some of the other areas.

The study that the state has done clearly supports the wants and wishes of the residents of the Town of Barnstable. Working from this study, the town-wide surveys, and our own surveys it is evident that the Town's priorities are clear: protect what we have now!

Section 7C: Management Needs

The Conservation Commission's Land Management Sub-Committee is presently in the process of developing management plans for its primary conservation holdings. The plans, similar in scope to the one developed by IEP, Inc. in 1988 for Long Pond, 1776 North, Bridge Creek and West Barnstable conservation areas, examine existing site conditions and use patterns and

recommend management strategies consistent with appropriate land stewardship objectives. The West Barnstable plan, for example, completed in June, 1992, identifies a need to improve public access to the 1,100 acre site while at the same time ensuring the protection of the natural resources. Motorized vehicle use on the property clearly poses the greatest threat to the environment at this location. Gates or boulders to exclude vehicles were recommended and were installed at all entry points. Designated parking lots with attendant signage were designed to accommodate user groups and facilitate access to proposed hiking trails and destination points.

Management plans for West Barnstable, Crocker Neck, Long Pond, Hathaways Pond , and Whelan conservation areas have been completed. As in the case of the West Barnstable site, the status of each location will be evaluated and specific recommendations formulated with an objective toward enhancing both passive recreation use and wildlife habitat. Additionally, access needs for the disabled will be identified, especially as they pertain to the Whelan and Hathaways Pond locations. At Hathaways Pond, existing facilities at the recreation beach include picnic tables, grills, and ample parking. Lacking, however, are a means of access to the water's edge (e.g., a boardwalk or ramp) and rut-free and relatively level trails leading to a planned destination point on the pond's west side. As part of a joint undertaking with the Recreation Department, steps will be taken to ensure that disabled individuals will not be excluded from enjoying some of the more important activities offered at this location. At Whelan conservation area, the flat topography diverse ecology and relative shortness of the trails renders it a primary target for a disabled accessible trail. Implementation of these proposals will be monitored over time and if deemed successful will be expanded to include other locations as funding permits.

Funding for conservation area improvements continue to come from the Capital Improvements Program. Projects covered include gates, signs, observation decks, information kiosks, parking lots, maps, miscellaneous maintenance equipment and access trails for the differently abled. The projects outlined are basic yet fundamental site improvements which will enhance the town's resources in a most effective and cost-efficient way. Management plans are in draft form for the Old Jail Lane parcel and Bridge Creek sites. Also being considered is the development of a trail network for the Hyannis south area which would lead from town hall to Nantucket Sound and back, touching upon conservation, recreation and municipal holdings.

This trail, if implemented, would allow citizens townwide the ability to enjoy their open space parcels to their fullest potential with the assurance that the lands are being actively managed and properly safeguarded from future despoliation.

Although not all conservation lands will receive individual review, generic plans will be developed for the smaller parcels often located in developed areas and for the expansive marsh properties for which a management plan might simply state that nothing be undertaken to change its present status.

The management disposition of the 80 acre "Darby" property in Osterville remains a municipal imperative. Acquired in 1985 for general municipal purposes, the parcel has been relegated to a largely unmanaged status since then. While certain restrictions to vehicular access have been emplaced, illicit vehicle use is not uncommon there. Major decisions on the fate of the parcel (i.e. partitioning to various municipal jurisdictions, consolidation under exclusive conservation or recreation management) await the Town and should be affected early in the longevity of the present five year plan.

SECTION 8 - GOALS AND OBJECTIVES

For the purposes of this Open Space Plan, the Open Space and Recreation Workgroup has adopted the goals of the local comprehensive plan, as established by the Open Space and Recreation Subcommittee of the Local Planning Committee. These goals are listed below.

GOAL ONE - OPEN SPACE IN BARNSTABLE.

The Town shall continue to assure that prime open space is preserved and retained and is used for the good of the public at large.

Land Acquisition: The Town shall continue to promote the acquisition of prime open space for the purposes of conservation and protection of resources, preservation of wildlife habitats, provision of recreational opportunities and to maintain the visual quality of the Town.

Open Space Preservation: The Town shall encourage the preservation of open space and secure public access through creative means of conservation restrictions, fee interest, land easements, tax abatements, transfer of development rights, gifts and zoning.

Residential Subdivisions: All new residential subdivisions greater than 4 acres and located within the Greenbelt and fingerlinks corridors shall be Open Space Residential Development. From 40 to 60 percent of the total upland area shall be reserved as permanent open space. The amount of required open space within a particular division shall be determined on the environmental protection needs of a particular site.

Commercial and Industrial Subdivisions: Regulations shall be developed for commercial and industrial subdivisions that incorporate the concept of 40 percent of all land as open space, shared parking, entrances and landscape amenities. These regulations shall be incorporated into guidelines for commercial and industrial subdivisions.

Redevelopment: All redevelopment shall strive to preserve existing vegetation and shall enhance the open space impression by incorporation of green buffers. When redevelopment is located in proximity to public open space, trail easements and buffers shall be planned and developed as part of the redevelopment.

Land Regulatory Activities: The Town shall continue to promote and enforce regulations which ensure development within Barnstable that is compatible with and protects natural resources.

Resource Protection: Open space shall be selected for its ability to protect natural resources, preserve ecological systems and retain archeological and culturally important sites.

GOAL TWO - RECREATION IN BARNSTABLE.

Maintain and expand recreational opportunities throughout Barnstable and ensure that every community and village is served appropriately.

Multi-Use Recreation Facilities: Public recreational facilities and open space areas shall be designed for year round and multi-use, where appropriate.

Renewal of Facilities: The Town shall undertake assessment of all existing recreational facilities and shall develop and fund a program for repairs, improvements and rehabilitation of the facilities to meet today's needs and standards. All renewal of facilities shall strive to meet national standards.

Expansion of Programs and Facilities: The Town shall undertake an analysis of its recreational needs and shall develop plans to fulfill those identified needs.

Awareness of Recreational Opportunities: The Recreation Department, in concert with other Town agencies, shall strive to educate the public on the availability of programs, facilities and services, and to promote public use.

Special Needs: Open space and recreational facilities shall be made accessible to disabled persons and program opportunities shall be available to the special needs population whenever possible and practical.

Group Recreation: Town agencies shall work cooperatively to ensure that public facilities meet the needs of local and community groups and facilitate nonprofit and social gatherings and events.

Revenue Producing Recreation and Facilities: In all revenue producing programs and facilities, assurances must be obtained that the opportunity for an individual or family to participate is not closed due to fees or expenses. All revenues received shall be utilized to provide or expand recreational opportunities for the general public.

Visitors and Tourists Facilities: The position of Barnstable, especially Hyannis, shall be maintained and improved as the central Cape Cod area for tourists and visitors. Major tourist facilities and services, large coastal beaches, marinas, open space and multi-modal transportation facilities shall be encouraged. Quality design standards shall be encouraged for all tourist facilities and in all visitor services.

GOAL THREE - MARINAS, WATER AND COASTLINES OF BARNSTABLE:

Public access should be secured to and along all water to protect and preserve natural amenities of the water's edge (its land and water sides), and, where appropriate, to expand water based recreation and fishing.

Coastline Activities: All construction and land division along the coastlines shall provide at minimum the public benefit of view easements to the coasts and tidal lands. All commercial development along the coastline shall provide for public access along the water's edge where possible and practical.

Marinas and Harbors: All development, redevelopment and building along or within a zoned Marina District shall allow for public access to and, where possible, along the waters edge.

Shellfish Resource: Inventory and assess shellfish habitats and resources of the Town and assure the continuation of this commercial and recreational asset through proper management and propagation.

Herring Runs: Continue to protect, acquire and preserve easements along all herring runs within the Town to assure this natural resource for future generations.

Flood Plain: The 100 year coastal flood plain should be revisited both in designation and in development techniques to ensure that the concern for nature's forces are accounted for in this precarious environment.

Coastal Pollution: Existing development which contributes to the pollution of the coastal waters shall be mitigated. New development and redevelopment that poses an unmitigated threat of pollution shall not be permitted.

GOAL FOUR - PUBLIC LANDS AND FACILITIES IN BARNSTABLE:

All public properties of the Town shall be managed for their intended public benefit and to protect natural resources, preserve wildlife habitat, provide recreation and maintain the visual and cultural qualities of town.

Land Management: Existing Town-owned properties shall be managed and maintained to ensure appropriate use and public benefit.

Public Roads: The improvement of public roads shall provide for the planting of street trees or natural canopy vegetation as appropriate. Public roads which link public open space, schools, ways to water, and recreational sites shall provide bicycle, walking and jogging trails between facilities, where appropriate.

Multi-Use of Facilities: When possible, encourage appropriate multiple uses of Town facilities.

GOAL FIVE - WILDLIFE HABITATS IN BARNSTABLE:

Protect and increase the wildlife population and habitats of Barnstable.

Wildlife Corridors: Identify and preserve those wildlife corridors that foster diversity in habitat and link known wildlife resource areas.

New Development: In all new developments, including single family dwellings, which are located in identified wildlife corridors and habitats, it shall be required to institute measures to ensure the preservation and the continuity of the wildlife corridor/habitat.

Program Development: Wildlife protection programs shall be instigated and extended to promote the increase of wildlife populations and diversity.

SECTION 9 - FIVE-YEAR ACTION PLAN

Fiscal Year 1998

- Create Open Space and Recreation Plan Implementation Committee. Group's task will be to realize goals set in this plan.
- Produce GIS maps of open space and recreation land for public dissemination.
- Reinstate tax title property conveyance plan.
- Continue implementation of disabled access plan for Sandy Neck.
- Develop acquisition plan for beach-front properties.
- Locate parcel and begin acquisition process for Cummaquid park area.
- Maintenance of existing recreation properties.
- Repair Kennedy Rink, including upgrade of bed pipe system, enclosure of roof and addition of proper ventilation system.
- Repair Osterville Community Building, including leaky roof and deteriorating walls
- Make town buildings and beach areas accessible to the disabled, including Covell's Bath House, Dowses Bath House, Joshua's Pond Bath House, Cotuit Loop, Hamblin's Pond Bath House, and West Barnstable Community Building Bathrooms.
- Erect sign designating disabled parking space at Long Pond Conservation Area.
- Resolve Town management disposition for Darby property, Osterville.
- Establish Conservation Land Acquisition Fund. Funds to be expended under the direction of the Conservation Commission to obtain independent appraisals of land proposed to be acquired by the Conservation Commission, pay back taxes on both gift and tax title properties, and otherwise meet the incidental costs pursuant to land acquisition by the Commission.
- Continue "priority parcel" identification and acquisition program.
- Continue conservation land management planning and implementation effort, including implementation of plans for West Barnstable, Hathaway Pond, Crocker Neck, Long Pond (Marstons Mills), and Whelan conservation areas, and the preparation of management plans for Spruce Pond and Otis Atwood or Lumber Mill conservation areas.
- Submit budget for FY 1999 projects, including disabled accessible trail at Whelan conservation area

Fiscal Year 1999

- Continue work to acquire beach-front property (both pond and ocean frontage).
- Acquire parcel for Cummaquid park area.
- Resurface Dowses Beach parking lot with hard top or hot mix and stripe.
- Repair and expand the Sandy Neck parking lot, recognizing that expansion may be best accommodated off-site.
- Repair existing softball and youth fields.
- Construct disabled access trail at Whelan conservation area.
- Expand and repair Covell's Beach Lot.
- Implement Land Acquisition Fund.
- Continue "priority parcel" identification and acquisition program.

Continue conservation land management planning and implementation effort.
Submit budget for FY 2000 projects, including disabled accessible trail at Hathaways Pond conservation area.

Fiscal Year 2000

Acquire salt-water access and plan for development.
Begin planning for expansion of facilities and restoration of frontal beach at Sandy Neck.
Expand waterfront area on Wequaquet Lake (better access and larger area).
Expand the number of ballfields.
Continue "priority parcel" identification and acquisition program.
Continue conservation land management planning and implementation effort.
Submit budget for FY 2001 projects.

Fiscal Year 2001

Develop new salt-water access.
Acquire fresh-water access and plan for development.
Expand family activity areas, including expansion of the picnic area in woods right of Lowell Park (Cotuit), and construction of Cummaquid park area.
Upgrade present parks:

- Veterans Park: senior citizens activities (bocci, shuffle board, etc.), upgrade playground equipment, upgrade grill and picnic equipment.
- Burgess Park: senior citizen activities (bocci, shuffle board, etc.), upgrade trails and access for the differently abled to water (swimming and fishing), and improve and expand picnic areas.
- Ridgewood Park: upgrade family activities, including swings, slides and playground equipment

Improve trail in the Jenkins Wildlife Reserve portion of the Bridge Creek conservation area to accommodate disabled.
Create new Open Space and Recreation Workgroup. Review current plan and begin rewrite process.
Continue "priority parcel" identification and acquisition program.
Continue conservation land management planning and implementation effort.
Submit budget for FY 2002 projects.

Fiscal Year 2002

Develop new fresh-water access.
Review other conservation areas townwide for suitability of cost-effective improvements aimed at enhanced disabled accessibility.
Monitor existing improvements and expand upon or modify as deemed appropriate to ensure that disabled access needs are being adequately met.
Work on the interpretive trail network at a select site that would accommodate the needs of the disabled.

Complete work on new Open Space and Recreation Plan. Submit to state for approval. Create new implementation committee.

Continue "priority parcel" identification and acquisition program.

Continue conservation land management planning and implementation effort.

Submit budget for FY 2003 projects.

SECTION 10 - PUBLIC COMMENTS

A number of constructive comments were received at the public comment sessions held at Town Hall. Comments were sought from the Board of Health, Board of Appeals, Recreation Commission, Conservation Commission, Village Associations and the general public.

SECTION 11 - REFERENCES

A Plan for Open Space: Barnstable, MA, the Regional Field Service of the Harvard Graduate School of Design, Department of Landscape Architecture, 1973.

Coastal Resources Management Plan: Town of Barnstable, Camp, Dresser and McKee, 1990.

Goals and Policies for the Town of Barnstable, by Lozano-White Associates, 1983.

Open Space and Recreation: Draft Comprehensive Plan (element six), Town of Barnstable Local Planning Committee and the Town Planning Department, 1994.

The Town of Barnstable Open Space Plan, by previous Town committees, 1984 and 1987.

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| <p>APPENDIX A TOWN OF BARNSTABLE LANDS</p> |
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TABLE OF CONTENTS

| | |
|------------|---------------------------------------|
| A-1 | CONSERVATION LAND |
| A-2 | RECREATION LAND |
| A-3 | DPW LAND |
| A-4 | CHAPTER 61A AGRICULTURAL LAND |
| A-5 | CHAPTER 61 B RECREATIONAL LAND |
| A-6 | WATER COMPANY LAND |