



# TOWN OF BOURNE



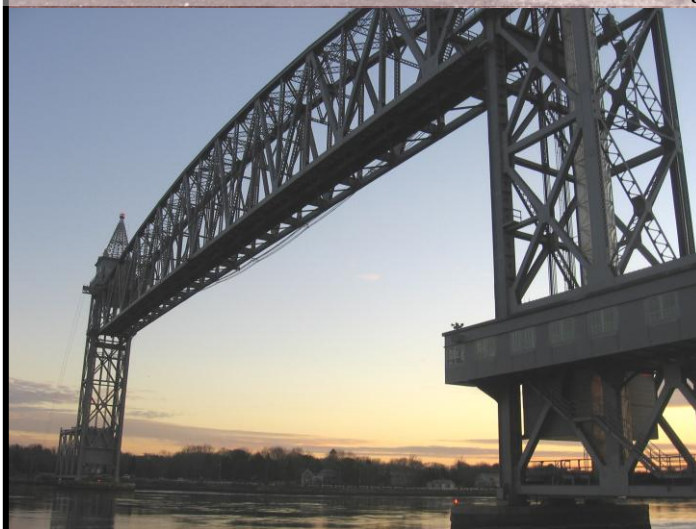
## Open Space and Recreation Plan 2008 - 2012

*Presented to:*

**Bourne Open Space Committee  
Town of Bourne  
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*Presented by:*

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**FINAL DRAFT – February 22, 2008**

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## **Credits and Acknowledgements**

Thank you to everyone who participated in the update of Bourne's 2008 Open Space and Recreation Plan. Without the effort of many, this planning effort would not have been possible.

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Jamie Sloniecki, Vice Chair  
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Linda M. Zuern  
John Ford

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**Section 1.0**  
**Plan Summary**

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## **1.0 PLAN SUMMARY**

The Town of Bourne's 2008 Open Space and Recreation Plan update has been prepared to serve as a guide to the many committees, boards, commissions and volunteer groups in the community. Much like the 1997 plan, this document was designed to encourage programs and policies that will have a lasting and constructive impact on the community in the future. As was mentioned at the Public Forum and within the Focus Groups that were held as a part of the project, the existing open space and recreation amenities and opportunities in Bourne are unique, from the Cape Cod Canal to the small pocket parks that exist in almost every village. Keeping these characteristics and continuing to think about open space, recreation and natural resources in a meaningful manner is an essential piece to quality of life in this seaside community.

The plan illustrates how important it is to continue to protect and preserve existing sensitive environmental areas and it also provides an inventory of existing recreational facilities. In terms of the future, suggestions are provided regarding what Bourne should think about protecting and adding how they can continue to make recreational opportunities available for both residents and visitors. Other sections of the Open Space and Recreation Plan update include a discussion of the most recent demographic information available (population and housing data), an environmental inventory and analysis, a discussion of goals and objectives and also a needs analysis. Perhaps one of the most significant sections is the Action Plan which details suggested steps that different boards, commissions and committees in Bourne can take to achieve the stated goals and objectives. The Action Items are ambitious, but can be done through cooperation and collaboration.

The final Open Space and Recreation Plan, in addition to serving as a guide for the town, once approved by the Massachusetts Division of Conservation Services (DCS) will allow Bourne to apply for specific types of grant funding for projects related to open space and recreation.

Bourne is a beautiful community filled with stunning scenery, an interesting history and deep tradition. The overall goal of this entire planning effort has been to provide another tool for the town and residents to use to help understand the community and how to improve its open space and recreation in the future while protecting what currently exists.

## Section 2.0 Introduction

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*Monument Beach, Photo By: Mary McCrann*



## **2.0 INTRODUCTION**

### **2.1 Statement of Purpose**

The Town of Bourne is a unique community with a tremendous diversity of natural resources, open space, recreational amenities and separate village areas. It is a strikingly beautiful community that prides itself on its heritage, devoted local residents and both natural and man-made assets. A tremendous amount of work has gone into researching the type of community that Bourne was historically and how it has progressed. The 2008 Open Space and Recreation plan update is laid out to highlight the town's history and define how residents can continue to sustain the quality of life they currently have through continued focus on the natural resources and recreational amenities that exist or may be needed in the future. The purpose of this Open Space and Recreation Plan update is to:

- ❖ Review and update the 1997 Bourne Open Space and Recreation Plan in order to create a more current, usable document that will better detail Bourne's natural resources, open spaces and recreational amenities to guide the Town for the next five years on how best to protect and enhance these resources.
- ❖ Inventory existing open space and recreational resources to identify where amenities are and what might be needed in the future.
- ❖ Inform local residents and visitors about Bourne's natural resources, open space and recreational amenities so that there is a better general understanding of what and where they are and how and why they need to be protected, acquired or improved.
- ❖ Ensure that there is a sustained momentum and dedicated constituency that will be charged with implementing the Action Plan created for the 2007 Bourne Open Space and Recreation Plan update.

The full 2007 Bourne Open Space and Recreation Plan is organized so that anyone reading it will have a comprehensive knowledge of the natural resources, open space and recreational amenities, community needs and resources available to achieve each goal, objective and action item that is detailed in the document.

### **2.2 1997 Open Space and Recreation Action Items**

The 1997 Bourne Open Space and Recreation Plan had a number of Action Items that were recommended as a way to help the community achieve the goals and objectives listed in the plan. Since 1997, the following has been accomplished:

*Community Character and Regulatory Revisions*

- Two phases of an inventory of Bourne's cultural assets meeting the Massachusetts Historical Commission's standards were completed. A third phase is needed. Copies can be found in the Town Planner's office and at the Historical Commission.

*Water Resource Protection*

- The Open Space Committee and the three Water Districts have worked on purchasing full or partial land rights within the Water Resource Protection Districts a priority.
- According to Cindy Coffin, the Board of Health has strengthened their regulations, including not allowing floor drains in Water Resource Districts.
- There is better coordination between local Boards and the Water Districts to strengthen the water resource enforcement ability of the Town.

*Management of Coastal Facilities and Protection of Coastal Resources*

- A tremendous amount of remediation has been completed at Hens Cove, Eel Pond, Pocasset River, Gray Gables and Wings Neck (salt marsh restoration). These areas, suffering from varying levels of impairment, were deemed critical to the overall health of Bourne's shoreline.
- The Sagamore Marsh (mostly located in Sandwich) has been completely restored.
- All of Buzzards Bay has been designated by the Environmental Protection Agency as a no-discharge zone.
- Some progress has been made to inventory and map Chapter 91 licenses for development within tidal zones. This continuing program may need more resources in the future.
- A draft report was prepared in November 2006 regarding suggestions about the organization design and function of the Department of Natural Resources.
- A Coastal Access sign and mapping program was completed. Signs were installed, but pamphlets and maps were not distributed.
- Gray Gables, Barlows Landing, Pocasset Marina and Eel Pond have all implemented stormwater management techniques to abate pollution from parking areas.
- Bourne has been awarded a Smart Growth grant to study the consistency of floodplain zoning in Buzzard's Bay for possible mitigation strategies and architectural design recommendations.
- The culvert at the Pocasset Salt Marsh was replaced with a more appropriate sized culvert to reinstate natural tidal flow and flushing.

**2.3 Planning Process and Public Participation**

In the fall of 2006, the Town of Bourne issued a Request for Proposals for consultant services to complete an Open Space and Recreation Plan update. The most recent Open Space and Recreation Plan had been completed in 1997. Beals and Thomas, Inc. submitted a response to the proposal request and was hired in November 2006 to orchestrate and complete the project. Work on the plan's update began immediately and the first meeting was held with the Open Space Committee and on November 27, 2006.



Beals and Thomas, Inc. assembled a team of qualified professionals that included a Project Manager, Environmental Specialist and ADA Accessibility surveyor. The team met monthly with the Bourne Open Space Committee which consists of local residents who volunteer their time to serve their community on a local committee. The Town Planner, Coreen Moore and Planning Board Secretary Ann Gratis were also a part of the committee. The Open Space Committee has been in existence since 1999 and since that time has worked diligently to protect approximately 315 acres of land in Bourne.

Beals and Thomas, Inc. conducted a site visit in December 2006. The visit consisted of partnering with the local Conservation Commission Agent, Brendan Mullaney, to travel around Bourne, get a feel for the community and take photographs of open space, natural resources, playgrounds, beaches, ballfields, walking trails, scenic viewscapes and other recreational amenities. Beals and Thomas, Inc. also conducted a well attended public forum on March 12, 2007 at the Bourne High School Library to inform local residents about the project and ask for their input regarding goals and objectives and to better understand what they really love about the community. (Notes from the Public Forum are included in Appendix 3).

In order to be inclusive and provide another public participation opportunity, Beals and Thomas, Inc. conducted two Focus Groups in April 2007. The first focus group was conducted with the local Recreation Committee. Mary McCrann attended their monthly meeting on April 23, 2007 where goals, objectives and action items from the 1997 Open Space and Recreation Plan were discussed and reviewed. The Recreation Committee also provided feedback regarding what they felt the strengths and weaknesses of Bourne's recreation amenities and programs are, where they saw the greatest need for improvement, and ideally, what they would like to happen in the community. One very intriguing point that came up again and again during this Focus Group was that the majority of the fields for sports such as baseball, lacrosse and football are 100% volunteer financed and maintained. The unwavering support from local volunteers in Bourne is what provides a tremendous amount of recreational opportunities to local youth.

Another Focus Group was conducted with a group of eight Bourne High School students on April 30, 2007 at the high school. The purpose of this Focus Group was to give the youth in Bourne an opportunity to comment on open space and recreation in the community and to offer their suggestions and viewpoints on what the strengths, weaknesses and needs are from a teenager's perspective. The Bourne High School principal, Richard McCarthy and Tom Bushy, the Student Council Advisor both were instrumental in organizing the group of students who met with Beals and Thomas, Inc. More information about this Focus Group is provided in Section 7.0 of the plan.

The Open Space Committee discussed at a meeting early in the process the characteristics that make Bourne unique and special, and what the average person should know about the community. Committee members responded with the following comments:

- The Canal is unique in that it attracts people to Bourne and it also can divide residents in the community.
- Bourne is a rural seaside community dotted with individual villages.
- Citizens of Bourne are civic-minded.
- People live in their own respective village, they are not from Bourne, they are from their own village (Sagamore, Pocasset, Bourndale etc.). Most villages have their own post office and their own beach.
- Bourne has three different water supplies and three different water districts.
- Bourne residents are independent but everyone comes together when they need to for the benefit of their neighbors and community.

The update of Bourne's Open Space and Recreation Plan was a collaborative and collective effort of many. The Open Space Committee's main goal was to prepare a plan that would be easily understood and implemented after the actual planning process is finished. The result of the nearly year long process was the creation of a document that is interesting, unique to the community of Bourne and contains specific recommendations regarding goals, objectives and action items.

## Section 3.0 Community Setting

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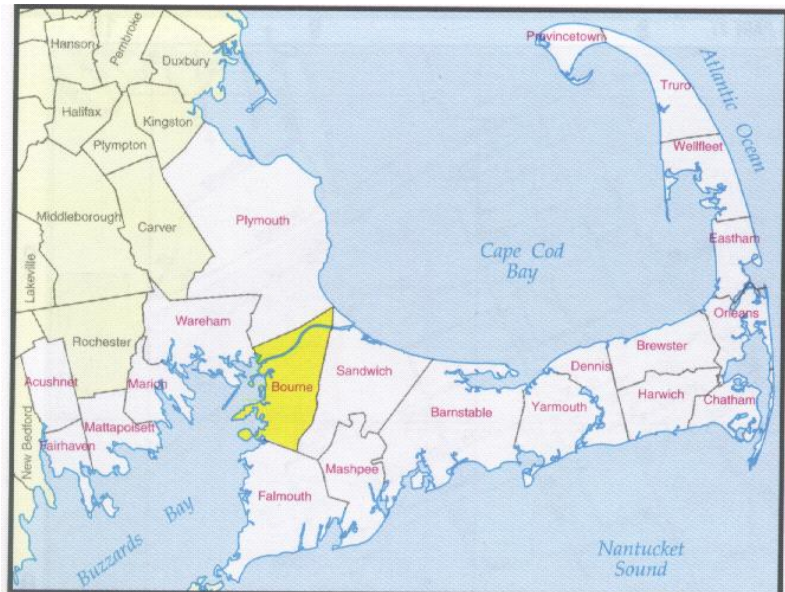


### 3.0 COMMUNITY SETTING

#### 3.1 Regional Context

The Town of Bourne is a medium sized rural community that is unique for several reasons; it is a community of villages, it is rich in cultural and natural resources, it is the home to the Cape Cod Canal and it is widely known as the “Gateway to Cape Cod.” Bourne is located approximately 60 miles southeast of Boston, Massachusetts and 55 miles east of Providence, Rhode Island. It is comprised of a total area of 52.82 square miles and a land area of 40.90 square miles which includes 15 square miles located in the Massachusetts Military Reservation and the National Cemetery. Residents and visitors who travel via local roadways between off-Cape locations and all parts of Cape Cod must pass through Bourne, traveling over the Cape Cod Canal on either the Bourne or Sagamore bridges.

Buzzards Bay, Bournedale, Sagamore Beach, Sagamore, Bourne Village, Gray Gables, Monument Beach, Cataumet and Pocasset are the villages of Bourne. While each has its own character, personality and in most cases post office, together the villages form a larger community that resonates with charm and pride. Bourne has a number of harbors, bays and inlets



for boating, swimming and shellfishing, yet the town does not seem to experience the summer tourist swath that many other Cape Cod communities experience annually.

Two different aquifers that are separated by the Cape Cod Canal are utilized by Bourne residents for water supplies. To the north of the canal, water resources come from the Plymouth Carver Aquifer while the southern portions of town rely on the Sagamore Lens. Due to Cape Cod's sole source aquifer, Bourne has implemented several regulatory tools to help manage the situation, including the creation of a groundwater protection overlay district.

There are a number of physical resources with regional significance that have affected Bourne's development.

- 1) **Cape Cod Canal** - The Town of Bourne contains most of the length of the Cape Cod Canal, a man-made waterway that bisects the land that formerly connected Cape Cod to "mainland" Massachusetts. The entire canal is approximately 17.4 miles long and 540 feet wide and it connects the Cape Cod Bay in the north to Buzzards Bay in the south. The Cape Cod Canal Railroad Bridge and the Bourne and Sagamore bridges span the width of the canal which is also part of the Atlantic Intracoastal Waterway<sup>1</sup>.

In 1907, wealthy New Yorker August Belmont founded the Cape Cod Construction Company and the digging for the canal began. The canal opened in 1914, 17 days ahead of the Panama Canal. Early operation of the narrow waterway was marked by frequent accidents and lengthy closures due to the currents. As a result, mariners began to fear using the intercoastal waterway so they returned to the coastal route and revenue decreased significantly. Although Belmont built the canal as a commercial venture, he ultimately sold it to the United States government in 1928 for \$11.5 million dollars.

After the government purchased the canal, they widened it from 100 feet to 540 feet and dredged it from a depth of 15 feet to 32 feet. They replaced the narrow portions with a straight channel to Buzzards Bay. Today, the Cape Cod Canal is operated by the United States Army Corps of Engineers. Nearly 90 years after its construction, the Cape Cod Canal remains one of the most physically impressive elements of Bourne's landscape. Its scenic and recreational value is an indisputable asset to the community; however, the canal also geographically split the town into essentially two separate communities when it was created. The Cape Cod Canal is home to the only bike path in Bourne with its own right-of-way, the 7.1 mile one way Cape Cod Canal Bike Path, which runs on both sides of the canal (14.2 miles total).

- 2) **Massachusetts Maritime Academy (MMA)**<sup>2</sup> – The Massachusetts Maritime Academy is another major landmark in the Town of Bourne. MMA is located in the village of Buzzards Bay and enrolls approximately 900 students while employing nearly 200 people.

In the next two to three years, the MMA anticipates increasing the number of students who attend the academy to 1,200 and to expand its on and off campus

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<sup>1</sup> The AIW is a 3,000 mile recreational and commercial waterway along the Atlantic and Gulf coasts of the United States, some portions of which are natural and manmade. The creation of the waterway was authorized by the U.S. Congress in 1919 and it is maintained by the U.S. Army Corps of Engineers.

<sup>2</sup> Massachusetts Regional Training Institute, "A Brief History of MRTI," [INTERNET] <http://www.mass.gov/guard/rti/history.htm> accessed 22 December 2006.



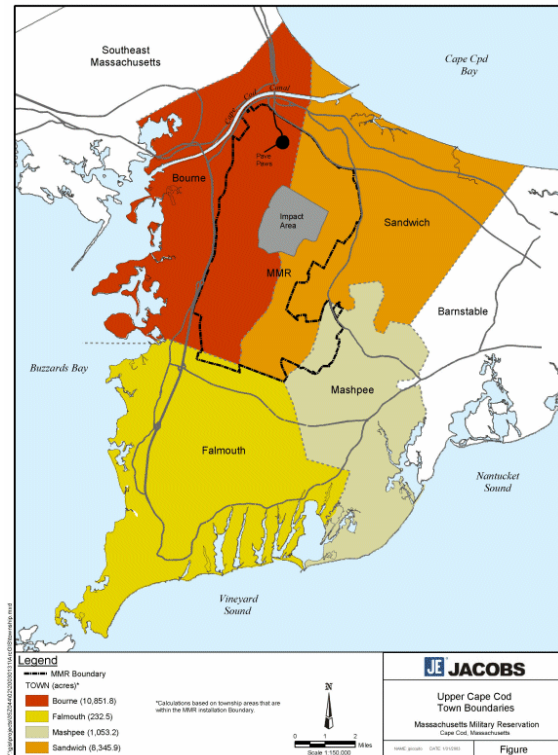
facilities. Due to the location of the MMA and its commitment to remaining a part of the community, any upgrades to the school and its facilities could help serve as a catalyst to the revitalization of Buzzards Bay.

- 3) **Massachusetts Military Reservation (MMR)**<sup>3</sup> – The MMR is a military training facility located on the upper western portion of Cape Cod, immediately south of the Cape Cod Canal in Barnstable County, Massachusetts. It includes parts of the towns of Bourne, Mashpee, and Sandwich and abuts the town of Falmouth. The MMR covers about 22,000 acres (approximately 30 square miles) and it is located over a sole source aquifer that provides drinking water for 200,000 year-round and 500,000 seasonal residents of Cape Cod. The aquifer, referred to as the Sagamore Lens, is a valuable drinking water supply resource.

Portions of MMR have been used for military purposes since 1911. The Massachusetts Military Reservation (MMR) was founded by the Commonwealth of Massachusetts in 1935 as a National Guard training camp and federalized in 1940 in order to prepare for World War II.

Although the occupants and property boundaries have changed a number of times since the MMR was established in 1935, the primary mission has always been to provide training and housing to U.S. Air Force or U.S. Army units. Since 1935, the base has been used for Army training and maneuvers, military aircraft operations, maintenance, and support.

The industrial area in the southern part of the reservation is where the US Coast Guard, Army National Guard, and Otis Air National Guard Base (ANGB) facilities are located. Aircraft runways, maintenance areas, access roads, housing, and support facilities are found in this 5,500-acre area. The northern 14,700-acre area, also known as Camp Edwards, is used primarily by the U.S. Army National Guard. This area contains the 2,200-acre Impact Area, associated military



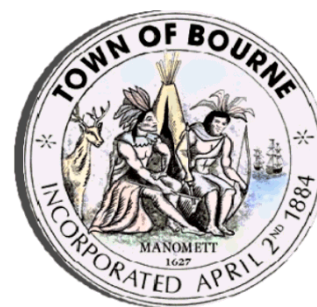
<sup>3</sup> Global Security, "Massachusetts Military Reservation (MMR)," [INTERNET]  
<http://www.globalsecurity.org/military/facility/mmr.htm> 13 January, 2007.

training ranges, and the U.S. Coast Guard Air Station Cape Cod. The 750-acre Veterans Administration Cemetery is located in the southwestern corner of the reservation.

- 4) **Areas of Critical Environmental Concern (ACEC)** – The Town of Bourne is home to two full ACECs and one partial ACEC that is also partially located in Plymouth, MA. The Bourne Back River ACEC is approximately 1,850 acres and was designated in 1989, the Herring River Watershed ACEC (located in Bourne and Plymouth) is nearly 4,450 acres and was designated in 1991 and the Pocasset River ACEC which is 150 acres and was designated in 1980. For more information about all three of these ACECs, see Section 4.2.2.

### 3.1.1 History of the Community

The present town of Bourne was the far western section of the Town of Sandwich which was founded in 1627 (Bourne was not officially incorporated until 1884 as its own town) and is named after Jonathan Bourne, one of the town's first prominent citizens. Jonathan Bourne served in general court for 14 years and he was very successful in the whaling industry. He was a citizen who people admired and wanted to emulate.



Bourne has a symbolic Town seal, which according to the Town warrant of 1895, was prepared by painter Charles S. Raleigh. On the seal is a dutch shallop (small light open boat with sails) that is sailing up the Monument River to trade with the Indians on the shore. The pilgrims considered the area depicted in the seal, then known as Manomet, a favorite place for trading with the Indians and settlers.<sup>4</sup>

Bourne's early history is also the early history of neighboring Sandwich, MA. Geography was what governed the Bourne/Sandwich separation and the division was considered to be an expression of the free will of the people. Originally the villages of Buzzards Bay, Sagamore, Cataumet, Pocasset, Monument Beach and Bourne were all a part of Sandwich. When Bourne separated from Sandwich, it took with it two existing foundaries, one railroad car works that employed 100 men, five blacksmith shops, two boat-building shops, one lumber yard and one axe factory<sup>5</sup>. At one time, the New Bedford Onset Street Railway ran from New Bedford to Monument Beach with stops along the way in different towns. With the coming of the railroad it slowly reduced its daily trips and eventually, ended them all together.

<sup>4</sup> Bourne 1884-1984, *A Centennial Celebration Memory Album*, Bourne Centennial Booklet Committee

<sup>5</sup> Bourne 1884-1984, *A Centennial Celebration Memory Album*, Bourne Centennial Booklet Committee, pg. 12.

The earliest inhabitants of Bourne and the surrounding area were members of the Wampanoag Nation. English settlements in Bourne date back to the early 1600s, after the Wampanoag first greeted colonists at Plymouth Rock. By the mid 1800s, industrial development expanded on the Cape and manufacturers located in Bourne to utilize its local raw materials and water resources. Very little evidence of this early manufacturing period remains. It was not until the 1900s that the Cape Cod Canal was constructed to shorten the trip between Boston and Long Island Sound, although the first survey for the canal's construction was requested more than 150 years prior by President George Washington.

The Aptuxet Trading Post (the first private commercial enterprise in the country) was established in 1627 on the banks of the Manomet River for trading with the Dutch from New Amsterdam (New York) to the south as well as with the Wampanoag Indian tribe in the area. Aptuxet means, "little trap by the river". The trading post was closed in the late 1650s but a replica of it is still in place on the original foundation. Typical objects that were traded at the time include sugar, tobacco, textiles and fur and they were either bought or bartered using an Indian shell currency called wampum.



Photo: Aptuxet Trading Post, Bourne  
Historical Society

In addition to the Trading Post, the Town also contains prehistoric Native American land west of Herring River (near Plymouth) and a Native American burial ground near the Bournedale Little Red Schoolhouse.<sup>6</sup>

According to the town website, *“Bourne has become known as a medium-sized rural community at the gateway to Cape Cod. The Cape Cod Canal bisects the community, with both the Bourne and the Sagamore bridges and the lift railroad bridge all located in Bourne. The canal is well known for its superb sport fishing, scenic bike rides and for carrying ships flying the flags of all nations. The Bourne Scenic Park campground is located beneath the Bourne Bridge and is a perfect location for those seeking to enjoy the canal.*

*Bourne has numerous quiet harbors and inlets for boating and swimming, the shell fishing in the area is particularly enticing. Bourne is a quiet community without the summer tourist crush experienced by some of the other Cape communities. The annual Bourne Scallop Festival, which is held in early September each year brings visitors from across the nation.”*

The recently completed connection of Route 25/495 to the Bourne Bridge causes

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<sup>6</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

many to pass through the town. Although this infrastructure improvement was long awaited, the easy access to Cape Cod has caused an economic hardship on the village of Buzzards Bay, once known as the hub of the community.

### 3.1.2 Bourne – A Town of Villages<sup>7</sup>

Buzzards Bay, Bournedale, Sagamore, Sagamore Beach, Bourne Village, Gray Gables, Monument Beach, Pocasset and Cataumet are all the villages of Bourne as they are named today. At one time the village of Buzzards Bay was known as the village of Cohasset. With the founding of Town of Bourne in 1884 the villages of Cohasset and Head of the Bay were merged and became the village of Buzzards Bay. The villages of Mashnee and Gray Gables have been established since 1884 when the rest of Bourne was incorporated. Most villages had a railroad station and some had electric cars that linked them with the village in Buzzards Bay. Historically, some of the villages were named differently, such as:

- Cataumet used to be South Pocasset
- Bourne Village used to be Monument
- North Sandwich was divided into the Sagamores
- Bournedale use to be West Sandwich
- Buzzards Bay and Head of the Bay is now known as just Buzzards Bay

**South Pocasset** (now known as Cataumet) – The village had a tavern and there were cranberry bogs, a wind-powered grist mill and the Herring Run at Red Brook

**Pocasset** – A village known for shipping cordwood and the location of Tahanto Foundry. This is where Wing’s Neck Light is located and it was the only lighthouse in the area at the time.

**Monument Beach** – In 1884, it had more summer homes than any other village in Bourne. It was known as a fishing and shellfishing village.

**Monument** – This village was chosen as the location where the town’s official business would be conducted. It was the “metropolis” amongst the villages.

**North Sandwich** – A village home to many Italian families whose men were employed by railroad car works and worked at the Keith Car Manufacturing Company.

**Sagamore Beach** – A village that started in 1904 as a summer colony, with the formation of Sagamore Beach Company. Two vacation hotels were built, the Sagamore Lodge and Bradford Arms, both have been destroyed by fire since.

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<sup>7</sup> *Ibid.*

**Bournedale** – In 1884, Bournedale was bustling with industry, in fact it was the largest industrial area around. Industry was based on water power from the Herring River and included in the village were a Nail Factory, Saw Mill, Howard Iron Foundry, Grist Mill and the Holway Axe Factory. When steam power came to be, these businesses slowly closed. The Old Indian Burial Ground is located in this village and today, it is known for the Herring Run.

**Buzzards Bay** – Town Hall was built here and historically it was the center of communication for the 8 villages at the time. Today, the village is bordered by bogs and Grazing Fields Farm.

**Mashnee Village** – Originally, this village was Mashnee Island, an island occupied by a sailing camp for boys during the 1920s and 1930s. Dredged material from the Cape Cod Canal was used to make the island a peninsula and it is now a community of private homes.

**Gray Gables** – For approximately 13 years, this area of Bourne was the summer home of President Grover Cleveland and for the four years of his presidency, it was the summer White House. Cleveland had two children born at his home in Gray Gables, one of whom died in 1904. He never returned after that. His home became an Inn and burned down on December 13, 1974. Today, Gray Gables is a community of private homes.<sup>8</sup>

Bourne's villages have stayed in existence for over one hundred years and although it has been said that the Cape Cod Canal somewhat divides the town, according to the 1884 Town Report, "In natural resources our town is unsurpassed, among our people all the elements of success abound."<sup>9</sup>

### 3.1.3 National and State Register of Historic Places

The Town of Bourne has a large number of sites and structures that have architectural, archaeological or historical significance and currently, there are three properties listed on the National and Commonwealth of Massachusetts Register of Historic Places. They include the George I. Briggs House, the Cleveland Ledge Light Station and Wing's Neck Light.

**George I. Briggs House** – The George I. Briggs House is located on Sandwich Road and was listed



*Photo: George I. Briggs House,  
Bourne Historical Society*

<sup>8</sup> Bourne 1884-1984, *A Centennial Celebration Memory Album*, Bourne Centennial Booklet Committee, pg. 14.

<sup>9</sup> *Ibid.*



on the National Register in September, 1981. George I. Briggs was instrumental in the incorporation of Bourne as a Town after its separation from Sandwich in 1884. A friend of President Grover Cleveland, Briggs became one of Bourne's first selectmen, the first school committee chairman, a library trustee, and chairman of the Barnstable County Commission for many years. This Greek revival style house has been restored and furnished to reflect the period from 1840 to 1910, an important time for the Briggs family and Bourne.

**Cleveland Ledge Light Station**<sup>10</sup> – The Cleveland Light Station is located on the Cape Cod Canal and was listed on the National Register in June, 1987. The station was established in 1943 and it was automated in 1978 with a white light that flashes every ten seconds. Cleveland Ledge Light, at the western entrance to the Cape Cod Canal, is the last commissioned lighthouse built in New England, and the only one built by the Coast Guard. Cleveland Ledge was named after President Grover Cleveland, who frequently fished in the area. Built by the J.F. Fitzgerald Construction Company of Boston of steel and reinforced concrete, the style of Cleveland Ledge Light is unique among New England's lighthouses. As Donald Davidson wrote in *America's Landfall: The Lighthouses of Cape Cod, Nantucket and Martha's Vineyard*, its architecture is "uncharacteristic of any frugal, Yankee heritage, and it closely resembles instead the art deco lines of some other time and place."



*Photo: Cleveland Ledge Light Station,  
Lighthouses of Massachusetts*

The 50-foot tower is on top of two stories that were used as living and work quarters. Below the main deck were the engine room, fuel tanks and four water tanks with a capacity of 4,800 gallons. The entire structure sits on a 52-foot cylindrical caisson pier.

**Wing's Neck Light**<sup>11</sup> – The Wing's Neck Light is located on Wing's Neck Road in Pocasset Village and it was listed on the National Register in June, 1987. The lighthouse was built in 1849 and it was deactivated in 1945. The peninsula called Wing's Neck extends from Pocasset on Cape Cod out into Buzzards Bay, a busy thoroughfare in the 19th century. The land where the lighthouse is located was once swampy and mosquito-infested.

The first Wing's Neck Light, built in 1849 for \$3,251, was a so-called Cape Cod-style structure, with a white, wooden hexagonal tower and lantern room on top of

<sup>10</sup> Lighthouses of Massachusetts, "Cleveland Ledge Light," [INTERNET] <http://lighthouse.cc/clevelandledge/history.html> 13 January, 2007.

<sup>11</sup> Lighthouses of Massachusetts, "Wing's Neck Light," [INTERNET] <http://lighthouse.cc/wingsneck/index.html> 13 January, 2007.

a stone keeper's house. The light was 38-feet above the ground and 50-feet above sea level. In the 1870s, it was reported that the weight of the lantern was crushing the roof of the dwelling.

The first keeper, Edward D. Lawrence, was removed in 1854 for belonging to the wrong political party. Lawrence returned as keeper in 1865 and remained until 1887, serving a total of 28 years at Wing's Neck. John Maxim, who was keeper in the 1850s, was killed at the Battle of Gettysburg. A Fresnel lens was added to Wing's Neck Light in 1856. A fire badly damaged the structure in 1878. Repairs put off the building of a new light, but finally in 1889-90 a new keeper's house and exagonal lighthouse tower were built. The walkway connecting the house and tower was added in 1899, and a fog bell tower was erected in 1902.



*Photo: Wings Neck Light, Lighthouses of Massachusetts*

With the building of Cleveland Ledge Light, Wing's Neck Light was considered expendable. The station was discontinued in 1945 and went up for sale in 1947. It was bought by Frank and Irene Flanagan of Boston for \$13,738. Wing's Neck Light is on private property and the grounds are not accessible to the public. It can be viewed from a gate about 100 yards from the lighthouse.

### 3.1.4 Population Characteristics

The Town of Bourne has a population of approximately 18,700 residents and it is expected that by 2020, the number of people living in the community could swell to 24,000 or more.<sup>12</sup> Population estimates made by the US Census Bureau projected Bourne's population to increase to 19,066 in 2001, 19,313 in 2002 and 19,523 in 2003 (a 4.3% increase between 2000 and 2003).<sup>13</sup> According to the 2005 Town Census, Bourne's population had risen to 20,265 and MISER predicts that it will increase in 2010 to 22,422 and in 2020 to 26,827 residents. Seasonal residents and tourists annually increase Bourne's population dramatically between April and October.

According to US Census 2000 data, Bourne's population makes up approximately 8.4% of Barnstable County's population overall. The nearby communities of Barnstable, Falmouth, Sandwich and Yarmouth all have larger populations than

<sup>12</sup> Town of Bourne, Town of Bourne Policy Plan Report, 2004.

<sup>13</sup> Cape Cod Commission, Population by Town, 2004.

Bourne ranging from 20,000 – 47,000 residents (see Table: Population Change). Bourne experienced an overall population increase of nearly 17% between 1990 – 2000 which is consistent with other nearby towns with the exception of Sandwich and Mashpee who saw increases of 30% and 64% respectively.

Historically, Bourne started as a small, rural community that became incorporated as its own Town in 1884 when it branched off from neighboring Sandwich. In the early 1900s, the Town had a population of approximately 1,600 people. Between 1910 – 1940, Bourne grew at about the same pace as other neighboring communities on Cape Cod. By the 1950s, after World War II and with the increased reliance in the automobile, more and more people began to discover Bourne and the other towns that make up Cape Cod. Bourne saw its largest population increase between 1950 and 1960 where it grew from 4,720 to 14,011 residents (or almost 200%). Interestingly, the population declined in the next decade by 10%, but since then it has steadily increased to a population of 18,721 in 2000. According to the Town Clerk, as of 2007, Bourne's population is approximately 21,000.

**Table: Population Change**

	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	% Change 1990-2000
Massachusetts				4,248,326	4,316,721	4,690,514	5,148,578	5,689,377	5,737,037	6,016,425	6,349,097	5.5%
Barnstable County	27,826	27,542	26,670	32,305	37,295	46,805	70,286	96,656	147,925	186,605	222,230	19.1%
Barnstable	4,364	4,676	4,836	7,271	8,333	10,480	13,465	19,842	30,898	40,949	47,821	16.8%
<b>Bourne</b>	<b>1,657</b>	<b>2,474</b>	<b>2,530</b>	<b>2,895</b>	<b>3,315</b>	<b>4,720</b>	<b>14,011</b>	<b>12,636</b>	<b>13,874</b>	<b>16,064</b>	<b>18,721</b>	<b>16.5%</b>
Falmouth	3,500	3,144	3,500	4,821	6,878	8,662	13,037	15,942	23,640	27,960	32,660	16.8%
Sandwich	1,448	1,688	1,458	1,437	1,360	2,418	2,082	5,239	8,727	15,489	20,136	30.0%
Mashpee	303	270	242	361	434	438	867	1,288	3,700	7,884	12,946	64.2%
Yarmouth	1,682	1,420	1,229	1,794	2,286	3,297	5,504	12,033	18,449	21,174	24,807	17.2%

**Source:** MISER Population Change, 1930 - 2000 and US Census

Understanding Bourne's population as a whole is important because it allows an overall look at how the town has grown and changed over time. For use in this particular plan another helpful way to look at the local population is via different age groups. The open space and recreation needs of children and young adults are not the same as those of teenagers which are not the same as adults and the elderly. Between 1990 – 2000, Bourne saw a decline in the number of children ages 9 and under and in the age range of 20 to 34 (see Table: Bourne Population By Age). Significant increases in age groups occurred in Bourne residents who are age 45 to 54 and those 85 and older. While open space amenities and recreational facilities should be available to residents of all ages, there may be opportunities to investigate that would provide enhanced opportunities for specific age groups.

**Table: Bourne Population By Age**

Age Group	Bourne			Massachusetts	United States
	1990	2000	% Change	% Change	% Change
Under 5	1,278	1,171	-8.37%	3.7%	4.5%
Age 5 to 9	1,158	1,136	-1.90%	14.0%	13.5%
Age 10 to 14	1,022	1,162	13.70%	23.9%	19.9%
Age 15 to 19	1,032	1,169	13.28%	1.4%	13.9%
Age 20 to 24	1,299	1,209	-6.93%	-21.3%	-0.3%
Age 25 to 34	2,667	2,355	-11.70%	-15.9%	-7.6%
Age 35 to 44	2,349	2,756	17.33%	15.7%	20.1%
Age 45 to 54	1,412	2,598	83.99%	45.5%	49.4%
Age 55 to 59	678	1,005	48.23%	22.3%	27.9%
Age 60 to 64	783	861	9.96%	-9.6%	1.8%
Age 65 to 74	1,380	1,783	29.20%	-7.0%	1.6%
Age 75 to 84	784	1,138	45.15%	18.1%	34.3%
Age 85+	222	378	70.27%	26.6%	37.6%

**Source:** US Census 2000, Summary File 1, US Census 1990, Summary File 1

Passive and active recreational facilities should be added, maintained and improved where appropriate with different population groups in mind. For example, an opportunity for an added walking trail, or new park bench may be appropriate near the Veterans Memorial Community Center which is where the Council on Aging is located and where they offer a considerable number of activity programs such as knitting, exercise classes and woodworking. Another example might be thinking about adding a pocket park or improving a park that is in a neighborhood where there is known to be a number of younger children.

Early industries on Cape Cod after the first settlers arrived in the early 1600s, included whaling, fishing and shellfishing and, because it was a land-based economy, these industries were very well supported. Manufactured products included rope, ships, canvas and anchors and despite the usefulness of these products and the overall success of these industries, Cape Cod was largely undeveloped. During the 1920s, Cape Cod began to emerge as a tourist destination, and after World War II, it became a major regional tourist area for out of state vacationers. Today, a large portion of Cape Cod's economic base comes from money generated outside of the region that is brought in by tourists, second home owners and retirees.

The Bourne Financial Development Corporation put together a presentation in March 2005 called Bourne Employment and Businesses that discussed employment and businesses in the community. According to statistics in this presentation, the following can be said about Bourne's Labor Force:

- 63% of the population is age 16 or older (9,623 residents)
- 8,511 residents are employed, 450 by the military
- Residents traveled an average 28 minutes to get to work
- Bourne had 654 businesses that employed 7,117 people

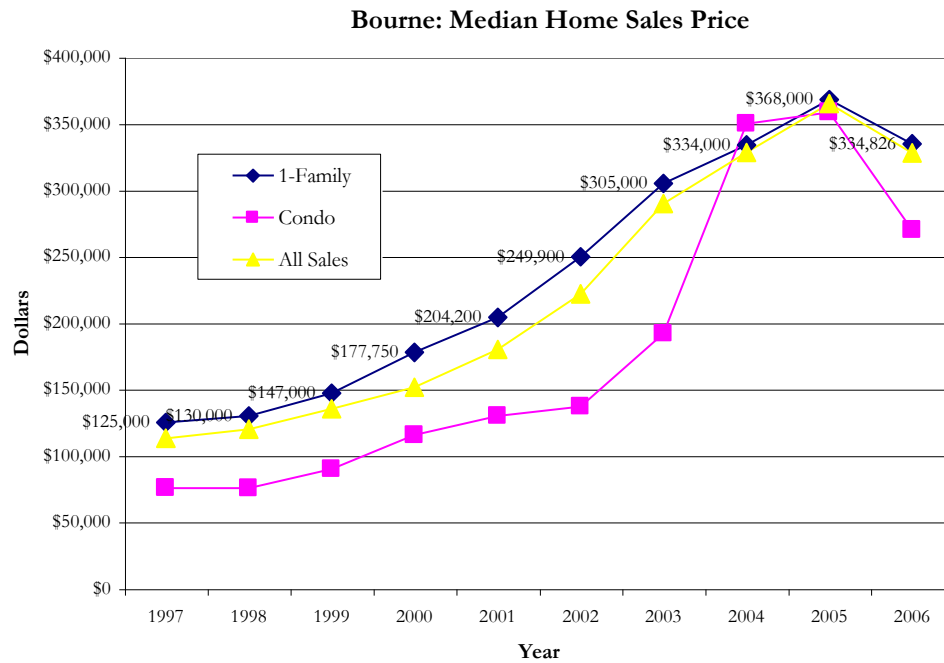
Overall, Bourne's local businesses are service-oriented and they are influenced by the seasonality of Cape Cod and job growth in Bourne and Cape Cod will be the highest in the industry sectors that are not as dependant on the seasonal tourist population.

Income information for Bourne from the 2000 Census states that the median household income was \$41,113 while median family income was \$51,603. Income levels in a community can dictate, to a certain extent, what activities residents participate in during their leisure time.

<b>Table: Bourne Housing Unit Information</b>		
	Number	Percent
Total Housing Units	9,648	
Occupied Units	7,439	77.1%
Vacant Units	2,209	22.9%
Vacant Units/Seasonally Occupied	1,861	84.2%
Owner Occupied	5,324	71.6%
Renter Occupied	2,115	28.4%
<b>Source:</b> US Census 2000		

In 2000, Bourne had a total of 9,648 housing units, 77.1% which were occupied units, meaning someone lived there year-round. Of the occupied housing units, 65% were owner occupied, while 43% were renter occupied. As with many other Cape Cod communities, of the 2,209 vacant units in town, 84% of them are considered to be seasonally occupied which is reflective of Bourne's status as not only a medium sized rural town, but also as a seasonal vacation place where visitors often have a second home (see Table: Bourne Housing Unit Information). Of the owner occupied housing units, 72.4% of householders were 45 or older, while for renter occupied housing units 62% were under the age of 45.

Over the past decade, Bourne, like many of the towns on Cape Cod, has seen a tremendous increase in the prices of single family homes and condominiums. The graph below illustrates data obtained from the Warren Group through 2006 and it shows that there has been a 62% increase in the price of a single family home since 1997. Condominium prices peaked in 2005 with a median sales price of \$358,555 which is a 78% increase during the same time frame. In 2006, condo sales dropped considerably to 270,000 (25%).



Examining demographic data for the Open Space and Recreation Plan update helps to form a framework of who is living in Bourne. Understanding how many people live in a community, who owns a home and who can afford to buy a home is important to recreation and open space because it helps define how much a community has developed and whether or not land needs to be preserved. It also highlights different population groups that may or may not have their recreational needs met through existing amenities and programs in the community.

## 3.2 Local and Regional Planning

### 3.2.1 Cape Cod Comprehensive Economic Development Strategy (CEDS)

The overall economic development strategy for Cape Cod which is administered by the Cape Cod Commission is to “implement a balanced, sustainable economic development strategy capable of absorbing the effects of seasonal fluctuations in economic activity, which integrates economic and environmental concerns.” This overall vision is the focus of the Cape Cod region’s Comprehensive Economic Development Strategy which is a five-year strategic plan that is updated annually.

Overall, Cape Cod is a unique region in terms of economic development - it has been hailed as a popular tourist and seasonal destination for years. Strong industries that blanket all of Cape Cod include fishing, real estate, tourism and hospitality, education and locally owned businesses.

### **3.2.2 Cape Cod Regional Policy Plan**

The Cape Cod Regional Policy Plan (CCRPP) is a document that is written and updated every five years by the Cape Cod Commission. The purpose of the report is to develop a growth policy for Cape Cod, identify key resources of regional importance and to provide a framework for local comprehensive planning efforts. The current regional policy plan was completed in 2001 – 2002 and an update is underway which should be completed in October 2007.

The CCRPP discusses land use and growth management, natural resources, economic development, community facilities and services, affordable housing, and community character. The planning effort undertaken to create and update this resource invaluable to the Town of Bourne because it provides an in-depth evaluation of how Bourne functions in its region and as a neighboring town to other communities. In addition, it offers Bourne the opportunity to discuss issues that are of regional significance like water quality and conservation.

One section of the CCRPP identifies Resources of Regional Importance as required by the Cape Cod Commission Act Section 7(b)(1) which states that critical resources and management needs must be specified. For the purposes of the CCRPP, criteria for selecting these resources were those that are significant to more than one town and those that crossed jurisdictional boundaries. Key regional resources on Cape Cod with relevance to the Bourne Open Space and Recreation Plan update include but are not limited to:

#### **Natural Resources**

- Recharge areas to existing and future public water supply wells
- Recharge areas to coastal embayments
- Inland and coastal wetlands and their recharge areas
- Inland and coastal ponds
- Floodplains, banks, beaches and dunes
- Shellfish and finfish habitat areas
- Rare plant and animal habitat and unusual biological habitats
- Designated Areas of Critical Environmental Concern
- Federal, state and regional parks and natural reserves
- Town conservation lands
- Private open space

#### **Economic, Historic and Cultural Resources**

- Historic village centers
- Working waterfronts and harbor areas
- Active aquacultural and agricultural areas including cranberry bogs
- Properties listed or eligible for listing on the National or State Register of Historic Places



- Scenic Landscapes
- Archaeological resource areas

After the identification of these regional resource areas, Districts of Critical Planning Concern (DCPC) were designated, one of which is located in Bourne. Such a designation is given to an area where the Cape Cod Commission feels there is a resource of critical value to the area and in need of protection from inappropriate development. According to the Cape Cod Commission Act, a proposed district must possess “significant natural, coastal, scientific, cultural, architectural, archaeological, historic, economic, or recreational resources or values of regional, statewide or national significance.” The DCPC designation is a regulatory tool that can augment existing local bylaws and regulations in areas where the laws may be unable to prevent environmental degradation or may discourage sound economic development or construction of affordable housing. Towns with areas that are designated can adopt special rules or regulations to govern development within the district.

The DCPC in Bourne is located in Bournedale and was designated in 1998 by the Barnstable County Assembly of Delegates. The district encompasses nearly 2,000 acres of land in the northeastern part of Bourne. The town nominated the district to protect drinking water quality, preserve an adequate water supply, assure an adequate and safe transportation network, preserve the area’s unique historic resources and community character, and protect rare wildlife habitat and significant natural resources. The town approved implementing regulations that encourage cluster development and increase resource protection.

### **3.2.3 Regional Open Space**

The Cape Cod Commission (CCC) was visionary in the Regional Policy Plan when they stated that one of their goals is to protect one half of the remaining developable land on Cape Cod as permanently protected open space in order to preserve rural character, scenic amenities and ecological integrity of Cape Cod. With so many fragile environmental resources and real water quality and quantity issues, this goal is both logical and necessary. Protecting a large quantity of open space will require local, regional and statewide cooperation and partnerships. The Town of Bourne has already taken a step towards cementing its commitment by making it a personal goal of the community to protect one half of its remaining developable land as permanently protected open space as detailed in the recently updated Local Comprehensive Plan (2006).

Steps towards reaching this goal have been taken with the formation of the Cape Cod land bank, communities adopting the Community Preservation Act, the Cape Cod Pathways program, local open space initiatives (committees etc) and private land trusts. According to the Cape Cod Regional Policy Plan, Cape Cod towns should think about taking the following actions at a local level:

- Seek to protect high priority areas identified by the CCC as Significant Natural Resource Areas (sensitive resources within greenbelt areas through local bylaw mechanisms like mandatory clustering, increased lot sizes and overlay districts).
- Work with local land conservation organizations to identify, acquire, and manage open space to meet projected community needs.
- Maintain and protect public access for recreation to freshwater and saltwater bodies.
- Seek to acquire tax title lands and hold them for purposes like open space, affordable housing or municipal services. Properties with environmental significance should be put under the Conservation Commission's jurisdiction.
- Create a local pathway committee to work with the CCC to identify and designate suitable locations for walking paths that would be added to the pathways network.
- Establish procedures for approval and assessment of conservation restrictions.
- Revisit cluster or open space bylaws (if existing) and remove provisions that mandate perimeter buffer strips and narrow access corridors or that require universal lot access to the open space. These requirements typically reduce the ecological integrity of the open space provided.
- Encourage landowners to restore blighted or abandoned areas to open space either as a landscaped park or natural area.

As a part of the Open Space and Recreation Plan update, we have discussed the above actions with the Open Space Committee, Town Planner and local residents and to date, Bourne has done very well with the list.

The Cape Cod Pathways program is a regional program run by the CCC and according to Heather McElroy it is something that the commission is trying to rejuvenate. The idea behind the program is to form a continuous cross Cape walking trail that would go through every single community on Cape Cod. Every town would identify the most appropriate locations for the pathway to include and they would figure out how to connect it with their neighboring towns. Many communities prepared a pathways plan and had either a designated committee or the Conservation Agent be the main point of contact. For the past few years, this program has not been very active, however, according to McElroy, the CCC is revitalizing the Pathways program and is eager for local communities to continue their participation.

### 3.3 Growth and Development Patterns & Local Planning Efforts

#### 3.3.1 Land Use

“Land use patterns on the Cape have changed in the last 50 years from a village-centered pattern of relatively dense development in centers surrounded by little or no development, to a suburban style of subdivisions and strip malls.”<sup>14</sup>

The Town of Bourne was historically a small fishing and shellfishing village that over time, has evolved into a medium sized rural community that as the first town on Cape Cod, welcomes residents and visitors to the region. Bourne is largely a residential community of villages that are dispersed throughout the 52.82 square miles (total land area is 40.90 square miles). Scattered throughout town are numerous business districts with several commercial strips, water resource districts and overlay zones, and a scenic development district. Due to its location on Cape Cod, Bourne has a significant amount of sensitive natural resources such as wetlands, salt marshes, cranberry bogs (mostly located in the southern and northernmost villages) and prime wildlife habitat that it must manage in conjunction with continued residential, commercial and industrial growth.

Reviewing historic land use data offers us a glimpse of what changes have taken place in the Town of Bourne over a thirty year period. The data used for this calculation spans 1971 – 1999 and was obtained from MassGIS (it is the most recent data available). Although the information has not been updated for the past seven years, it is still invaluable because it allows a picture of what has taken place in Bourne in terms of open space, land for housing and land for commercial activity. For the purposes of the designated land uses in the accompanying table, MassGIS identifies the categories that are noted in the Land Use Change Table as follows:

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<sup>14</sup> Cape Cod Metropolitan Planning Organization, *Cape Cod Regional Transportation Plan*, October 2006

<b>Category</b>	<b>Type of Land</b>
Agriculture	Crop land, pasture
Forest	Forest
Recreation & Urban Open Space	Participation, Spectator & Water Based Recreation (Golf, Tennis, Playgrounds, Fairgrounds, Beaches, Marinas, Swimming Pools)
Multi-Family Residential	Multi-Family
Higher Density Residential	Medium and High Density Residential (Smaller than ¼ acre lots and lots ¼ acre – ½ acre in size)
Moderate Density Residential	Moderate Density Residential (greater than ½ acre lots)
Commercial	Commercial (General urban, shopping centers, downtown)
Transportation	Transportation (Docks, highways, railroads, roadways)
Open Land, Mining & Other Uses	Mining, Open Land, Urban Open, Waste Disposal, Woody Perennial (Sand, gravel, rock, abandoned agricultural, power lines, no vegetation areas, parks, cemeteries, greenspace, vacant undeveloped land, landfills, orchard, cranberry bog)
Wetlands	Non-Forested Wetlands, Salt Water Wetlands (Non-forested freshwater wetland, salt marsh)
Water	Water (Freshwater, coastal embayments)

Between 1971 – 1999, there has been a significant decrease (almost 20%) in the amount of forest land in Bourne as well as a decrease in wetlands (see Table: Land Use Change in Acres, Bourne 1971-1999). While the acreage of forested land has declined, the amount of land used for residential purposes has significantly increased. Bourne's development has happened gradually overtime and the factor that is somewhat atypical is the increase in the amount of recreation & urban open space and open land overall as noted in the table on the next page. Many communities do not see an increase in these categories. Growth is inevitable, so continuing to plan for it with an eye towards preserving and managing remaining open space and sensitive natural areas will help Bourne keep its character.

<b>Table: Land Use Change in Acres, Bourne 1971-1999</b>					
				<b>Change</b>	<b>% Change</b>
	<b>1971</b>	<b>1985</b>	<b>1999</b>	<b>1971-1999</b>	<b>1971-1999</b>
Agriculture	131.19	121.13	176.29	45.10	34.4%
Forest	19,284.54	18,014.74	15,604.05	-3,680.49	-19.1%
Recreation & Urban Open Space	324.65	374.03	499.20	174.55	53.8%
Multifamily Residential	272.74	395.93	371.94	99.19	36.4%
High Density Residential	1,813.10	2,220.53	2,746.31	933.21	51.5%
Moderate Density Residential	1,139.11	1,493.84	1,845.12	706.01	62.0%
Commercial	245.81	322.12	447.70	201.88	82.1%
Industrial	44.37	94.34	108.80	64.44	145.2%
Transportation	336.81	346.95	452.31	115.50	34.3%
Open Land, Mining & Other Uses	1,930.64	2,139.34	3,282.83	1,352.19	70.0%
Wetlands	502.27	502.27	493.91	-8.36	-1.7%
Water	215.66	215.66	212.43	-3.24	-1.5%
<b>Source: MassGIS</b>					

According to MA GIS and Town data, Bourne has approximately 6,200 acres of open space (18.5%) and of that acreage 48.5% is permanently protected. Much of the open space is owned by the Town of Bourne, Federal Government, Commonwealth of Massachusetts, private citizens, the water districts and a portion is designated as having Chapter 61 status.

### 3.3.2 Zoning

According to the Bourne Zoning Bylaw, there are thirteen established zoning districts. The districts include:

Residence District	R-80
Residence District	R-40
Village Business District	V-B
Business District	B-1
Business District	B-2
Business District	B-3
Business District	B-4
Scenic Development District	SDD
Government District	GD
Water Resource District	WR
Sensitive Use District	SUD
Traffic Management District	TMD
Bournedale Overlay District	BOD

More specifically, the purposes of the districts are as follows:

**RESIDENCE R-80 and RESIDENCE R-40:** To ensure continuance of a residential environment, with any development carefully related to environmental capacities and existing character.

**VILLAGE BUSINESS V-B:** To provide for village-oriented business compatible with small scale environs and nearby residences.

**BUSINESS B-1:** To provide high-intensity generally pedestrian-oriented activity concentrations at village centers.

**BUSINESS B-2:** To accommodate general business development in areas serviced by major traffic arteries, and where conflict with residential development will not be substantial.

**BUSINESS B-3:** To reserve areas for business development without single-family residential development, in areas of 10 acres or more well suited by utilities, access, topography, and surroundings for such use.

**BUSINESS B-4:** To provide for business development along arterial routes with careful control over environmental and traffic impacts.

**SCENIC DEVELOPMENT DISTRICT SDD:** To gain intensive use of land, while at the same time preserving or enhancing highway views of the canal, ocean, or bay, preserving or enhancing landscaping and tree cover, minimizing visibility of parked autos and the intrusion of commercial signs, and avoiding creation of hazards or congestion. Each Scenic Development District created on the Zoning Map shall be not smaller than 40 acres in extent, shall be accessible directly via state-owned highway, and shall be so located that ocean or canal visibility exists or can reasonably be expected to be gained.

**GOVERNMENT DISTRICT GD:** To provide for necessary governmental functions on publicly owned land.

**WATER RESOURCE DISTRICT WR:** To protect the public health by preventing contamination of the ground and surface water resources providing water supply for the Town.

**SENSITIVE USE DISTRICT SUD:** To provide for rarely encountered uses whose consequences for their surroundings warrant Town Meeting consideration of individual sites.

**BOURNEDALE OVERLAY DISTRICT BOD:** To provide for the preservation of resources that are unique to the Bournedale area and which are fundamental to the character of the areas.

The Traffic Management Districts are considered to be superimposed over any other districts established in this Bylaw, and comprise the following areas:

- all land in the SDD Scenic Development District; and
- all land in the R-40 District bounded on the southwest by the Bourne Bridge, on the southeast by the Cape Cod Canal, on the northwest by the B-2 Business District and the SDD Scenic Development District, and on the northeast by the SDD Scenic Development District; and



- all land in the R-40 District bounded on the southwest by the Bourne Bridge, on the northwest by the Cape Cod Canal, on the southeast by Sandwich Road, and on the northeast by the extension of the northeasterly boundary of the Scenic Development District.

### 3.3.3 Build Out Analysis<sup>15</sup>

In 2001, the Executive Office of Environmental Affairs issued Buildout Analyses for communities throughout Massachusetts, including the Town of Bourne. The detailed demographic projections for Bourne at estimated complete buildout are summarized in the table.

**Table: Buildout Analysis Statistics**

**Population**

1990	16,064
Current	18,721
Buildout	23,355

**Households**

1990	5,898
Current	9,648
Buildout	11,680

**Source:** Executive Office of Environmental Affairs

The build-out analysis exercise does not specifically reflect when the actual build-out would occur; it just gives insight into what potentially could happen under conditions that were existing at the time of analysis. Given the growth that most of the Cape Cod communities have experienced, these numbers may not be unrealistic. Bourne's most recent Comprehensive Plan update states that it would like to protect at least 50% of the undeveloped land in the community. There will be many competing uses for this undeveloped land and it will require close attention by residents and Town staff to ensure that Bourne's goals and objectives are being met. Protecting, enhancing and creating new amenities for open space and recreation in the Town of Bourne is in the best interest of the community to help preserve its character and unique natural resources.

Bourne's goal of protecting at least 50% of the undeveloped land in the community is a challenging goal, but necessary, particularly to avoid the potential ecological impacts of what a full-build scenario in the community would look like. If Bourne becomes fully "built-out," ecological impacts may include contamination of wells used for drinking water, a decrease in the quality and quantity of sensitive habitat areas for plants and animals and an increase in habitat fragmentation (of which Bourne has many designated according to NHESP), an increase in the severity of erosion that occurs would be likely, an increase in

<sup>15</sup> Information from the Executive Office of Environmental Affairs regarding how the build-out analysis was prepared – "The buildout-analysis starts with available land in each zoning district and makes projections of additional housing units and commercial/industrial space according to each district's minimum lot size and other regulations. The projections only account for as of right development and do not include development by special or comprehensive permit that may increase the amount of development. These buildout projections were combined with 2000 Census and other data to create a profile of each community at buildout according to its current zoning."

issues with stormwater flow and management and a decrease in air and water quality.

### **3.3.4 Transportation**

The growth on Cape Cod as a region since the 1950s has had and will continue to have an effect on transportation infrastructure and needs in the future. As a seasonal tourist area, Cape Cod sees a significant increase in the amount of traffic and traffic congestion between May – September. Bourne is well served by the local highway system that includes Route 6, Route 6A, Route 28, Route 3, Route 3A and Route 25. Traffic access is provided to communities on the other side of the Cape Cod Canal by the Sagamore Bridge and the Bourne Bridge.

The region known as “Upper Cape Cod” consists of Bourne, Sandwich, Falmouth and Mashpee and within this area, there is approximately 1,200 miles of roadway, intercity and local bus service, limited rail service and ferry service.<sup>16</sup> Regional bus service to Boston, MA and Providence, RI is provided by Bonanza Bus Lines/Coach USA. There is also the Plymouth/Brockton busline that provides transportation direct to Boston from Sagamore Beach. Local bus service has been provided in the past by the Greater Attleboro Regional Transit Authority (GARTA) that has stops at Main Street Buzzards Bay, the Massachusetts Maritime Academy and across the Bourne Bridge to a local convenience store. In addition, Falmouth Hospital operates a courtesy bus to residents in Bourne, Mashpee, Sandwich and Falmouth from Monday to Friday.

The closest Ferry Service link to Bourne is the Steamship Authority Ferry that operates out of neighboring Falmouth and travels to Martha’s Vineyard carrying passengers, vehicles and bicycles. Limited rail service involves another bridge in Bourne, the famed Railroad Bridge, which is used by the Bay Colony Railroad Corporation that operates a trash hauling train every morning and the Cape Cod Central Railroad that uses the railroad to operate a seasonal scenic and dinner train.

The Sagamore Rotary was located at the base of the Sagamore Bridge in Bourne and has been the subject of a recent major renovation and overhaul project. On September 10, 2006, the old rotary was removed and replaced by a new interchange that includes ramps which make for convenient access to and from Route 3.

### **3.3.5 Water and Sewer**

Of all the residents and businesses in Bourne only a small percentage are sewered. The only areas of Town that are sewered are Main Street Buzzards Bay and some

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<sup>16</sup> Cape Cod Metropolitan Planning Organization, *Cape Cod Regional Transportation Plan*, Section 2.9.2, pg. 2, October 2006

secondary streets off of that section and the residents in Hideaway Village. All other residents and businesses are serviced by on-site subsurface disposal systems.<sup>17</sup>

In Bourne, there are three different Water Districts from which residents and businesses get their water. They are the Buzzards Bay Water District, Bourne Water District and North Sagamore Water District. The majority of residents and businesses obtain their water from one of these districts with only a few on Wings Neck and several other scattered areas having private wells.<sup>18</sup>

The Town of Bourne's Board of Health has updated and improved its septic system regulations since 1997 when the last Open Space and Recreation Plan was written. Bourne's regulations are well written and they take into consideration the many sensitive natural resource areas and issues that effect the Town. One major issue is enforcement. Due to limited Town staff, it is sometimes difficult to follow up on situations where there is non-compliance. A lot of time is spent on following up on complaints and issuing orders.

### **3.3.6 Bourne Integrated Solid Waste Management Facility<sup>19</sup>**

Bourne's history of landfills is somewhat interesting. Like many other towns on Cape Cod, historically, the town disposed of solid waste at various sites. The current landfill off of MacArthur Boulevard began operating in the 1960s under the direction of the Department of Public Works. In the 1980s, Bourne decided to continue landfilling in Bourne and not join other Cape Cod communities in sending waste to the SEMASS waste to energy facility in Rochester, MA. In the 1990s, Bourne decided to construct a Phase 2 (lined landfill cell) and develop the remaining site-assigned landfill acreage as a regional, non-Municipal Solid Waste (non-MSW) landfill. The facility could then accept regional construction and demolition materials, bulky items and various other waste streams, but not household trash. Bourne's household trash, or Municipal Solid Waste (MSW), would no longer be accepted at the facility and instead would be sent to SEMASS under a long-term contract. The landfill no longer landfills construction and demolition materials, what is accepted is transferred from the landfill to [ a ] construction and demolition processing facilities located off of Cape Cod. In addition the ISWM is back to accepting Municipal Solid Waste.

Bourne set up a department exclusively dedicated to managing a modern integrated operation and today, the ISWM facility is fully self-funded. The ISWM provides solid waste management services such as recycling, composting, waste processing, and landfilling to Bourne, as well as surrounding communities

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<sup>17</sup> Cynthia Coffin, Health Agent, Town of Bourne to Mary C. McCrann, Beals and Thomas, Inc. via Email, 9 February 2007

<sup>18</sup> *Ibid.*

<sup>19</sup> Town of Bourne, Integrated Solid Waste Management, [INTERNET] [www.townofbourne.com](http://www.townofbourne.com), accessed 9 February 2007 and as reviewed by Brent Goins, Integrated Solid Waste Management General Manager, 24 July 2007

and businesses on Cape Cod and southeastern MA and it is permitted to accept an average of 600 tons per day in the landfill. ISWM's operations are reviewed by several outside parties including: Board of Health, Board of Selectmen, Town Administrator, Finance Committee, [Citizen's ISWM Advisory & Information Board no longer exists], Cape Cod Commission, [and] the Massachusetts Department of Environmental Protection, the financial auditing firm of Melanson Heath & Company, PC, and the Massachusetts Department of Revenue.

The Bourne Residential Recycling Center is located at the Bourne Integrated Solid Waste Management Facility and is open daily except holidays [Monday through Friday] from 7 am to 4 pm [and on Saturday from 7 am to 12:00 pm]. At the center, residents with a sticker can recycle household items, yard waste (leaves and brush) or leave items (in good condition) in the Swap Shop that someone else can take for free. For hazardous waste materials, regional waste collection days are held annually in May and October [annually].

### **3.3.7 Bourne Local Comprehensive Plan 2006 (LCP)**

Top concerns of Bourne residents raised during the recent 2006 Local Comprehensive Planning process were preserving historic and rural community character, improving the village centers, traffic volume, safety, and open space and environmental protection. Wastewater disposal and a comprehensive revision of the Zoning Bylaw were identified as two areas that need immediate action by town officials in order to avoid severe problems in the future.

The Comprehensive Plan notes that it isn't the amount of open space and recreation land that is most important, it is the location. Preserving tracts of open land that are visible and contribute to Bourne's maintenance of its rural image was noted as important to participants at the village meetings for this project.

Updating the 1997 OSRP, pursuing acquisitions or protection of key parcels and revising the zoning bylaw and subdivision regulations to increase the amount of open space preserved and insuring that it remains open are the three highest priority actions for open space in the LCP. Other action items include using planning techniques such as transfer of development rights, land swapping, cluster development and planned unit development for land preservation, developing greenbelts between neighborhoods and villages, supporting activities of private organizations like the Bourne Conservation Trust, appointing a Pathways Committee, establishing a stewardship program to maintain town-owned open space, work with military and Federal officials to protect MMR land and encourage private landowners to restore and preserve privately owned land.

The LCP notes that expanding recognition of the importance of recreation to the town's economy, community character, and the quality of life of residents and visitors is crucial. More passive and active recreation variety is needed to meet

different demographic groups and Bourne should consider working with neighboring towns to share recreation facilities and programs. It is noted how important it is to make recreation activities and resources more of a high priority in the Town because it is such an attraction to visitors and people who choose to live in Bourne.

Specific action items in the LCP include creating a Parks and Recreation Department to maintain recreation facilities and coordinate activities, conduct a recreation program and facility inventory, develop a 10 year Capital Improvement Project Plan, address needs identified in the 2000 State SCORP plan, improve maintenance of existing recreation facilities, expand and protect public access to water, develop a bikeway system, evaluate facilities for ADA compliance and set up year-round programs that appeal to teenagers. The 2007 OSRP update will serve to address many of the open space and recreation action items noted in the 2006 LCP.

### **3.3.8 Community Preservation Act (CPA)**

On April 6, 2005 the Town of Bourne overwhelmingly adopted (84% of voters said yes) the Community Preservation Act to place a 3% real estate surcharge to help the community fund projects for Affordable Housing, Open Space, Historic Preservation and Recreation. Since that time, the local Community Preservation Committee has been working towards a plan for fund allocation. To date, the CPC has allocated funding for the following open space and recreation projects in Bourne<sup>20</sup>:

- Open Space - \$20,000 approved at May 2006 Town Meeting for lighting to improve the Perry Avenue scenic outlook.
- Open Space – \$25,000 approved at May 2006 Town Meeting to hire a consultant to update the 1997 OSRP.
- Recreation - \$15,000 approved at May 2006 Town Meeting to re-install the Tennis Courts behind Town Hall.
- Recreation - \$40,000 approved at May 2006 Town Meeting for playground equipment/ballfield at Monument Beach and Lynne Butler Park.
- Recreation - \$45,000 approved at May 2006 Town Meeting for playground upgrades behind the Community Center and Clark Field.

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<sup>20</sup> Community Preservation Committee Project Status Report, January 25, 2007, provided by D. Conron April 2007

- Recreation - \$175,000 approved at May 2006 Town Meeting for playground upgrades, engineering and architectural renderings and bid specifications for Jackson Field, behind the middle school and Queen Sewell Park.
- Recreation - \$65,000 approved at October 2005 Town Meeting for the rehabilitation and preservation of Keith Field.

Examples (this is not a complete list) of other projects funded through the Community Preservation Act for Recreation and Open Space throughout the Commonwealth that may give Bourne an idea of how to use CPA funds for open space and recreation projects in the future include<sup>21</sup>:

### **Open Space**

Ashland	\$5,000 to purchase and plant trees.
Bedford	\$65,000 additional funding for the preservation of Fawn Lake.
Bedford	\$150,000 in CPA funds and \$450 in water and sewer funds to purchase 16 acres to preserve land critical to protecting Bedford's only active water source, the Shawsheen Wellfield. There are also wetlands and trails through rolling upland portions which are contiguous to a large town-owned parcel.
Duxbury	\$6,900 to purchase an acre of open space on Keene Street that is not buildable.
Georgetown	\$290,000 which is the approximate cost of a forested site that was the location of a historic farm and provides habitat for a variety of wildlife, including a rare species of turtle.
Marshfield	\$9,200 for land surveys.
Scituate	\$4,200 for reconstruction of a fish ladder located off Mordecai Lincoln Road for which the town will receive a permanent deed restriction.
Tyngsborough	\$350,000 for the purchase of the Norton property, with 500 feet of frontage along the Merrimack River. The property abuts 22 acres of riverfront open space already owned by the Town.

<sup>21</sup> Community Preservation Act, [www.communitypreservation.org](http://www.communitypreservation.org), [INTERNET] Accessed April 2007



Wareham	\$242,500 to purchase a parcel on Swifts Beach that would join two parcels already owned by the town and allow for 2,400 feet of conuous frontage at the beach.
Weston	\$20,000 for preservation of 2-3 of the 36 historic town-owned fields - to remove invasive plants to restore the open space back to the historic stone wall boundaries and improve the viewsapes into the fields from the streets nearby.

**Recreation**

Acton	\$67,000 for the construction of the T.J. O'Grady Skate Park at 66 Hayward Road.
Ayer	\$100,000 to preserve and restore the Sandy Pond Beach and its recreational facilities and to make them ADA compliant. Would include a new dock area, new walkways, special parking for people with disabilities, and improved safety at the intersection of Sandy Pond Road and Snake Hill Road.
Bedford	\$9,000 for improvements to the Minuteman Bike Path in town.
Braintree	\$25,000 for a new playground.
Chatham	\$40,000 for a new elementary school playground.
Cohasset	\$26,000 for a feasibility study of a pedestrian and bike trail along the Cohasset stretch of the Greenbush rail corridor.
Dartmouth	\$170,000 for the acquisition of 4 acres to expand Crapo Field.
Holliston	\$31,000 to Parks Commission for gas vent tests and monitoring at the old town dump. Also for topographic survey and design for recreation fields.
Nantucket	\$170,000 for a skateboard park.
N. Andover	\$25,000 to replace the Grogan Field Playground.
Norwell	\$9,200 to create a nature center at the Vinal School.
Scituate	\$200,000 to build a soccer and lacrosse field at the Hatherly School.

Wareham	\$135,000 for the creation of athletic fields, including installation of a well, irrigation system and loam.
Wellesley	\$49,000 to install an irrigation system to preserve the lower and upper fields at Warren School Park.

The Town of Bourne has a tremendous opportunity to utilize CPA funding for specific projects that would otherwise not be possible for financial reasons. The Open Space Committee and Recreation Committee should continue to work closely with the Community Preservation Committee to discuss potential projects.

### 3.3.9 Regulatory Tools

Cape Cod has a unique review process that new development projects must follow if they meet a threshold of 30 acres, 30 residential lots or units, ten or more business, office or industrial lots, or greater than 10,000 square feet of new construction (gross floor area). Projects that meet one of these thresholds are subject to review by the Cape Cod Commission (CCC) as a Development of Regional Impact (DRI). In addition to these triggers, any proposed development which requires an Environmental Notification Form (ENF) under the Massachusetts Environmental Policy Act (MEPA) can be deemed a DRI and any proposed demolition or substantial alteration of a historic structure or destruction or substantial alteration to a historic or archaeological site listed with the National Register of Historic Places or Massachusetts Register of Historic Places is subject to CCC review as a DRI as well.

The Town of Bourne has numerous overlay districts and regulatory tools in place to help manage future growth and protect open space and natural resources, they include:

- In addition to administering the Massachusetts Wetland Protection Act G.L. Chpt. 131 § 40, Bourne also has their own local Wetland Protection Bylaw (Article 3.7).
- Water Resource Overlay District – The purpose of this district is to protect the public by preventing contamination of the ground and surface water resources providing water supply for the Town.
- Landscaping and Screening requirements.
- Earth Removal specifications including a requirement for a Special Permit for removal in some cases
- Open Space Community – A Special Permit may be granted in the R-80 District to allow the construction of a subdivision designed as an Open

Space Community which would serve to allow a relatively intensive use of land while maintaining existing character, preserving open space for conservation and recreation and introducing a variety of residential development.

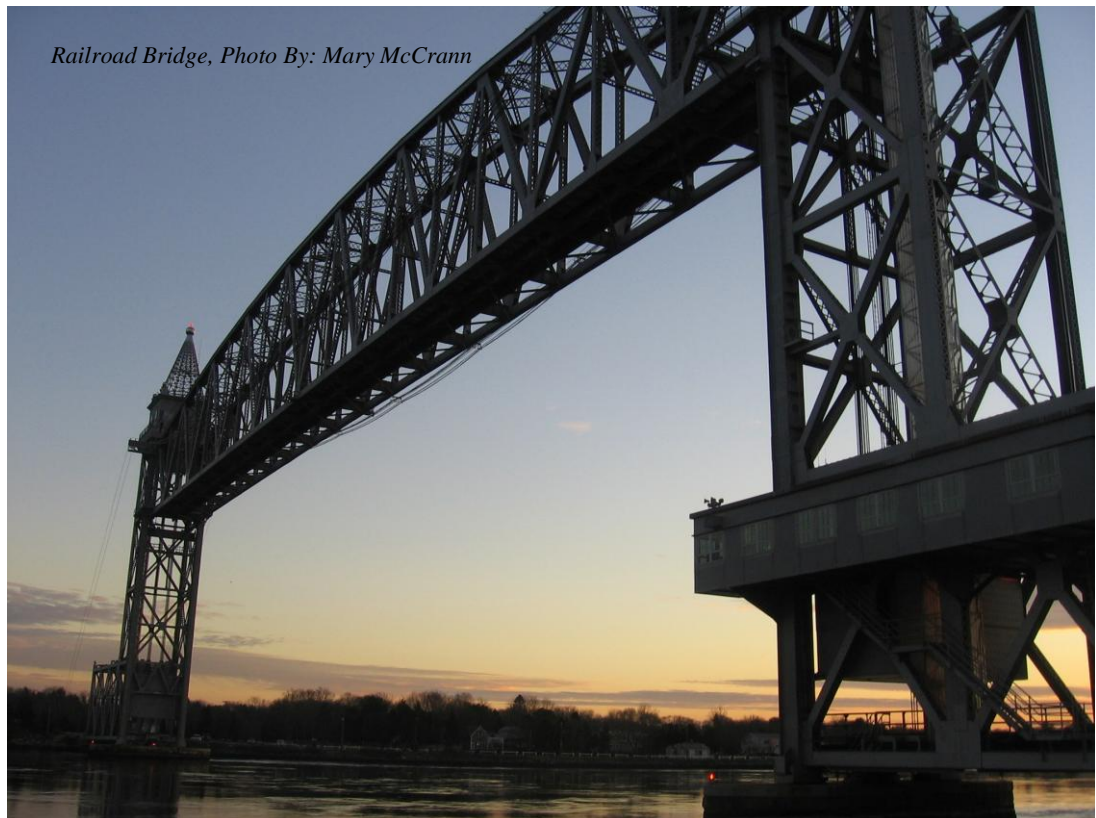
- Scenic Development District – The purpose of this district in Bourne is to gain intensive use of the land while preserving or enhancing highway views of the canal, ocean, or bay, preserving or enhancing landscaping and tree cover, minimizing visibility of parked autos and intrusion of commercial signs, and avoiding creation of hazards or congestion.
- Bournedale Overlay District – The purpose of this district is to provide for preservation of resources that are unique to Bournedale and which are fundamental to the character of the areas.

Within the Bournedale Overlay District, Flexible Resource Development (FRD) is allowed by the Planning Board through the granting of a Special Permit for specific uses. The purpose of FRD is to allow for more flexibility and creativity in the design of the development and to encourage permanent preservation of natural and cultural resources, including open space, agricultural and forestry land, waterbodies and wetlands and historic and archaeological resource (among other reasons). Within the FRD there are specific requirements for open space such as setting aside all land not utilized for lots, roads or drainage as open space and encouraging applicants to include within the open space any natural or cultural resources mentioned in the zoning section.

The Town of Bourne also specifies a number of Environmental Regulations in its Zoning Bylaw with regard to waste, air quality, electronics and lighting.

## Section 4.0 Environmental Inventory & Analysis

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## 4.0 ENVIRONMENTAL INVENTORY & ANALYSIS

### 4.1 Geology, Soils & Topography

#### 4.1.1 Geology

Bourne lies within the Avalon Terrane, which is a large block of the earth's crust that separated from the Gondwanan supercontinent between 490 and 550 million years ago. The Town also lies within the Fall River batholith, which is a complex of igneous rocks (rock that solidified from the cooling of molten magma) in southeastern Massachusetts. Fall River granite is the most abundant rock in this complex.<sup>22</sup>

The last continental ice sheet, the Wisconsinan, deposited the majority of the glacial debris present in eastern Massachusetts, and it is to this glacier and the subsequent rise in sea level following the glaciation that Barnstable County owes its origin. The bedrock of southern New England was worn down, producing drift, and re-deposited as the glacial and postglacial sediments of Cape Cod. The subsequent sea level rise eroded the drift along the shoreline, re-depositing it as beaches and spits, with windblown sand deposited as dunes.<sup>23</sup> The Wisconsinan ice sheet likely disappeared from southeastern Massachusetts by about 14,000 to 15,000 years ago.

The Buzzards Bay and Cape Cod Bay glacial ice sheet lobes intersected within and proximate to the Town of Bourne. Semi-circular ridges of glacial till (moraines) were created where the southern portions of the lobes dumped sediments. Since each lobe sloped toward the other, a depression was created where they met. The portion of Bourne south of the Cape Cod Canal consists of the Sandwich Moraine (deposited by the Cape Cod Bay lobe), Buzzards Bay Moraine, and younger ice contact deposits. The Bourne Bridge actually lies on the western side of the Sandwich and Buzzards Bay moraines' junction. Generally, that portion of Bourne north of the Cape Cod Canal lies within the Wareham pitted plain. Pitted plains contain numerous kettleholes, which often mark areas where large pieces of ice melted underneath the outwash sediments.<sup>24</sup>

Very few bedrock outcroppings exist within the Buzzards Bay drainage basin, since glacial deposits generally cover the bedrock. Overall, bedrock geology in the community consists of granite, and above this, Bourne overlays a thick mantle of glacial sands and gravels.<sup>25</sup> In fact, Neil Jorgensen's A Guide to New England's Landscape notes that, "*only in the Cape Cod region does the bedrock*

<sup>22</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

<sup>23</sup> <http://nesoil.com/barnstable/barngeology.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

<sup>24</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>25</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

*layer lie buried so deeply beneath the surface that, except by its absence, it plays no part in the landscape.*"<sup>26</sup> There is a swath of end moraine surficial geology oriented north/south and extending through the approximate center of the Town of Bourne. With the exception of several minor areas of floodplain alluvium associated with surface water features within the Town, the remaining surficial geology consists of sand and gravel deposits. The present, postglacial landforms continue to change due to wave erosion, major storm events, and sea level rise, maintaining the Cape's dynamic geologic character.<sup>27</sup>

The majority of Bourne's surficial geology (end moraine, sand and gravel deposits) poses few development limitations, although the highly permeable nature of the geology may become a factor when considering the potential for groundwater contamination. Similarly, depending upon slope and wind effects, the sandy nature of the surficial geology may increase the potential for erosion in specific areas of Bourne.

#### 4.1.2 Soils

Since the soils within Barnstable County have formed after the last glaciation, they are considered relatively young and therefore evidence only weak soil horizon development, with little changes to the parent material. Cape Cod's soil is classified as podzol, or "*nutrient-poor three-layered soil subject to sandy and hardpan areas.*"<sup>28</sup>

Generally, soils within the Town of Bourne are sandy and rocky to bouldery, with the majority exhibiting slopes of less than 15%. With the exception of the hydric/wetland soils, Bourne contains deep soils that are moderately to excessively well drained. This permeability can lead to groundwater contamination from septic systems if not properly designed, constructed, or maintained. Many areas with low-lying organic soils have been utilized in the production of cranberries.<sup>29</sup> In addition to soils suitable for agricultural uses, the Town of Bourne also contains several gravel pits. A list of those soils occurring within the Town is provided within Table # located in Appendix 5.

Any reprieve offered by the Cape's mild climate is counterbalanced by the generally poor soil conditions. Post-glaciation meltwater streams impoverished the already sandy Cape Cod soils by removing the clay that would have enriched them and increased their ability to retain water<sup>30</sup>.

<sup>26</sup> A Guide to New England's Landscape, by Neil Jorgensen. Barre Publishers, Barre Massachusetts, 1971.

<sup>27</sup> <http://nesoil.com/barnstable/barngeology.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

<sup>28</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>29</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>30</sup> A Guide to New England's Landscape, by Neil Jorgensen. Barre Publishers, Barre Massachusetts, 1971.



Several soils have also been classified as Prime farmland soils, as defined by the U.S. Department of Agriculture. Prime farmland is the most suitable land for food, feed, forage, fiber, and oilseed crops due to its potential to produce high yields with minimal energy and economic inputs. Additionally, farming in Prime farmland soils results in the least amount of environmental damage. Prime farmland may consist of cultivated areas, pasture, or woodland.<sup>31</sup> Approximately 2,900-acres of Bourne are classified as Prime farmland soils.

#### 4.1.3 Topography

Knob- and-kettle- topography resulting in rolling terrain is prevalent throughout Bourne, especially where the Town falls within the Sandwich Moraine. Such topography includes conical hills with flattened tops, and round to irregularly shaped depressions within the overall sandplain character of the area.<sup>32</sup> Elevations vary from sea level proximate to the coast to approximately 200-feet, with the highest altitudes achieved at the Sagamore Highlands (also referred to as Pikes Peak) adjacent to the Plymouth town line, Bournedale Hills, and along both sides of the Cape Cod Canal between the Sagamore and Bourne Bridges.<sup>33</sup>



View of Sagamore Highlands (portions extending into Plymouth). A parking lot and walking trails, and stairs provide public access to the beach.<sup>34</sup>

Although steeply sloping areas often limit development, the Town does not prohibit construction on steep slopes; however, the Town's Subdivision and Zoning Regulations do impose limitations on the finished grades of streets and cul-de-sacs. Additionally, Open Space Community zoning provisions create "bonus points" for the preservation of areas with greater than 15% slopes, and additional stabilization measures are required for slopes exceeding 15% due to

<sup>31</sup> <http://nesoil.com/barnstable/prime.htm>

<sup>32</sup> *Roadside Geology of Massachusetts*, by James W. Skehan. Mountain Press Publishing Company, 2001.

<sup>33</sup> *Town of Bourne Open Space and Recreation Area Plan - 1997*

<sup>34</sup> Information in Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received March 23, 2007.

site grading for all developments.<sup>35</sup> The kettle holes common to this area are ideal for cranberry bog cultivation.<sup>36</sup>

## 4.2 Landscape Character

As James W. Skehan states in his *Roadside Geology* book, “When you cross the Cape Cod Canal, you enter a land shaped entirely by ice, water, and wind.”<sup>37</sup> The Town of Bourne is home to many distinctive landforms, unique environments, and areas of scenic interest, in large part due to the aforementioned environmental factors.

### 4.2.1 Distinctive Landforms

Perhaps the most obvious feature of the Town of Bourne is the “Gateway to Cape Cod,” or the Cape Cod Canal, which is also known as the gateway to America’s Intracoastal Waterways. As noted in the 1997 Open Space and Recreation Area Plan, “*Whether passing through the waterway, driving by it on adjacent highways, over it on either of the two highway bridge crossings or merely resting on its shores, it is an impressive site. It is both the size and the unique setting of the project which attracts tourists and locals alike.*” Beyond connecting Cape Cod Bay and Buzzards Bay, the Canal provides a plethora of recreational activities, including sightseeing, walking, running, bike riding, saltwater fishing, boating, swimming, picnicking, and camping. The Town of Bourne Recreation Authority, the Scusset Beach State Reservation, and the Army Corps of Engineers, New England Division make available access areas with picnic and sanitary facilities.

Much of the land neighboring the Canal is wooded with pitch pine, oak and locust or vegetated with dune species such as beachgrass, beachplum and rugosa rose, and juniper. Commercially, the Canal saves between 65 to 150 miles in navigational distance, and although benefits accrued from this efficiency total in the millions of dollars each year, the Canal remains toll free.<sup>38</sup>

### 4.2.2 Unique Environments

#### Areas of Critical Environmental Concern (ACEC)

Bourne contains three Areas of Critical Environmental Concern, as designated by the Secretary of Environmental Affairs: 1) the Pocasset River ACEC; 2) the Bourne Back River ACEC; and 3) the Herring River Watershed ACEC. According to the ACEC Program website, ACECs “*are places in Massachusetts that receive special recognition because of the quality, uniqueness and*

<sup>35</sup> Town of Bourne Open Space and Recreation Area Plan – 1997, information verified on ordinance.com February 26, 2007.

<sup>36</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

<sup>37</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

<sup>38</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

*significance of their natural and cultural resources.”<sup>39</sup> Additionally, “Proactive stewardship and collaboration is essential to achieve the purpose and goals of ACEC designation.”<sup>40</sup>*

### **Pocasset River ACEC**

The Pocasset River ACEC was the first ACEC designated within the Town of Bourne, on December 5, 1980. It is also the smallest, with an area of approximately 160-acres. The Pocasset River ACEC consists of a river and estuarine system located on the eastern shore of Buzzards Bay. Specifically, the ACEC includes the Pocasset River and Freeman, Mill, Shop, and Upper Ponds, which are all Outstanding Resource Waters.

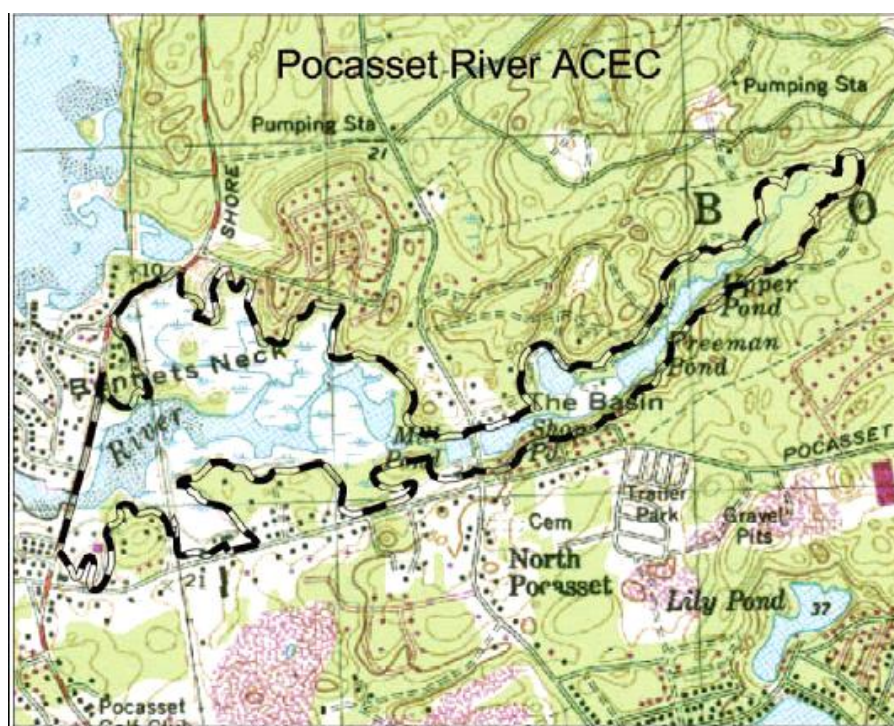


Image from: <http://www.mass.gov/dcr/stewardship/acec/acecs/maps/pocasset.pdf>

Key habitats within this ACEC consist of salt marsh, floodplain, tidal flats, wetlands, streams, and freshwater ponds, all of which provide flood control, storm damage prevention, improved water quality, wildlife habitat, and recreational opportunities.<sup>41</sup>

A 2003 summary of the Pocasset River ACEC cites 40 confirmed or probable breeding bird species, a productive oyster crop within the estuary, and healthy

<sup>39</sup> <http://www.mass.gov/dcr/stewardship/acec/index.htm>

<sup>40</sup> <http://www.mass.gov/dcr/stewardship/acec/acecProgram.htm>

<sup>41</sup> Pocasset River Designation Overview, from <http://www.mass.gov/dcr/stewardship/acec/acecs/l-pocriv.htm>

trout populations within the freshwater ponds. Although the Pocasset River does not presently contain migratory fish runs, the potential for restoration of an established historic fish run exists if fish ladders are installed. American eels do migrate from the upper ponds to spawn at sea, and habitat for softshell clams, quahogs, and oysters is present within the ACEC.

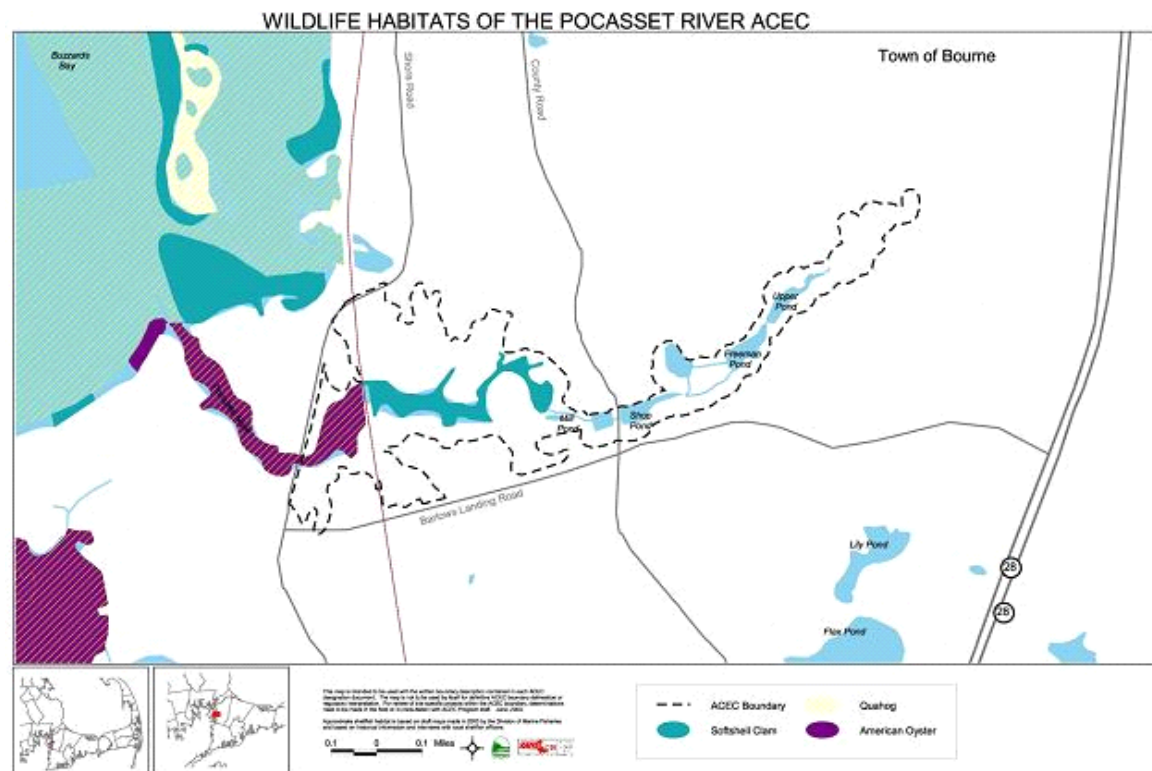


Image from [http://www.mass.gov/dcr/stewardship/acec/acecs/maps/pocassetriver/pr\\_wlh.pdf](http://www.mass.gov/dcr/stewardship/acec/acecs/maps/pocassetriver/pr_wlh.pdf)

The ACEC also houses three state-listed species, diamondback terrapin, eastern box turtle, and water-willow stem borer, according to NHESP. Approximately 25% of the ACEC lies within NHESP designated BioMap core habitat (discussed in Section 4.6.1). Within the ACEC, forest or salt marsh comprises two-thirds of the land area, and only 15% of the ACEC contains low and medium density residential development. However, much of the land adjacent to the Pocasset River ACEC contains residential development.

Mill and Shop Ponds, located within the ACEC, were historically sites for the Pocasset Iron Foundry (1822 – 1881) and the Tahanto Art Works (1882 – 1900), both of which utilized native bog iron. The upper ponds were created by the foundry for the purpose of water storage, and a fish hatchery was later created adjacent to Mill Pond. Finally, an archaeological site has also been recorded within this ACEC.

Past or on-going stewardship activities within the ACEC include water quality and nutrient loading analyses by the Buzzards Bay Baywatchers. This group's sampling indicates that the system is relatively healthy. Additional water quality testing is being performed by the Bourne Selectmen's Taskforce on Local Pollution, which was also placing interpretive signs within the ACEC at the time of the 2003 report.<sup>42</sup>

### **Bourne Back River ACEC**

The Bourne Back River ACEC encompasses 1,850± acres just south of the Cape Cod Canal. The ACEC includes (partially or entirely) Phinneys Harbor, the Back River, Clay, Eel, and Mill Ponds, as well as the Rocky Point Recurved Barrier Spit.<sup>43</sup> Much of the estuary is Town owned.<sup>44</sup>

The Bourne Back River ACEC was designated on April 24, 1989 due to its “*outstanding natural resources*.” At the time of the designation, the majority of the coastal and inland wetlands within this ACEC had not been subject to alteration or development. Therefore, the Bourne Back River ACEC provides important habitat, nursery and spawning grounds, and storm damage prevention. “*The estuarine/salt marsh ecosystem...supports a wide variety of shellfish, finfish, amphibians, reptiles, birds, and mammals, within an extraordinary spectrum of habitat types.*”

In addition to its designation as an ACEC, the US EPA designated the Back River Estuary an “Estuary of National Significance” in 1988. The ACEC also forms part of the Ocean Sanctuaries of Massachusetts, and contains state-listed rare and endangered species, including diamondback terrapin. On top of the ACEC's spectacular natural resources, it also provides excellent recreational opportunities, and is used widely by recreational and educational groups, including the Bourne school system, the Northeast Marine Environmental Institute, and the Woods Hole research community.<sup>45</sup>

The Elijah Pery Grist Mill and Ironworks were located within the ACEC, and the solar saltworks industry was situated on the Eel Pond shoreline and vicinity.<sup>46</sup>

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<sup>42</sup> Pocasset River Area of Critical Environmental Concern (ACEC) Summer 2003, from <http://www.mass.gov/dcr/stewardship/acec/acecs/descriptions/PocassetRiver.pdf>

<sup>43</sup> Bourne Back River and Headwater Wetlands Resource Summary, from <http://www.mass.gov/dcr/stewardship/acec/acecs/l-boubac.htm>

<sup>44</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>45</sup> Bourne Back River and Headwater Wetlands Resource Summary, from <http://www.mass.gov/dcr/stewardship/acec/acecs/l-boubac.htm>

<sup>46</sup> Town of Bourne Open Space and Recreation Area Plan - 1997



### **Herring River Watershed ACEC**

The Herring River Watershed ACEC totals 4,450± acres within the Towns of Bourne and Plymouth, and was designated as an ACEC on November 5, 1991. Within the Town of Bourne, it contains 3 ponds, freshwater wetlands, cranberry bogs, and protected open space. It is home to a significant anadromous fish run, with Great Herring Pond supporting a regionally important recreational fishery. Additionally, this ACEC lies within the Plymouth Carver Sole Source Aquifer, and is therefore critical to public water supply. Several of the state-listed species previously discussed, including eastern box turtle, are also present. In addition to these natural resources, the Herring River Watershed ACEC is also believed to be the core habitation area for a Wampanoag settlement.<sup>47</sup>

## **4.3 Water Resources**

The majority of Bourne overlies part of the Sagamore groundwater lens, which is the Cape's most abundant source of fresh water. According to the 1997 Open Space and Recreation Plan, *"Drainage and groundwater flows from all of Bourne's villages on Buzzards Bay (Bourne, Monument Beach, Pocasset and Cataumet) reach the ocean via constricted embayments which give the coast its beauty and resource value, but render it vulnerable to contamination."* Existing development already results in nutrient loading within Bourne's water resources; in 2006 ±513-acres of the "in-shore" fishery were closed to shellfishing due to such pollution.<sup>48, 49</sup>

### **4.3.1 Watersheds**

The Town of Bourne is divided between three major watersheds, or drainage basins. A watershed is that area of land from which precipitation flows or seeps into a waterbody or wetland (marsh, stream, river, lake, or groundwater).<sup>50</sup>

North of the Canal, the western portion of the Town lies within the Buzzards Bay Basin while the eastern portion lies within the South Coastal Basin. South of the Canal, the Town lies within the Cape Cod Basin.

Approximately 4.7 square miles of the total 380 square miles of the Buzzards Bay Basin are situated within the Town of Bourne. The lower elevation valleys are inundated with seawater, and form a coastline with many inlets valuable for commercial fishing and recreation. This basin exhibits well-drained sandy soils and contains a plethora of kettle ponds and freshwater and saltwater marshes.<sup>51</sup> Bourne's northeast corner comprises the southernmost ±4.4 square miles of the

<sup>47</sup> Herring River Watershed Resource Summary, from <http://www.mass.gov/dcr/stewardship/acec/acecs/1-herriv.htm>

<sup>48</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>49</sup> Email from Mike Gratis, Senior Officer, Department of Natural Resources, received February 23, 2007.

<sup>50</sup> "What is a Watershed" viewed online March 22, 2007,

[http://www.conservationinformation.org/?action=learningcenter\\_kyw\\_what\\_is\\_a\\_watershed](http://www.conservationinformation.org/?action=learningcenter_kyw_what_is_a_watershed)

<sup>51</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

South Coastal Basin, and  $\pm 32$  square miles of Bourne lie within the Cape Cod Basin.

#### **4.3.2 Surface Water**

##### **Waterways**

Although man-made, the Cape Cod Canal forms the most prominent waterway within the Town of Bourne. While dividing the Town in two, it also provides an excellent recreational amenity, as previously discussed. The 17.4-mile-long canal linking Cape Cod Bay to Buzzards Bay was constructed by the Boston, Cape Cod & New York Canal Company (it was completed in 1914). Its width varies between 480 and 700-feet, and it is 32-feet deep. Prior to the Canal, two rivers, the Scusset and the Monument or Manomet, flowed in its future path. The former ran north into Cape Cod Bay while the latter flowed south into Buzzards Bay.<sup>52</sup>

Besides the Canal, Bourne's principal rivers include the Herring River, Pocasset River, and Back River. In addition to these major rivers, the following waterways are also present within Bourne: Red Brook, East River, Gibbs Brook, Bass Creek, Crooked River, and Broad Marsh River, among with other unnamed, smaller streams.<sup>53</sup>

The Division of Marine Fisheries monitors most tidal creeks in the course of its sanitary surveys, and many storm drains have been monitored by the Coalition for Buzzards Bay.<sup>54</sup> The Bourne Selectmen's Task Force on Local Pollution is presently working on stormwater remediation as part of compliance with Phase II of the National Pollutant Discharge Elimination System, which requires towns to develop a stormwater management program to prevent pollutants in stormwater runoff from entering municipal separate storm sewer systems (and subsequently local surface waters).<sup>55</sup> Stormwater remediation projects are currently considered for Queen Sewell Pond off Cherry Street and Conservation Pond, where there are issues with a culvert and pollution. The task force also monitors marina water quality with assistance from the Board of Health, and is considering pollution issues associated with nitrogen, including the use of slow-release fertilizers and education regarding the effects of nutrient loading for Bourne residents.<sup>56</sup>

##### **Ponds and Lakes<sup>57, 58</sup>**

Bourne contains approximately 30 ponds, some of the larger of which include Queen Sewell (also known as "Bumps"), Goat Pasture, Great Herring and Bourne Ponds (all Great Ponds) north of the Canal, and Eel Pond, Mill Pond, Freeman Pond, Lily Pond, Flax Pond, Red Brook Pond, and Long Pond (all Great Ponds) south of the Canal. The Plymouth County Wildlands Trust protects Goat Pasture

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<sup>52</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.



Pond, while the Town owns and maintains beaches at Queen Sewell and Flax Ponds (Picture Lake).

Other ponds include Black Pond, Nightingale Pond, Ellis Pond, and Foundry Pond north of the Canal, Great Pond, Clay Pond, The Basin, and Cuffs Pond south of the Canal, and Deep Bottom Pond, Little Halfway Pond, Donnelly Pond, Baileys Pond, Succonnessett Pond, Opening Pond, Osbourne Pond, Edmunds Pond, Spit Pond, Fish and Game Ponds (North and South), and Connery South Pond within the Military Reservation. The North Sagamore Water District protects Black Pond, as it lies within the interim wellhead protection area for a municipal wellhead.

In addition to these named water bodies, numerous other smaller ponds, many of which have formed in kettleholes, dot Bourne's landscape and are used for recreational activities such as fishing and boating.

### **Coastal Waters**

Bourne is unique in that it borders both Massachusetts Bay and Buzzards Bay, creating the longest coastline on Cape Cod. The shore of Massachusetts Bay coupled with Buzzards Bay's meandering shoreline creates a profusion of coastal resources within the Town.

The prevalent coastal areas generate abundant recreational and commercial opportunities, in addition to the habitat functions they provide. However, these coastal areas have also been subject to pollution over the years.<sup>59</sup> Close to 90-acres of in-shore shellfish beds are permanently closed, while over 420 additional acres were closed to shellfishing last season. Beaches are also occasionally closed to swimming.<sup>60,61</sup> Oil spills from ship groundings, such as the Bouchard spill that occurred in April 2003 in Buzzards Bay, have also historically produced serious consequences for coastal habitats.

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<sup>53</sup> Halliwell, David B.; Kimball, Warren A.; and Arthur J. Screpetis. Massachusetts Stream Classification Program Part I: Inventory of Rivers and Streams July 1982 (reprinted July 1984).

<sup>54</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>55</sup> U.S. Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) Stormwater Program for Regulated Small MS4s website, <http://cfpub.epa.gov/npdes/stormwater/phase2.cfm>

<sup>56</sup> Telephone conversation with Cynthia Coffin, Town of Bourne Board of Health Agent, March 23, 2007.

<sup>57</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>58</sup> Risk and Vulnerability Assessment Map Town of Bourne, MA, <http://www.capecodcommission.org/GIS/BournePDM.pdf>

<sup>59</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>60</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>61</sup> Email from Mike Gratis, Senior Officer, Department of Natural Resources, received February 23, 2007.

### Environmentally Sensitive Resources

Home to some of the most productive ecosystem types (like salt marshes), most coastal areas are also extremely sensitive to negative impacts from anthropogenic sources which are either direct physical alterations to these areas, or indirect effects from nutrient loading. Within Bourne, such sensitive areas include Squeteague Harbor, Bassett's Island, Red Brook Harbor, the Pocasset River, the Back River, Buttermilk Bay, and their associated salt marshes, the Herring/Monument River (which has historically supported one of the largest herring runs in the state, but is presently in decline), and Sagamore Beach Marsh. The 1997 Open Space and Recreation Area Plan notes that "*Many sensitive areas are prime shellfish habitat and have declining areas of eelgrass beds.*"<sup>62,63</sup> Today, despite a propagation program, shellfish habitat and numbers are not as strong as they were historically, although they have not suffered significant declines in recent history. Eelgrass beds continue to decline (see discussion below).<sup>64</sup>

#### Anadromous Fish Runs<sup>65</sup>

Herring is an anadromous fish, meaning that it migrates from saltwater to spawn in freshwater. Therefore, this species is especially sensitive to impediments within its migration routes (e.g. culverts, dams, etc...). Within Bourne, there were historically three herring runs: 1) Bourne Pond (located behind Town Hall, this pond is connected to the Cape Cod Canal); 2) Herring River; and 3) Red Brook. Of these, the Herring River is currently the largest run, although it too has suffered significant declines in the past few years.<sup>66</sup> Bourne Pond no longer functions as a herring run.

#### Eelgrass Beds<sup>67</sup>

Seagrass beds provide food and cover for many commercially and recreationally important marine organisms and their associated prey, and the leaf canopy creates a "micro-climate" of still water, filters particulates, and stabilizes sediment through extensive roots and rhizomes. Eelgrass is the most common seagrass along the Massachusetts coast, and because it is susceptible to effects from Nitrogen, is considered an indicator of overall ecosystem health.

The Massachusetts Department of Environmental Protection has mapped eelgrass beds using aerial photography from 1995, 1998, and 2001. Additional mapping is

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<sup>62</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>63</sup> Email received on February 16, 2007 from Brendan Mullaney, Conservation Agent, Town of Bourne.

<sup>64</sup> Email received on February 16, 2007 from Brendan Mullaney, Conservation Agent, Town of Bourne.

<sup>65</sup> Telephone conversation with Phil Brady, Aquatic Biologist, Division of Marine Fisheries, on March 5, 2007.

<sup>66</sup> Email from Dody Adkins-Perry, Town of Bourne, received March 16, 2007.

<sup>67</sup> Eelgrass Interactive Map, from <http://www.mass.gov/dep/water/resources/maps/eelgrass/eelgrass.htm> viewed on February 21, 2007.

anticipated to be undertaken during 2006/2007. Areas of eelgrass that have been mapped within Bourne's coastal resources include the following:

- Buttermilk Bay
- Maritime Academy
- Toby's Island
- Red Brook Harbor

The mapping of Buttermilk Bay indicates that, although significant areas of eelgrass beds were present in 1995, those areas had disappeared by 2001. The narrow waterway between Buttermilk Bay and Buzzards Bay (including Butler Cove and areas of Buzzards Bay adjacent to the Canal) also experienced an overall decline in eelgrass beds, although eelgrass was still present in 2001. Overall, this portion of Bourne's waters experienced a  $\pm 72\%$  decline in the amount of eelgrass present, or a decline from  $\pm 234$ -acres in 1995 to  $\pm 66$ -acres in 2001.

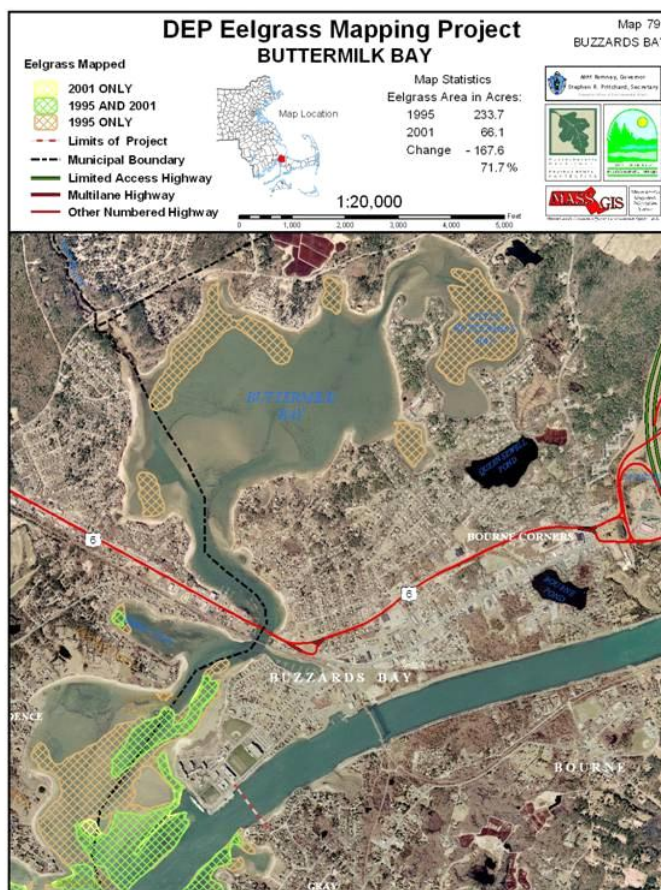


Image from [http://www.mass.gov/dep/water/resources/maps/eelgrass/buttermilk\\_bay.htm](http://www.mass.gov/dep/water/resources/maps/eelgrass/buttermilk_bay.htm).

Reduced

Eelgrass beds in the coastal waters proximate to the Maritime Academy suffered a  $\pm 35\%$  decline, from  $\pm 484$ -acres to  $\pm 317$ -acres. These waters partially overlap with those depicted in the Buttermilk Bay map, but also include areas adjacent to Hog Island, as well as waters not directly adjacent to Bourne, such as Onset Bay. Coastal waters proximate to Toby's and Mashnee Islands lost  $\pm 106$  acres of eelgrass beds, or a  $\pm 28\%$  loss between 1995 and 2001. The eelgrass beds of Red Brook and Pocasset Harbors remained fairly stable, with the least amount of coverage lost,  $\pm 22$ -acres or a  $\pm 7\%$  decline.

### Salt Marshes

Salt marshes represent some of Bourne's most productive and important ecosystems. Over two thirds of recreationally and commercially significant saltwater fish utilize coastal marshes as spawning and nursery habitat. The amount of detritus produced by the dieback of herbaceous salt marsh plants is an important source of food for microorganisms, forage fish, and grass shrimp, which in turn act as prey for larger fish, including bluefish, weakfish, and striped bass. Salt marshes not only provide valuable habitat for fish and shellfish, but also maintain water quality by uptaking pollutants and filtering sediments and provide flood and storm damage protection. In addition to these services, salt marshes also provide many direct recreational opportunities such as hunting and bird watching.

The recorded salt marshes within Bourne are restricted under M.G.L. c. 130 s. 105 (1980), and filling is therefore strictly prohibited. Despite this protection, fill associated with transportation projects does occur, and salt marshes are also subject to degradation from tidal restrictions (such as culverts) associated with roadways.<sup>68</sup> A description of salt marsh restoration projects is provided in the following paragraphs.

The Pocasset Salt Marsh borders Pocasset Harbor in western Pocasset. Changes in flow due to improperly sized culverts restricting tidal effects has caused significant erosion within the marsh. Specifically, the culvert between the marsh and Pocasset Harbor has prevented flushing from the marsh since just after World War II. The remaining standing water present in the marsh at low tide super-saturates the peat and erosion occurs, as evidenced by the wide channels bordered by eroded peat present within the salt marsh.<sup>69</sup>

Under the GROWetlands Program and in conjunction with the Natural Resources Conservation Service, the Wing's Neck Neighborhood Association, and the Bourne Conservation Commission, the Town of Bourne restored 10-acres of salt

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<sup>68</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>69</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

marsh at Wing's Neck Road. An undersized culvert was replaced with two culverts of sufficient size to restore full tidal flushing to the salt marsh.<sup>70</sup>

Widening and deepening of the Cape Cod Canal during the mid-1930's resulted in the restriction of tidal flushing to the Sagamore Marsh. Whereas the Scusset River had previously facilitated tidal flushing of this marsh, a combination of fill, natural accretion, and an undersized culvert has reduced the tidal influence to the marsh, resulting in a monoculture of common reed that provides limited ecological value and constitutes a fire hazard. Fifty-acres of the Sagamore Marsh were restored, beginning in April 2000, using funds from the Massachusetts Executive Office of Environmental Affairs, the Corporate Wetlands Restoration Partnership, and the federal government. A post-construction monitoring program has been funded by The Gillette Company.<sup>71</sup>

In addition to the restoration projects completed, several other projects have been accepted under the Massachusetts Office of Coastal Zone Management Wetlands Restoration Program as priority projects.<sup>72</sup>

Following two images from: [http://www.mass.gov/czm/wrp/projects\\_pages/priority\\_projects.htm](http://www.mass.gov/czm/wrp/projects_pages/priority_projects.htm)



<sup>70</sup> GROWetlands Report 2001, 2001 Progress Report, Wetlands Restoration Program, Executive Office of Environmental Affairs, April 2002. Viewed online at [http://www.winterheating.net/czm/wrp/downloads/wrp\\_2001\\_progress\\_parta.pdf](http://www.winterheating.net/czm/wrp/downloads/wrp_2001_progress_parta.pdf) on March 2, 2007.

<sup>71</sup> Corporate Wetlands Restoration Partnership Project Spotlight: Sagamore Marsh Restoration, <http://www.coastalamerica.gov/text/sagamore.html>, viewed on March 2, 2007.

<sup>72</sup> Massachusetts Office of Coastal Zone Management Wetlands Restoration Program Priority Projects website, [http://www.mass.gov/czm/wrp/projects\\_pages/priority\\_projects.htm](http://www.mass.gov/czm/wrp/projects_pages/priority_projects.htm), viewed on March 2, 2007.



Back River Marsh – Photo Above



Gray Gables – Photo Above

### Working Waterfronts

The Town of Bourne's expansive coastline generates numerous economic prospects. Commercial shipping and the Massachusetts Maritime Academy represent the most obvious coastal dependant economic contributors; however, services relating to recreational boating and fishing are also a major local industry, while traditional shell and fin-fishing also contribute. Bourne's prevalent coastline also attracts a booming tourism industry, and is an incentive for choosing the town as a primary or secondary residence.

Red Brook Harbor (Parker's Boatyard and Kingman Marine), Barlows Landing, Monument Beach Marina, the Pocasset River (Barlow's Boat Yard and the Pocasset River Marina), and Taylor's Point/Cohasset Narrows (Bourne Marina, a private marina, bait shops, and the Massachusetts Maritime Academy), all represent working waterfronts in Bourne.<sup>73</sup>

Bourne has not completed a comprehensive inventory or map of the access points to its various public recreational and/or conservation areas, however it has been

<sup>73</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

discussed in detail and drafts have been prepared in the past. Bourne's Coastal Access Program previously received a grant from Coastal Zone Management to install signage denoting the public access points. The Conservation Commission oversaw the installation of some of these signs during the summer of 2006.<sup>74</sup>

The Shore and Harbor Committee completed a formal inventory and priority list of areas requiring dredging in 1995, however this list has been updated informally several times since then. Based upon the 1995 list, the north and south passages of Red Brook Harbor as well as portions of Buttermilk Bay were top priorities and have undergone dredging, and Gray Gables was dredged three years ago. Generally, the Shore and Harbor Committee tries to undertake a new dredging project every three years. The next project planned is dredging of Monument Beach, which is anticipated to begin during the fall of 2007. The Committee's goal is to complete the major dredging projects required in order to reach a point where all that is necessary are smaller, maintenance dredging of the various working waterfronts.<sup>75</sup>

#### **Outstanding Resource Waters**

Outstanding Resource Waters (ORWs) are classified under the Massachusetts Surface Water Quality Standards (314 CMR 4.00), and consist of those waters that offer "*outstanding socioeconomic, recreational, ecological, and/or aesthetic values.*"<sup>76</sup> They include public water supplies and certified vernal pools (CVPs), for example. Beyond Bourne's CVPs, Flax Pond, Queen Sewell Pond, Freeman Pond, Mill Pond, Shop Pond, Upper Pond, Herring Pond, the Herring River, and the Pocasset River are also designated ORWs.<sup>77</sup>

#### **4.3.3 Water Supply and Aquifer Recharge Areas**

The vast majority of Bourne north of the Cape Cod Canal consists of a high yield aquifer, the Plymouth Carver Aquifer, while the Sagamore Lens (part of the Cape Cod Sole Source Aquifer) supplies the portion of Bourne south of the Canal.<sup>78</sup> The Plymouth Carver Aquifer is one of the largest in the state, and it has a potential yield of 300 gallons per minute per well, with a total storage capacity of 540 billion gallons of water.<sup>79</sup> The Sagamore Lens consists of fresh groundwater overlying bedrock, bounded by marine waters, and separated from the Plymouth Carver Aquifer by tidal waters of the Cape Cod Canal.

Public water supplies north of the Canal are administered by the Buzzards Bay and North Sagamore Water Districts, while the Bourne Water District is

<sup>74</sup> Telephone conversation with Coreen Moore, Bourne Town Planner, March 23, 2007.

<sup>75</sup> Telephone conversation with Charles Perry, Bourne Shore and Harbor Committee, on February 23, 2007.

<sup>76</sup> 314 CMR 4.04(3): Massachusetts Surface Water Quality Standards

<sup>77</sup> 314 CMR 4.06: Massachusetts Surface Water Quality Standards

<sup>78</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>79</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

responsible for water supplies south of the Canal.<sup>80</sup> Note that another water district, the South Sagamore Water District, previously administered water supplies for a portion of southern Bourne, but was absorbed into the Bourne Water District in 2004.<sup>81</sup> These figures are compiled from the paragraphs specific to each water district that follow, and do not include the Cape Cod Air Force Station and Schooner Pass Trustees Condominiums water supplies.

Water supplies within Bourne are derived from groundwater sources that are highly vulnerable to contamination due to permeable soils and the absence of hydrogeologic barriers (such as clay) that can prevent contaminant movement into aquifer recharge areas.<sup>82</sup>

Two of the public wells were replaced due to chemical contamination from the Massachusetts Military Reservation. Non-point source pollution from septic systems, businesses, hazardous waste, and improper disposal of chemical products are also threats to Bourne's water supplies, due to the highly permeable soils. Zoning bylaws afford some protection by requiring setbacks from wells and by limiting septic system density in water contribution areas. In fact, Bourne was the first town on Cape Cod to establish a groundwater protection overlay district, which controls potentially detrimental land uses (such as gasoline storage and hazardous waste facilities) within the district. An annual household hazardous waste collection event also encourages homeowners to properly dispose of waste. Finally, large lot zoning within wellhead protection areas has maintained low nitrogen concentrations within the public water supply systems.<sup>83</sup> Specific potential/existing contaminants within each water supply district are outlined in the subsections that follow.

Each water supply well has an associated Zone I and Zone II or Interim Wellhead Protection Area.

- A Zone I is the area closest to a well. Per the Massachusetts Drinking Water Regulations (310 CMR 22.00), it should be owned or controlled by the water supplier and limited to water supply activities.<sup>84</sup>
- A Zone II consists of the primary recharge area for the aquifer, as defined through a hydrogeologic study.<sup>85</sup>

<sup>80</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>81</sup> Water Management Act Permit Application Received by the Department of Environmental Protection Southeast Regional Office For the Cape Cod Coastal Drainage Area. Viewed online at <http://www.mass.gov/envir/mepa/notices/082306em/8.pdf> on February 26, 2007.

<sup>82</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for Bourne Water District January 14, 2003.

<sup>83</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>84</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Cape Cod Air Force Station. October 2003.

<sup>85</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for North Sagamore Water District. June 2003.



- An Interim Wellhead Protection Area is the larger area that is likely to contribute water to a well, but that has not been defined through a hydrogeologic study.<sup>86</sup>

### **Buzzards Bay Water District<sup>87,88</sup>**

The Buzzards Bay Water District contains four wells located in three Zone IIs. All of the wells have an associated 400-foot Zone I, and the following non-water supply related activities occur within the Zone I:

- Dry Cedar Swamp and Bournedale Roads pass through the Zone I for Well #1. Portions of the Zone I are owned by the Wildlands Trust of Southeastern Massachusetts, and although not technically controlled by the water supply authority, are fenced and undisturbed.
- A small section of Bournedale Road crosses through the Zone I associated with Well #4.

The Zone IIs are comprised of mainly undeveloped forest mixed with residential, agricultural, and recreational/open space lands. As of 2003, less than 10% of each of the three Zone II areas was residentially developed, however considerable fractions have the potential for further residential development. In addition to the residential development, the following is a list of potential contaminant sources within the Zone II's:

- Nursing home - although concerns regarding the operation of older septic systems serving large numbers of people may arise, there is no evidence that the subject septic system is malfunctioning.
- Route 25 - a major transportation corridor
- A gas main and electric lines - utilities represent potential contaminant sources considering the possibility of improper herbicide application during maintenance of Rights-of-Ways.
- Golf Course (in Plymouth, but within the Zone II for Wells #3 and 4) - possible over-application of pesticides and fertilizers.
- Agricultural uses include a horse farm, a pig farm, backyard animals, and cropland. Pesticides and fertilizers, as well as animal waste products, have the potential to contaminate drinking water sources if improperly stored, applied, disposed, or contained.

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<sup>86</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Cape Cod Air Force Station. October 2003.

<sup>87</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for Buzzards Bay Water District. May 2003.

<sup>88</sup> Massachusetts Department of Environmental Protection Bureau of Resource Protection – Drinking Water Program 2006 Public Water Supply Annual Statistic Report for Community Public Water Systems – Reporting Period 1/1/2006 – 12/31/2006, received from Glen R. Doherty, Superintendent, Buzzards Bay Water District, in an email dated March 29, 2007.

- Illegal dumping occurs within the Zone II for Well #2; such debris sometimes contains hazardous materials or wastes.
- DEP Tier Classified Oil or Hazardous Material Release Site within the Zone II for Well #1.

A summary list of additional information pertaining to the Buzzards Bay Water District is provided below:

- Total of 45 miles of water main
- Total of 2,238 service connections
  - 2109 residential
  - 4 non-residential institutions (schools, camps, day care centers, etc...)
  - 109 commercial
  - 1 agricultural
  - 2 industrial
  - 1 recreational
  - 12 municipal/sanitary improvement district
- Educational program for industrial/commercial users, but not for residential users
- Daily average withdrawal in 2006 = 462,187 mgd

### **North Sagamore Water District<sup>89</sup>**

The North Sagamore Water District is currently supplied by three active gravel-packed wells: the Black Pond Well (installed in 1979), Well No. 1 (the Beach Well, installed in 1958) and the Church Lane Well (installed in 2001). Three above-ground reservoirs (standpipes) store water within this District: the Bournedale tank, the Clark Road tank, and Norris tank. There are presently no interconnections (to facilitate reserve supplies) between the North Sagamore Water District and the other water districts in Town. However, future possible connections with the Buzzards Bay Water District and the Town of Plymouth Water Department may be available options.

The aquifer in the Church Lane area is part of the extensive Plymouth aquifer system from which all water for the North Sagamore Water District is drawn. Groundwater flows from Herring Pond and the Herring River toward the Cape Cod Canal. The Black Pond Well is the principal source of water, and the Bournedale tank level controls the pump operation during normal conditions. The Beach Well (Well No. 1) functions primarily as a peaking well, supplying water only during peak demand periods.

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<sup>89</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for North Sagamore Water District. June 2003. This section reviewed by the Susan Kruse NSWDO Office Manager/Clerk-Treasurer (with additional information also provided) via emails received on June 26 and 27, 2007. Information originally from North Sagamore Water District Superintendent Paul Gibbs.

The North Sagamore Water District is proactive in protecting the present and future water supply by purchasing as much land as possible abutting District property. In order to achieve this goal without impacting its ratepayers, the North Sagamore Water District has secured Commonwealth of Massachusetts grant money, along with purchasing land as a “bargain sale.” Currently, the District owns over two hundred and fifty (250) acres, which guarantees possible well sites for future generations of the District, and also provides protection of the existing water supply. Additionally, the North Sagamore Water District has been proactive in making capital improvements. These improvements include main replacement projects, construction of an additional well, construction of an addition to the District office building, making it A.D.A compliant, and most recently, installing a state of the art iron and manganese filtration plant. In 2007 the District will be constructing an addition to its Beach Well building.

Both the Beach Well and the Black Pond Well have associated 400-foot Zone Is, and each also has a road (Pilgrim Road and Black Pond Road, respectively) passing through the associated Zone I.

The Zone IIs are predominantly forested and undeveloped, and the Zone II for the Black Pond well extends into Plymouth. Residential uses are also present, with the potential for additional residential development. Other uses within the Zone IIs include:

- Automotive repair shop (Beach Well Zone II) - concerns arising from this land use type include the potential for automotive fluid and solvent leaks/spills.
- Route 3 passes (Beach Well Zone II)
- Local roads
- Electric utility line
- Illegal dumping (Black Pond Well Zone II)
- Waterfowl within Black Pond may contribute to nutrient loading and subsequent contamination of the water supply due to the prolific waste generally produced by these birds.
- Baseball field (Beach Well Zone II) - fertilizer use and storage may be of concern

A summary list of additional information pertaining to the North Sagamore Water District is provided below:

- Total of 38 miles of water main
- Total of 1,900 service connections
  - Commercial connections included in this number, however there are very few commercial areas in North Sagamore
  - Future development expected to be minimal
- Celebrate water quality, consumption and conservation with the students

of Ella F. Hoxie Elementary School the first week in May each year, which coincides with National Drinking Water Week

- Daily average withdrawal in 2006 = 449,000 gallons

### **Bourne Water District<sup>90</sup>**

The Bourne Water District contains six gravel packed wells and is a member of the Upper Cape Regional Water Supply Cooperative, which provides an emergency water supply. Land uses within the Zone II for the Bourne Water District include a mixture of forested, residential, commercial, and light industrial. A list of issues relating to and potential contaminant sources within the protective radii of these wells is provided below:

- All Zone I's are not publicly owned or controlled.
- County Road encroaches into the 250-foot Zone I for Pumping Station #1.
- Route 28A intersects the Zone I associated with Well #2/
- An underground storage tank is located within the Zone I for Well #2.
- Damaged vehicles are being stored at an unpermitted facility within the Zone II, which could potentially contaminate water supply through spills, leaks, or improper handling of chemicals, wastes, and batteries.
- West of Route 28, parts of the Zone II contain residential areas that use septic systems, since public sewer is not available.
- Other activities associated with residential areas, including household hazardous materials, above- and below ground oil storage tanks, and contaminants (pet waste, lawn chemicals, etc...) in stormwater, can also contribute to drinking water contamination.
- The transportation network, including Route 28 and many other local roads, passes through the Zone II. Roadway construction and maintenance, as well as accidents, illegal dumping, and de-icing materials, can all contribute to potential contamination as materials are washed into catch basins by stormwater.
- The commercial and industrial uses within the Zone II, mainly along the Routes 28 and 28A corridors, are a potential source of hazardous waste contamination, if improperly stored, used, or disposed of.
- The Zone II contains several DEP Tier Classified Oil and/or Hazardous Material Release Sites, as well as the federally classified superfund site at the Massachusetts Military Reservation.

A summary list of additional information pertaining to the Bourne Water District is provided below:

- Total of 100 miles of water main

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<sup>90</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report for Bourne Water District January 14, 2003. This section reviewed by the Superintendent of the Bourne Water District, and deemed accurate (with additional information also provided) via email from Nancy Ward, Bourne Water District, received on April 3, 2007.

- Total of 5,947 accounts
  - 5,706 residential
  - 241 commercial
- Daily average withdrawal in 2006 = 1,303,799 gd

### **Cape Cod Air Force Station<sup>91</sup>**

The Cape Cod Air Force Station maintains two groundwater wells that supply drinking water to the facility. Both wells have associated Zone I radii of 400-feet and Interim Wellhead Protection Area (IWPA) radii of 2320-feet.

The Zone I associated with one of the wells (Well #1) contains buildings with above ground diesel fuel storage tanks. An additional tank containing waste oil is present within the IWPA of this well. Above-ground storage tanks can be a threat to drinking water if leaks or spills arise due to improper management. The Zone I for Well #1 also includes the septic system for the Air Force Station, and roads and parking areas lie within the IWPA for the well.

### **Schooner Pass Trustees Condominiums<sup>92</sup>**

The Schooner Pass Trustees Condominiums complex maintains its own drinking water supply well, and also purchases some of its water from the Bourne Water District. The Zone I radius for the well is 300-feet, while the Interim Wellhead Protection Area (IWPA) radius is 879-feet. Presently, the Massachusetts Drinking Water Regulations are met in that the Zone I is controlled by the public water system and no non-water-supply activities are permitted within the Zone I.

Residential uses comprise a portion of the IWPA, and, since the area is not publicly sewered, all use on-site septic systems. Athletic fields associated with a nearby school are located within the IWPA. Lawn care products such as pesticides and fertilizers can be transported into the aquifer with stormwater and excess irrigation water. Therefore, the over-application or improper storage and disposal of such materials could result in contamination of the aquifer. Although no oil or hazardous contamination sites appear to be located within the IWPA, it abuts the Massachusetts Military Reservation, which has multiple areas with DEP Bureau of Waste Site Cleanup Release Tracking Numbers.

#### **4.3.4 Flood Hazard Areas**

Based upon a review of the most recent flood insurance study and map for the Town of Bourne (completed in 1999), the eastern half (approximately) of Bourne lies within a Federal Emergency Management Agency designated Zone D, where

<sup>91</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Cape Cod Air Force Station. October 2003.

<sup>92</sup> Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Schooner Pass Trustees Condominiums. December 10, 2003.

flood hazards are undetermined. New England “nor’easters” are generally the cause of flooding along the northeastern portion of Bourne’s coast. The larger ponds within the Town are designated as Zone X500 flood areas, which are either subject to the 500-year frequency flood, or the 100-year flood with flooding depths of less than 1-foot or drainage areas less than 1 square mile. Areas adjacent to the Cape Cod Canal and various bays and inlets along Bourne’s shoreline lie at or below the 100-year flood elevation, and as such, are designated as Zone AEs, where base flood elevations have been determined. Areas most proximate to the shore constitute VE Zones, where velocity hazards (wave action) are present. The western coast is very irregular and experiences flooding during hurricanes. Widely impacted areas during flooding events include the Buzzards Bay and Monument Beach village centers.

In addition to damage caused by smaller, more frequent storm events within these flood hazard areas, serious flooding occurred in association with the hurricanes of 1938, 1944, 1954, 1955, and 1992. Such major storms have resulted in regulatory and investor constraints in some of Bourne’s lower elevation areas targeted for revitalization. The Town does not presently have, or have any future plans for, major flood control structures, although private seawalls and jetties are present in many coastal areas. In most instances, these structures afford little protection from large storm events, and even in smaller storms, wave run-up, wave-induced erosion, and wave-born debris may still damage coastal structures.<sup>93</sup>

#### **4.3.5 Wetlands**

Wetlands provide a variety of important functions, including 1) the protection of public and private water supply; 2) the protection of groundwater supply; 3) flood control and storm damage prevention; 4) the prevention of pollution; 5) the protection of fisheries and shellfish; and 6) wildlife habitat. Bourne contains many wetland types from coastal (e.g. salt marshes, tidal flats, beaches, dunes, land subject to tidal action and/or coastal storm flowage, etc...) to inland (forested- both red maple and Atlantic white cedar swamps, scrub-shrub swamps, freshwater marshes, and bogs etc...) and everything in-between (e.g. estuaries and brackish areas). In addition to naturally occurring wetlands, Bourne also contains several man-made cranberry bogs.

In addition to the Massachusetts Wetlands Protection Act, which regulates activities potentially impacting wetland resource areas, the Town of Bourne imposes its own Wetland and Natural Resources Protection Bylaw that considers recreation and navigational issues in addition to those wetland functions listed above. Furthermore, Bourne contains over 200 restricted wetlands under M.G.L.

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<sup>93</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

c. 130 s. 105, which prohibits certain development from taking place within delicate areas.<sup>94</sup>

## 4.4 Vegetation

### 4.4.1 General Inventory

The Town of Bourne comprises part of the Cape Cod Coastal Lowland and Islands Ecoregion, as defined by the U.S. Environmental Protection Agency.<sup>95</sup> Due to the sandy soils comprising the majority of southeastern Massachusetts, including Bourne, rain percolates too rapidly to be sufficiently available to many plants. Therefore, species specialized to grow in drought, nutrient poor, and acidic conditions are common.<sup>96</sup> In fact, *“only a fraction of the plant species that grow in southern New England can tolerate the dry, sterile soils of Cape Cod.”*<sup>97</sup> A January 2, 2007 letter received for this project from the Natural Heritage and Endangered Species Program (NHESP) details that the Cape Cod Coastal Lowland and Islands Ecoregion may support Hemlock-White Pine and Oak-Pine xeric (dry) forests on moraines and sandy outwash. In addition to vegetation adapted to dry and nutrient poor conditions, however, species associated with bogs and pondshores are also present, and may be rare due to their affinity for unusual habitats, such as Sandplain Heathlands or Coastal Plain Pondshores. Furthermore, in Bourne *“some of the state rare species are locally abundant because of habitats that are locally abundant or locally widespread, supporting good populations that depend on these generally limited local conditions.”*<sup>98</sup> Another characteristic of Bourne that impacts vegetative communities is the presence of lands subject to regular salt spray. In addition, *“areas in the vicinity of daily or regular salt spray are limited in the state and important to a variety of species.”*<sup>99</sup>

### 4.4.2 Forest Land

Remaining sizable tracts of forested land within Bourne include:

- Bourne Town Forest and adjacent Four Ponds Conservation Area and Aquifer Protection Lands in Pocasset
- Shawme Crowell Forest State Forest proximate to the northeastern corner of the Massachusetts Military Reservation
- North Sagamore Woodlands north of the Canal
- Carter Beale Conservation Area north of the Canal

<sup>94</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>95</sup> <http://www.mass.gov/mgis/eco-reg.htm>

<sup>96</sup> Roadside Geology of Massachusetts, by James W. Skehan. Mountain Press Publishing Company, 2001.

<sup>97</sup> A Guide to New England's Landscape, by Neil Jorgensen. Barre Publishers, Barre Massachusetts, 1971.

<sup>98</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 2, 2007

<sup>99</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

- Massachusetts National Cemetery in the southeast portion of Bourne
- Monks Park and Briarwood and Conservation Area
- Old Field Pond Preserve, Bournedale Forest, and Buzzards Bay Water District Land north of the Canal
- Red Brook forest owned by the Bourne Conservation Trust

Additionally, Camp Edwards also contains significant forested areas. In addition to Town-owned woodlands, Town zoning affords further protection of forested areas through provisions for retaining existing vegetation, and by requiring a Special Permit when vegetative clearing occurs in quantities greater than 10,000 square feet.<sup>100</sup>

Maps from the 1830's depict potential primary forests, in addition to untilled woodlots and wooded pastures within the Town of Bourne. The fact that woodlots were untilled is interesting because untilled lands have greater biodiversity than tilled areas. The soil structure in areas that were never tilled remains relatively undisturbed, and the seed bank and reproductive material (roots and rhizomes) persist, leading to this greater biodiversity. Comparing the 1830's map to 1999 aerial photographs indicates that, despite human activity that may have occurred within these forested areas during that time span, certain areas may never have been tilled, since forest was present in the 1830's and in 1999. Investigations into the soil structure of sites containing forested land during both time periods would be necessary to determine whether any of the sites represent primary forest. Although not old growth forests, which have never been cut, primary forests are areas that have been continually forested, despite possible use as woodlots or wooded pastures, which maintains the forests in a "younger" condition, never reaching the climax of significantly aged trees common to old growth forests. When compared to earlier stage forests or forests that have established on tilled land, primary forests retain more native biodiversity. Specifically, potential primary forests are located north of the Canal and around the North Sagamore Water District.<sup>101,102</sup>

#### 4.4.3 Agricultural Land

Agricultural land provides more than just the obvious benefits associated with the production of crops or raising of livestock. In addition to economic benefits, agricultural land contains intrinsic scenic value and open vistas, and also provides open areas and varied habitats for wildlife. Within Bourne, the main agricultural

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<sup>100</sup> Town of Bourne Open Space and Recreation Area Plan – 1997, verified on ordinance.com on February 26, 2007.

<sup>101</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 2, 2007.

<sup>102</sup> Email from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, received March 1, 2007.



lands consist of cranberry bogs, although other agricultural areas also include other croplands, and pasture.

#### 4.4.4 Wetland Vegetation

Wetlands are often very productive communities whose vegetation provides an important source of food, cover, and nesting sites for various wildlife habitat. In addition to the more common wetland types (red maple/high bush blueberry swamps, scrub-shrub swamps containing sweet pepperbush, southern arrowwood, buttonbush, winterberry, among others, and freshwater marshes), the unique environs within Bourne provide an opportunity for state-wide unusual or rare species to thrive.

Red Maple Swamp<sup>103</sup>



Some of Bourne's forested swamps contain Atlantice white cedar, which is becoming less and less common throughout Massachusetts. The largest Atlantic white cedar (AWC) swamp within Bourne lies proximate to Goat Pasture Pond, although several others are located at Queen Sewell Pond in Buzzards Bay, off Brooks Road in Monument Beach, and at Camp Edwards. None are pure Atlantic White Cedar Stands; instead, the canopy is dominated by both Atlantic white cedar and red maple, with sweet pepperbush, swamp azalea, and highbush blueberry prevalent in the shrub story, and various ferns, starflower, wild sarsaparilla, and sphagnum moss comprising the herbaceous layer.<sup>104,105</sup> The Town of Bourne Wetlands and Natural Resources Protection Bylaw prohibits any alteration to AWC swamps.<sup>106</sup>

<sup>103</sup> From Barnstable Land Trust website: <http://www.bltr.org/catalog/1992-Small.ccm1>

<sup>104</sup> Town of Bourne Open Space and Recreation Area Plan – 1997.

<sup>105</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, dated February 16, 2007

<sup>106</sup> Town of Bourne Bylaws amended through 2006 Special and Annual Town Meetings, Article 3.7 "Wetland and Natural Resources Protection.

The Coastal Plain Pondshores present within Bourne are an example of unique environments that create ideal conditions for plants suited to specific habitats.

The Plymouth gentian and creeping St. John's-wort are examples of state-listed wetland plants that grow along Coastal Plain Pondshores. Overall, Bourne contains a plethora of habitat types, coastal to inland, floodplain to kettleholes, which results in an abundance and diversity of wetland vegetation.

#### 4.4.5 Rare Plant Species

The population status of rare plants in Massachusetts is described using three categories: 1) special concern; 2) threatened; and 3) endangered:

- Special concern species have either experienced a decline that could threaten the species without intervention, or whose populations are so small, localized, or dependant upon specialized habitats that they could become threatened.
- Threatened species are likely to become endangered in the foreseeable future.
- Endangered species are in danger of extirpation from Massachusetts.

In addition to these categories, the Natural Heritage and Endangered Species Program (NHESP) maintains an unofficial watch list of plants. Watch Listed species are those *“a) species which have been removed from the official regulatory list but for which the Program still maintains active files and encourages conservation efforts to ensure that its status remains secure; and b) species suspected to be rare or declining but for which information is lacking regarding the number and size of current populations, the severity of threats and decline, or its taxonomic status.”*<sup>107</sup>







The majority of Bourne (approximately 65%) is mapped as Priority Habitat. Priority Habitat is the geographical extent of habitat for all state-listed plant and animal species.<sup>108</sup> Specifically, two Priority Habitats are located within Bourne; PH 1213 and PH 1232. The first consists of ±90-acres of land extending across the Town boundary from Sandwich. The latter, PH 1232 includes ±17,025-acres of Bourne, encompassing nearly all of the land east of Route 28, with portions also extending across the highway and Cape Cod Canal into the western and northern parts of Town.

<sup>107</sup> The Vascular Plants of Massachusetts: A County Checklist By Bruce A. Sorrie and Paul Somers. Produced by the Massachusetts Division of Fisheries and Wildlife Natural Heritage & Endangered Species Program, 1999.

<sup>108</sup> <http://www.mass.gov/dfwele/dfw/nhesp/nhenvprioHab.htm>

Seventeen special concern, threatened, or endangered plant species, as designated by the Natural Heritage and Endangered Species Program, occur within the Town of Bourne. Three additional species have been watch-listed, and another species has been extirpated from Massachusetts. Some of these species are locally abundant, such as the Plymouth Gentian, but globally rare. In all cases, the species listed below warrant special consideration and protection. The table below lists these plants.<sup>109</sup>

**Table:** State-Listed Plant Species Occurring Within the Town of Bourne as of August 28, 2006. (Associated ranking and Priority Habitat identifier are also included.) N/A denotes species whose photographs were not readily available.

	Common Name	Scientific Name	Status	Last Documented Observation	Habitat ID
	adder's-tongue fern <sup>110</sup>	<i>Ophioglossum pusillum</i>	Threatened	2003	PH 1232
	American sea-blite <sup>111</sup>	<i>Suaeda calceoliformis</i>	Special Concern	1995	PH 1232
N/A	Bayard's green adder's mouth	<i>Malaxis bayardii</i>	Endangered	1919	
	beaked spike-sedge <sup>112</sup>	<i>Eleocharis rostellata</i>	Watch List		
	bristly foxtail <sup>113</sup>	<i>Setaria parviflora</i>	Special Concern	1913	
	broad tinker's weed <sup>114</sup>	<i>Triosteum perfoliatum</i>	Endangered	2004	PH 1232
N/A	bushy rockrose	<i>Helianthemum dumosum</i>	Special Concern	2000	PH 1232
	butterfly-weed <sup>115</sup>	<i>Asclepias tuberosa</i>	Watch List		

<sup>109</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

<sup>110</sup> Photograph by Don Lubin, <http://nefern.info/picpages/opusstpx.htm>

<sup>111</sup> <http://www.digitalnaturalhistory.com/images/suaedacalceoliformissundaycove/tickleaug72001ndc11-86.jpg>







<sup>112</sup> Photograph by Emmet J. Judziewicz, <http://www.botany.wisc.edu/wisflora/scripts/detail.asp?SpCode=ELEROS>

<sup>113</sup> Photograph by Robert Corbett, Monique Reed collection 2717, TAMU 31941,


<http://botany.cs.tamu.edu/FLORA/pic03/DSCN2391.JPG>

<sup>114</sup> <http://www.mass.gov/guard/E&RC/picturearchives.htm>

<sup>115</sup> Louisiana Ecosystems & Plant Identification: An Interactive Virtual Tour, Dr. Michael Stine, Project Director. <http://rnrstreamer.lsu.edu/ecosystems/webtour/species/bflymilkwd/bflymilkwd.htm>

N/A	climbing fern	<i>Lygodium palmatum</i>	Special Concern	1992	PH 1232
	creeping St. John's-wort <sup>116</sup>	<i>Hypericum adpressum</i>	Threatened	2004	PH 1232
	false-gromwell <sup>117</sup>	<i>Onosmodium virginianum</i>	Historic	1914	
	<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Last Documented Observation</b>	<b>Habitat ID</b>
	grass-leaved Ladies' tresses <sup>118</sup>	<i>Spiranthes vernalis</i>	Threatened	1896	
N/A	hyssop hedge-nettle	<i>Stachys hyssopifolia</i>	Watch List	1981	
N/A	linear-leaved milkweed	<i>Asclepias verticillata</i>	Threatened	1915	
N/A	long-beaked bald-sedge	<i>Rhynchospora scirpoides</i>	Special Concern	1986	PH 1232
	New England blazing star <sup>119</sup>	<i>Liatris scariosa</i> var. <i>novae-angliae</i>	Special Concern	2004	PH 1232
	ovate spike-sedge <sup>120</sup>	<i>Eleocharis ovata</i>	Endangered	1992	PH 1232
	Plymouth gentian <sup>121</sup>	<i>Sabatia kennedyana</i>	Special Concern	1993	PH 1232

<sup>116</sup> Photograph by Dan Busemeyer, Illinois Natural History Survey,[http://www.inhs.uiuc.edu/cwe/illinois\\_plants/ThePlants/HGenera/HypAdp/HypAdp.html](http://www.inhs.uiuc.edu/cwe/illinois_plants/ThePlants/HGenera/HypAdp/HypAdp.html),<sup>117</sup> Horizon Herbs website: <http://www.horizonherbs.com/group.asp?grp=46><sup>118</sup> Photographs of Flowering Plants of the Ozarks and the Interior Highlands of North America, by Paul L. Redfearn, Jr.,<http://biology.missouristate.edu/Herbarium/Plants%20of%20the%20Interior%20Highlands/Flowers/Spiranthes%20vernal%20-%203.JPG><sup>119</sup> Photograph courtesy of Thomas G. Barnes at USDS-NRCS Plants Database/ Barnes, T.G. & S.W. Francis. 2004, on the United States Botanic Garden. Plant Collections website: <http://www.usbg.gov/plant-collections/conservation/L-scariosa-v-novae-angliae.cfm><sup>120</sup> Collection of Aquatic and Wetland Plants, The Institute of Botany, Academy of Science of the Czech Republic, Department Třeboň, [http://www.butbn.cas.cz/coll\\_wet/photoguide/Eleocharis\\_ovata.jpg](http://www.butbn.cas.cz/coll_wet/photoguide/Eleocharis_ovata.jpg)<sup>121</sup> Staff photograph by Steve Heaslip, Cape Cod Times Photo Galleries online:<http://images.google.com/imgres?imgurl=http://www.capecodonline.com/special/photos/morningglory/images/pic2.jpg&imgrefurl=http://www.capecodonline.com/special/photos/morningglory/pic2.htm&h=338&w=275&sz=21&hl=en&start=1&tbnid=5aRqHaMK03H8wM:&tbnh=119&tbnw=97&prev=/images%3Fq%3DPlymouth%2BGentian%26bv%3D2%26svnum%3D10%26hl%3Den%26sa%3DG>

N/A	pondshore knotweed	<i>Polygonum puritanorum</i>	Special Concern	1994	PH 1232
	Purple needlegrass	<i>Aristida purpurascens</i>	Threatened	1901	
N/A	sandplain gerardia	<i>Agalinis acuta</i>	Endangered	1883	
N/A	sea-beach knotweed	<i>Polygonum glaucum</i>	Special Concern	1913	
N/A	terete arrowhead	<i>Sagittaria teres</i>	Special Concern	1994	PH 1232
N/A	weak rush <sup>122</sup>	<i>Juncus debilis</i>	Endangered	1993	PH 1232

The New England Wildflower Society has coordinated the creation of Conservation and Research Plans for various state-listed species. Thus far, of the species occurring in Bourne, a plan has only been created for Creeping St. John's-wort, which is often associated with Coastal Plain Pondshores. This species is generally considered to be secure in New England, and the conservation objective noted in the plan is to maintain all populations at their current locations and current numbers. The Conservation and Research Plan further notes that this is attainable at all sites except for the mainland site in Bourne. The mainland site is subject to several impacts, including the recreational use of a proximate public beach and invasion by common reed (a non-native, aggressive colonizer) which may be worsened by road run-off. Currently, actions are only being undertaken to control the spread of common reed, and recreational impacts have not been addressed.<sup>123</sup>

#### 4.4.6 Unique Natural Resources

The Town of Bourne is unique in that it contains both coastal and inland resources. Coastal areas include dune systems, barrier beaches, and salt marshes, among many others, while unusual inland/freshwater communities include Atlantic white cedar swamps and vernal pools (both discussed in other sections of this report).

The Natural Heritage and Endangered Species Program (NHESP) provided a list of natural communities that occur within Bourne. These natural communities are ranked on a scale from 1 to 5 (S1 to S5), with S1 being vulnerable and S5 being secure. S1, S2, and S3 ranked communities are priorities for conservation.<sup>124</sup>

<sup>122</sup> Ted Bodner, Southern Weed Science Society, [www.forestryimages.org](http://www.forestryimages.org)

<sup>123</sup> Enser, Richard W. 2001. *Hypericum adpressum* (Creeping St. John's-wort) Conservation and Research Plan. New England Wildflower Society, Framingham, Massachusetts, US (<http://www.newfs.org>). Viewed online at <http://www.newfs.org/pdf/Hypericumadpressum.pdf> on February 26, 2007.

<sup>124</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of



Additional natural communities with a high likelihood of occurring in Bourne are also described below. A brief description of each community type, as well as the most common threats to each community, is provided below.

### **Coastal Plain Pondshores<sup>125</sup>**

Coastal Plain Pondshore communities occur along the exposed margins of coastal plain ponds, between the shallow water and shrub community, and include various herbaceous and graminoid plant species. Unvegetated sandy areas, as well as peat and/or cobbles often occur between the plants. Coastal plain ponds have no inlet or outlet, and receive their water source from the groundwater; therefore, the water elevation changes with the groundwater table through the seasons. This change of pond water elevation is extremely important in creating suitable habitat for the Coastal Plain Pondshore vegetative community, which includes several globally restricted species.

This community is ranked as vulnerability level S2.<sup>126</sup> Immediate and long-term perils to Coastal Plain Pondshores result mostly from human disturbances, including artificially induced water levels, physical disturbance from pedestrian and vehicular use, as well as from beach building, and nutrient leachate from malfunctioning septic systems and overwintering Canada geese. Overwash of road salt is affecting Coastal Plain Pondshores associated with Flax Pond.<sup>127</sup>

### **Maritime Beach Strands<sup>128</sup>**

Sparsely vegetated Maritime Beach Strands are long and narrow communities located between the high tide wrack line and foredunes. They generally form part of a barrier beach system and are only subject to overwash during storms or spring tides. Migratory shorebirds often use Maritime Beach Strands as staging areas for resting and congregating prior to and during migrations. Vehicular traffic impacts the physical character of Maritime Beach Strands, and so should be restricted. Additionally, natural disturbances such as deposition and erosion and exposure to overwash and salt spray, should be allowed, as they are essential to the character of this natural community.

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Fisheries & Wildlife, dated January 3, 2007.

<sup>125</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet: Coastal Plain Pond Shores 1990

<sup>126</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

<sup>127</sup> Telephone conversation with Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, on March 22, 2007.

<sup>128</sup> Natural Heritage & Endangered Species Program Maritime Beach Strand Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_beach\\_strand.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_beach_strand.pdf)

**Maritime Dunes<sup>129</sup>**

Maritime Dunes often occur landward of Maritime Beach Strands and consist of windswept dunes within the salt spray zone. The more sheltered back dunes contain shrub- or woodland. The influence of wind and water (storm overwash) on Maritime Dunes creates the dunes' ability to "move," which is a critical characteristic of their associated habitat. Maritime dunes offer nesting sites to an assortment of seabirds, shorebirds, and song birds, as well as the diamondback terrapin, while northeastern beach tiger beetles utilize the dunes as overwintering habitat.

**Maritime Erosional Cliffs<sup>130</sup>**

Maritime Erosional Cliffs consist of unconsolidated clay and sand cliff faces within the salt spray zone that are subject to erosion. Where freshwater seeps through the bluff, vegetation is more diverse. Natural erosion is essential to the character of Maritime Erosional Cliffs, however, human induced disturbance (such as foot traffic, climbing, increase stormwater runoff), can lead to severe erosion. The Sagamore Highlands are representative of the Maritime Erosional Cliff community.

**Sandplain Heathlands<sup>131</sup>**

Sandplain Heathlands primarily consist of a coastal community that arises on acidic, nutrient poor, droughty soils and is dominated by dwarf shrubs. Historically, Sandplain Heathlands were likely maintained by fire and/or salt spray. Threats to the community include fire suppression, exotic species (especially black pine and scotch broom), fragmentation, vehicular traffic, and development. Additionally, domestic pets and feral animals prey upon ground nesting bird species. Sandplain Heathlands are ranked S1.<sup>132</sup>

**Sandplain Grasslands<sup>133</sup>**

Sandplain Grasslands are open communities dominated by grasses on outwash plains with droughty, low nutrient soils; many times this community comprises small clearings within Pitch Pine/Scrub Oak forests. Most examples occur within the influence of ocean winds and salt spray from storms. Sandplain Grasslands are maintained by fire, salt spray, and artificially by mowing. Threats to the

<sup>129</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Maritime Dune Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_dune.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_dune.pdf)

<sup>130</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Maritime Erosional Cliff Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_erosional\\_cliff.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_erosional_cliff.pdf)

<sup>131</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Heathland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_heathland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_heathland.pdf)

<sup>132</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

<sup>133</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Grassland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_grassland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_grassland.pdf)

community include exotic species (scotch broom, Japanese knotweed, cypress spurge, and various cool season grasses, in particular), and fire suppression.

### **Pitch Pine – Scrub Oak Barrens<sup>134</sup>**

The Town Forest, Shawme-Crowell State Forest, Four Ponds Conservation Area, and other wooded areas within Bourne are classified as pitch pine-oak forests, and pitch pine-scrub oak barrens are a subset of this forest type.<sup>135</sup>

Pitch Pine-Scrub Oak Barrens occur on outwash sandplains with acidic, nutrient poor and drought prone soils, and typically have an open canopy of pitch pine and a dense understory of scrub oaks and huckleberry. Pitch Pine-Scrub Oak Barrens tend to exhibit greater temperature variation (hotter days, cooler nights) than mesic sites during the summer due to the low vegetation, sandy soils, and generally dry environment. The community is dependant upon fire to sustain itself, and some of the associated species even have volatile oils that facilitate the spread of fires. Regular removal of accumulated duff (dead needles and leaves) through prescribed burning can reduce the risk of wildfire and maintain the natural community. In addition to the exclusion of fire, this S2 ranked community is also threatened by human development, since the generally flat terrain and rapid drainage make it very developable.<sup>136</sup>

### **Scrub Oak Shrublands**

Scrub Oak Shrublands are generally located within Pitch Pine-Scrub Oak communities, and are maintained by frosts that damage more susceptible species. The community is threatened by development and fragmentation, and studies are needed in order to ascertain how fire dependant the community is.<sup>137</sup> Therefore, Scrub Oak Shrublands have an associated S1 ranking.<sup>138</sup>

### **New England Coastal Heathlands<sup>139</sup>**

Located on stabilized dunes or glacial deposit plains, New England Coastal Heathlands are open, nearly treeless communities dominated by low-growing members of the Heath family with patches of open soil and foliose lichens interspersed. These tundra-like communities experience extreme daily and seasonal temperature variations, as well as intense sunlight and salt spray, and lie

<sup>134</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Pitch pine/Scrub oak Barrens October 1990

<sup>135</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>136</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

<sup>137</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Scrub Oak Shrubland Fact Sheet from [http://www.mass.gov/dfwele/dfw/nhesp/nhcomm/scrub\\_oak\\_shrubland.pdf](http://www.mass.gov/dfwele/dfw/nhesp/nhcomm/scrub_oak_shrubland.pdf)

<sup>138</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.

<sup>139</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Southern New England Terrestrial Communities New England Coastal Heathlands 1992



over nutrient poor soils. Coastal erosion, foot and vehicular traffic, land development, fire suppression, and reduction in livestock grazing threaten this unique community; estimates indicate that about 90% of the Coastal Heathlands in the United States have been lost since the mid-1800's. Prescribed burning and controlled grazing are presently being studied as methods to maintain remaining heathlands.

#### **Salt Marshes<sup>140</sup>**

Salt Marshes lie between the high spring-tide and mean-tide levels of protected coastal shores, and represent one of the most productive ecosystem types, despite the extreme variations in temperature, salinity levels, and inundation that characterize this community. The vegetation of Salt Marshes comprises the basis of the food chain in estuarine and marine environments, and also provide habitat for migrating and overwintering waterfowl and shorebirds, as well as juveniles of many marine organisms. Salt marsh cordgrass and saltmeadow cordgrass dominate the Salt Marsh landscape, lending a misleadingly simple grassland-like appearance to this natural community. Several sub-communities, including salt shrub zones, high and low marshes, tidal creeks, and panes (unvegetated depressions), each with an associated flora and fauna, actually make up Salt Marshes.

Salt Marshes protect the coast from damaging surf, lowlands from flooding by terrestrial runoff, absorb and breakdown contaminants, and provide habitat for a variety of organisms. Current threats to Salt Marshes generally include those activities that alter drainage patterns, such as development, dredging (for docks and marinas), and ditching (for mosquito control).

#### **4.4.7 Invasive Species**

In Massachusetts, invasive plants are defined as those that are exotic in origin and have the ability to out-compete native vegetation.<sup>141</sup> A discussion of the threats invasive species pose to native vegetation is provided in Section 4.8.8; this section focuses on an inventory of the invasive species present within the Town of Bourne. This inventory is not comprehensive and is meant to act as a starting point for future inventory/management of invasive species. Additionally, it would be useful to ascertain if invasive species are present on any of the various Town-owned parcels, and to take management actions to remove or control their populations. The major and most problematic invasive species presently within Bourne consist of purple loosestrife, common reed, and oriental bittersweet.<sup>142</sup> The first two are herbaceous wetland plants, although both can grow in upland conditions and readily colonize disturbed areas.

<sup>140</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Salt Marshes Updated 2006

<sup>141</sup> Invasive Plants in Massachusetts brochure produced by the Town of Orleans Invasive Species Committee

<sup>142</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

Purple loosestrife outcompetes native vegetation and forms dense stands. It reproduces both via seed dispersal and vegetatively.<sup>143</sup>

Purple Loosestrife Infestation<sup>144</sup>Purple Loosestrife Flower<sup>145</sup>

Common reed spreads mainly via rhizomes as seed viability is usually low. It also forms dense stands with mats of dead biomass that crowd out native plants. Stands of common reed can also result in an increased risk of fire.<sup>146</sup>

Common Reed Infestation<sup>147</sup>Common Reed Seed Head<sup>148</sup>

<sup>143</sup> <http://www.nps.gov/plants/alien/fact/lysa1.htm>, Plant Conservation Alliance's Alien Plant Working Group Fact Sheet: Least Wanted, Purple Loosestrife, viewed on February 21, 2007.

<sup>144</sup> <http://www.invasive.org/browse/detail.cfm?imgnum=1624026>, viewed February 21, 2007. Randy Westbrooks, U.S. Geological Survey, [www.forestryimages.org](http://www.forestryimages.org)

<sup>145</sup> <http://www.invasive.org/browse/detail.cfm?imgnum=0022075>, viewed February 26, 2007. Eric Coombs, Oregon Department of Agriculture, [www.forestryimages.org](http://www.forestryimages.org)

<sup>146</sup> <http://www.nps.gov/plants/alien/fact/phau1.htm>, Plant Conservation Alliance's Alien Plant Working Group Fact Sheet: Least Wanted, Common Reed

<sup>147</sup> <http://www.invasive.org/eastern/species/3062.html>, Bernd Blossey, Cornell University, Invasive Plants of the Eastern United States CD-ROM

<sup>148</sup> <http://www.invasive.org/eastern/species/3062.html>, Joseph McCauley, U.S. Fish and Wildlife Service, Invasive Plants of the Eastern United States CD-ROM

Oriental bittersweet is a woody vine that “strangles” other vegetation through its vigorous growth habit. The vine spreads vegetatively as well as via dispersal of its seeds by a variety of birds.<sup>149</sup>



Other invasive species within Bourne include Norway maple, black locust, tree of heaven, multiflora rose, tartarian and Japanese honeysuckles, autumn olive, winged eunymous glossy buckthorn, garlic mustard, and Japanese knotweed.<sup>152</sup> Although most likely not as prevalent as the aforementioned, water hyacinth is also present in Town, at least within private cranberry bogs off Little Bay Lane.<sup>153</sup>

#### 4.4.8 Vegetation Mapping Projects

A vegetation mapping project was undertaken at Camp Edwards, and the project was presented at a Natural Communities Symposium sponsored by the Manomet Center for Conservation Sciences and the Massachusetts Natural Heritage & Endangered Species Program on April 1, 2006. This presentation is posted at [http://www.conservationmapper.org/natcom\\_symposium.htm](http://www.conservationmapper.org/natcom_symposium.htm).

The Massachusetts Military Reservation, of which Camp Edwards is a part, houses over ten separate entities. Past and current land uses at the Camp include private and commercial wood lots, agriculture (grazing and cranberry bogs), state forest, and military excercises. Natural disturbances have also influenced the

<sup>149</sup> <http://www.nps.gov/plants/alien/fact/ceor1.htm>, Plant Conservation Alliance’s Alien Plant Working Group Fact Sheet: Least Wanted, Oriental Bittersweet

<sup>150</sup> <http://www.invasive.org/eastern/species/3012.html>, James H. Miller. USDA Forest Service. Invasive Plants of the Eastern United States CD-ROM

<sup>151</sup> <http://www.invasive.org/eastern/species/3012.html>, Invasive Plant Atlas of New England/ Leslie J. Mehrhoff, University of Connecticut, United States

<sup>152</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

<sup>153</sup> Invasive Plant Atlas of New England website: <http://nbii-nin.ciesin.columbia.edu/ipane/datamaps/ipane.db.output.pl>

natural communities present. The vegetation mapping project at Camp Edwards was undertaken by interpreting aerial photographs from 1991, 1997, 2001, and 2002 and subsequent “ground truthing.” More information can be found at [http://www.conservationmapper.org/Camp\\_Edwards\\_Lessons\\_Pt1.pdf](http://www.conservationmapper.org/Camp_Edwards_Lessons_Pt1.pdf).

## 4.5 Fisheries and Wildlife

### 4.5.1 General Inventory

Bourne’s natural resources provide both abundant and diverse habitats for fisheries and wildlife species. The Bournedale Office of the Division of Fisheries and Wildlife has noted that areas of Bourne contain plentiful wildlife, including the more common species such as squirrel, rabbit, raccoon, deer, coyote, turkey vulture, fox and opossum, to less abundant species such as river otter, mink and weasel, to uncommon species such as box turtle, diamondback terrapin, osprey, and barn owl.<sup>154</sup> Specifically, Four Ponds and the Town Forest, located in Pocasset, provide valuable wildlife habitat, while Sagamore Marsh and Scusset areas are home to bobcat in addition to the animals previously listed.<sup>155</sup>

The natural environment has been impacted by community growth, including residential and commercial developments as well as improvements to transportation networks; however, some significant natural corridors do remain. The 1997 Open Space and Recreation Plan notes that the finfish population was sufficiently viable to support finfishing, although opportunities for shellfishing and hunting had dwindled.<sup>156</sup> Shellfishing continues to decline, and hunting is generally restricted to the Town Forest and the northern sections of the Four Ponds Conservation Area (between Upper Pond and Town Forest). Beyond the Town Conservation Areas, hunters must follow rules regarding a discharge of firearms, which is illegal within 150-feet of any road or within 500-feet of an inhabited dwelling, thereby limiting the lands that can be hunted upon.<sup>157,158</sup>

### Mammals

A theoretical list of mammals that may occur within Bourne based on occurrence within Barnstable County as designated on <http://www.mass.gov/dfwele/dfw/dfwmam.htm> regarding county species distributions (generated by MassWildlife) is provided in Appendix 5. Although not directly affected by terrestrial activities occurring within the Town of Bourne, aquatic mammals have been included in the above list, as development and other

<sup>154</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>155</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

<sup>156</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>157</sup> Email from Michael Gratis, Senior Officer, Department of Natural Resources, received March 29, 2007.

<sup>158</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received April 4, 2007, containing Bourne Conservation Commission Policy 04-5 “Regulation for the Use of Conservation Areas” and Bourne Conservation Commission Policy 04-4 “Regulations for the Four Ponds Conservation Area”

land disturbances can result in indirect effects to these creatures via impacts to water quality in Bourne's off-shore areas.

The largest game species within Bourne is white-tailed deer, while other game mammals include eastern cottontail and weasels.<sup>159</sup> Predatory mammals present in Bourne include red fox and coyote, which often hunt on the beaches of Bourne. Bourne's beaches are also used by seals for resting.<sup>160</sup> In general, pine barrens are not heavily populated by mammalian species, as larger mammals tend to favor more open forests where movement is easier.<sup>161</sup>

### Avian Species

A theoretical list of birds that may occur within Bourne based upon occurrence within Barnstable County as well as within natural communities present within Bourne is provided in Appendix 5.<sup>162, 163, 164, 165, 166, 167, 168</sup>

Bourne's extensive freshwater and coastal shorelines provide nesting opportunities for many species of waterfowl and wading birds, such as various herons and ducks, among others.<sup>169</sup> Several shorebird species within Bourne are beach specialists, and nest and forage on beach strands, while raptors such as merlins and peregrine falcons hunt on beaches and from cliffs during migrations of prey bird species.<sup>170, 171</sup> Erosional cliffs within Bourne provide the less

<sup>159</sup> <http://nesoil.com/barnstable/barnwildlife.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

<sup>160</sup> Natural Heritage & Endangered Species Program Maritime Beach Strand Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_beach\\_strand.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_beach_strand.pdf)

<sup>161</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Pitch pine/Scrub oak Barrens October 1990

<sup>162</sup> <http://nesoil.com/barnstable/barnwildlife.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

<sup>163</sup> Natural Heritage & Endangered Species Program Maritime Beach Strand Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_beach\\_strand.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_beach_strand.pdf)

<sup>164</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Heathland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_heathland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_heathland.pdf)

<sup>165</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Grassland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_grassland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_grassland.pdf)

<sup>166</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Southern New England Terrestrial Communities New England Coastal Heathlands 1992

<sup>167</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Pitch pine/Scrub oak Barrens October 1990

<sup>168</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Maritime Erosional Cliff Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_erosional\\_cliff.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_erosional_cliff.pdf)

<sup>169</sup> <http://nesoil.com/barnstable/barnwildlife.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

<sup>170</sup> Natural Heritage & Endangered Species Program Maritime Beach Strand Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_beach\\_strand.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_beach_strand.pdf)

<sup>171</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Maritime



common habitat required by bank swallows for nesting.<sup>172</sup> Grasslands and heathlands are utilized by various sparrows and larks and northern harriers nest in heathlands and shrublands.<sup>173</sup> Birds of prey (hawks and owls) hunt in grasslands and open heathlands.<sup>174</sup> The birds present within Pitch Pine-Scrub Oak Barrens are similar to that of oak woodlands, and include various song birds. Openings within the forest are used by whip-poor-wills, common nighthawks, and American woodcock. The exclusion of fire in this fire dependant community type leads to less common but very large, hot fires, which are thought to have contributed to the extinction of heath hens, which used to populate Pitch Pine-Scrub Oak Barrens.<sup>175</sup>

The brackish areas in Bourne, where rivers and streams flow into the ocean, generally do not freeze and so provide overwintering habitat for waterfowl, while the Mashnee Island access road provides habitat for piping plovers and marsh hawks.<sup>176</sup> Maritime shrublands are an important resource for migrating flocks.<sup>177</sup>

Upland game birds that are likely to be present within Bourne include bobwhite quail, ruffed grouse, ring-necked pheasant, American woodcock, and common snipe.<sup>178</sup>

### Herpetofauna

A theoretical list of herpetofauna (reptiles and amphibians) that may occur within Bourne based on occurrence within Barnstable County as designated on <http://www.mass.gov/dfwele/dfw/dfwamph.htm> regarding county species distributions (generated by MassWildlife) is provided in Appendix 5. Although not directly affected by terrestrial activities occurring within the Town of Bourne, seaturtles have been included in the above list, as development and other land disturbances can result in indirect effects to these creatures via impacts to water quality in Bourne's off-shore areas.

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Erosional Cliff Community Fact Sheet, from

[http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_erosional\\_cliff.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_erosional_cliff.pdf)

<sup>172</sup> *Ibid.*

<sup>173</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Heathland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_heathland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_heathland.pdf)

<sup>174</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Sandplain Grassland Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain\\_grassland.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/sandplain_grassland.pdf)

<sup>175</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Pitch pine/Scrub oak Barrens October 1990

<sup>176</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

<sup>177</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 2, 2007

<sup>178</sup> <http://nesoil.com/barnstable/barnwildlife.htm> (from Soil Survey of Barnstable County, Massachusetts, Fletcher, 1993)

## Insects

The Class Insecta are the most diverse group of animals on Earth and include those insects one commonly considers (bees, ants, butterflies, beetles, etc...), yet they are often not even mentioned in Open Space and Recreation Plans.<sup>179,180</sup> Several of the natural communities within Bourne provide habitat to a variety of state-listed insects in addition to the common insects one would expect to find in Town. Specifically, several butterfly, moth, and beetle species find habitat in Coastal Heathlands, Pitch Pine-Scrub Oak Barrens and Scrub Oak Shrublands.<sup>181</sup>

### *Lepidoptera (Butterflies and Moths)*

A list of butterflies observed within Bourne according to the Butterfly Atlas coordinated by MassAudubon and viewable online via a partnership between MassAudubon and MassGIS, is provided in Appendix 5.<sup>182</sup> A separate theoretical list of butterflies and moths that may occur within the Town based on occurrence within Barnstable County as designated on the Butterflies and Moths of North America website is also provided in Appendix 5.<sup>183</sup>

Although often considered largely devoid of faunal diversity, pitch pine/scrub oak barrens tend to contain a rich diversity of lepidopteran species. Some of these species depend on large tracts of barrens.

The Lloyd Center for the Environment completed a three year survey for butterflies and moths at the Massachusetts Military Reservation in 1999. Fifteen species of state-listed moths were found at the Reservation, and seven of these species were documented at Camp Edwards. The Lloyd Center for the Environment and the Camp Edwards environmental staff are working to coordinate a long-term study of the changes in species composition at the 1997 burn site (which provides valuable habitat for butterflies and moths) at Camp Edwards as the vegetative community regenerates. Data resulting from the study may provide insight regarding how often prescribed burning should be undertaken in order to maximize the benefit to fire-dependant barrens lepidoptera.<sup>184</sup>

<sup>179</sup> Cavanagh, Paul M., and Michele Simoneaux. 2003. Planning for wildlife: Improving wildlife conservation through better open space and recreation plans. Regional Conservation Planning Program, Manomet Center for Conservation Sciences, Manomet, MA. 70pp.

<sup>180</sup> <http://en.wikipedia.org/wiki/Insect> viewed on February 28, 2007.

<sup>181</sup> Natural Heritage & Endangered Species Program Natural Community Fact Sheet Pitch pine/Scrub oak Barrens October 1990

<sup>182</sup> <http://maps.massgis.state.ma.us/mbap/viewer.htm>, viewed on February 2, 2007

<sup>183</sup> [http://www.butterfliesandmoths.org/map?sf=CommonName&si=22&dc=5313&\\_dcc=1](http://www.butterfliesandmoths.org/map?sf=CommonName&si=22&dc=5313&_dcc=1) viewed on February 2, 2007.

<sup>184</sup> <http://www.thelloydcenter.org/what-we-do/research/research.htm>, viewed on February 28, 2007



***Odonata (Dragonflies and Damselflies)***

A theoretical list of dragonflies and damselflies that may occur within Bourne based on occurrence within Barnstable County as designated on the Dragonflies and Damselflies (Odonata) of the United States website is in Appendix 5.<sup>185</sup>

***Beetles***

Information regarding beetle species present within Bourne is lacking, although tiger beetles are often present along the bases of erosional cliffs, and two different tiger beetle species occur in Barnstable County.<sup>186, 187</sup>

***Pests (Mosquitos and Ticks)***

Mosquitos and ticks represent the most infamous invertebrate pests in Massachusetts. West Nile Virus, encephalitis, and Lyme disease are some of the better known insect and tick-borne illnesses that affect the health of both humans and wildlife.

Twenty-five mosquito species, both fresh and saltwater, live in Bourne.<sup>188</sup> The Cape Cod Mosquito Control Project (CCMP) works to control populations of these mosquitos by focusing on the immature (larval and pupal) stages.<sup>189</sup> The CCMP monitors and treats approximately 300 sites in Bourne, including 700-acres of salt marsh, 353 freshwater areas, and over 1,200 catch basins that have been identified as potential mosquito larvae habitat.<sup>190</sup> Treatment is undertaken either by reducing the amount of standing water, improving flow within areas of standing water, or by applying a larvicide where removal of standing water is impractical.<sup>191, 192</sup> In 2006 over 1,600 mosquitos were collected in Bourne and submitted to the State Department of Public Health for analysis. All were negative for Eastern Equine Encephalitis and West Nile Virus. Although

<sup>185</sup> [http://www.npwrc.usgs.gov/resource/distr/insects/dfly/chklist/states/counties/ma\\_1.htm](http://www.npwrc.usgs.gov/resource/distr/insects/dfly/chklist/states/counties/ma_1.htm) viewed on February 2, 2007.

<sup>186</sup> Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife Maritime Erosional Cliff Community Fact Sheet, from [http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime\\_erosional\\_cliff.pdf](http://www.mass.gov/dfwele/dfw/nhsp/nhcomm/maritime_erosional_cliff.pdf)

<sup>187</sup> [http://www.npwrc.usgs.gov/resource/distr/insects/tigb/chklist/states/counties/ma\\_1.htm](http://www.npwrc.usgs.gov/resource/distr/insects/tigb/chklist/states/counties/ma_1.htm) viewed on February 2, 2007.

<sup>188</sup> Email from Gabrielle Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project, received March 1, 2007.

<sup>189</sup> Cape Cod Mosquito Control Project Integrated Pest Management Plan (Current Mosquito Control Procedures), received in an email from Gabrielle Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project, received March 1, 2007.

<sup>190</sup> Results of mosquito monitoring and management in 2005, received in an email from Gabrielle Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project, received March 1, 2007.

<sup>191</sup> Telephone conversation with Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project on March 1, 2007.

<sup>192</sup> Cape Cod Mosquito Control Project Integrated Pest Management Plan (Current Mosquito Control Procedures), received in an email from Gabrielle Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project, received March 1, 2007.

mosquitos have tested negative for these arboviruses, birds from Bourne did test positive for West Nile Virus in 2001 and 2003; no birds tested positive in 2006.<sup>193</sup>

The Cape Cod Cooperative Extension has organized a “Deer Tick Project” that includes both field and educational components. The program supplies educational materials, including ID cards, posters, and a childrens’ activity booklet, at no cost. Presentation’s to interested groups can also be arranged (contact David Simser, Deer Tick Project Coordinator, [simserdh@aol.com](mailto:simserdh@aol.com), (508) 375-6642). The field program includes a surveillance project that calculates deer tick abundance and Lyme disease infection rates on Cape Cod. In 2006, over 28% of larval ticks removed from various birds were infected with either Lyme disease or Anaplasma. Other field surveillance indicate that approximately 20% of deer tick nymphs and 50% of adult deer ticks are infected with Lyme disease.

The project is also evaluating whether deer tick populations can be controlled using 4-poster deer feeding stations. The “4-posters” work by delivering a topical acaricide to deer using the station. In field trials, stations placed in a grid formation reduced the tick population by up to 70%.<sup>194,195,196</sup>

### **Fish/Shellfish**

A theoretical list of saltwater fish that may occur within Bourne is provided in Appendix 5 (shellfish and freshwater fish are detailed below). The Canal Electric Company performed monitoring of fish and invertebrates within the Cape Cod Canal during the 1980’s, and may be able to provide specific information with regard to what species were found however, they were not contacted for this report.<sup>197</sup>

In general, New England’s, and the majority of the eastern seaboard’s, coastal fisheries and shellfisheries face significant threats, including over-fishing, pollution, and habitat loss, which have lead to drastic declines in populations of various species. Bourne is no exception. Oyster and scallop populations are in a severe state of decline, as are alewives and blueback, both types of herring. The table below outlines the shellfish harvest in 2005.

<sup>193</sup> Email from Gabrielle Sakolsky, Assistant Superintendent, Cape Cod Mosquito Control Project, received March 1, 2007.

<sup>194</sup> Reducing the Deer Tick Population Using an Array of 4-Poster Deer Stations On Cape Cod, Martha’s Vineyard and Nantucket Island, Massachusetts. David Simser, Barnstable County Cooperative Extension, from <http://www.capecodextension.org/pdfs/DeerStationPopulation.pdf>

<sup>195</sup> Tick Talk: Barnstable County’s Tick Newsletter, David Simser, Deer Tick Project Coordinator, Barnstable County Cooperative Extension. Winter 2007, Volume 3, Number 1, from <http://www.capecodextension.org/pdfs/TickTalkWinter2007.pdf>

<sup>196</sup> <http://www.capecodextension.org/doc.php?22>, viewed on February 2, 2007.

<sup>197</sup> Telephone conversation with Phil Brady, Aquatic Biologist, MA Division of Marine Fisheries, on March 5, 2007.

**Table:** Shellfish harvest (in bushels) for 2005.

<b>Recreational</b>	<b>Shellfish Species</b>	<b># of Bushels</b>
	Quahog	387.40
	Soft shell clam	123.50
	Oyster	72.25
	Scallop	18
<b>Commercial</b>	Quahog	1335.00
	Scallop	114.50

In addition to causing population declines, pollution has also resulted in closures of shellfish beds, which can have significant commercial impacts to the community. Appendix 5 lists the various shellfish beds that have been closed, either seasonally or permanently.<sup>198</sup>

Inland fishing remains popular recreationally, and Bourne's freshwater habitats support a variety of freshwater fish. Specific information was available from The Massachusetts Division of Fisheries and Wildlife regarding fisheries within Flax Pond, Queen Sewell Pond, and Great Herring Pond (only a small portion of which lies within Bourne).<sup>199</sup> A variety of freshwater shellfish are also present within Bourne, some of which, such as eastern pondmussel, are state-listed.

#### ***Flax Pond***<sup>200</sup>

Flax Pond, also called Picture Lake, within Pocasset, exhibits an average depth of 3-feet, with maximum depths of 6-feet. The pond bottom is comprised of muck and sand with abundant aquatic vegetation, and its one-mile shoreline is residentially developed. Two public access points are located off County Road. Flax Pond is an unstratified warmwater pond where largemouth bass is the primary gamefish. The pond was intermittently managed and stocked with various species from 1927 to between 1965 and 1971. A fisheries survey undertaken in 1994 found six total species: largemouth bass, bluegill sunfish, pumpkinseed sunfish, white perch, yellow perch, and banded killifish.

#### ***Queen Sewell Pond***<sup>201</sup>

Queen Sewell Pond, also called Bumps Pond, exhibits an average depth of 10-feet with a maximum depth of 24-feet. The Pond is generally infertile, with clear

<sup>198</sup> Email from Mike Gratis, Senior Officer, Department of Natural Resources, received February 23, 2007 and Town of Bourne Department of Natural Resources website <http://www.townofbourne.com/> viewed on February 23, 2007.

<sup>199</sup> Fact sheets received via email from Steve Hurley, Southeast District Fisheries Manager, Massachusetts Division of Fisheries and Wildlife on March 26, 2007.

<sup>200</sup> Flax Pond Bourne Barnstable County Cape Cod Watershed, Fact Sheet, Commonwealth of Massachusetts Division of Fisheries and Wildlife, updated March 5, 2007.

<sup>201</sup> Queen Sewell Pond Bourne Barnstable County Cape Cod Watershed, Fact Sheet, Commonwealth of Massachusetts Division of Fisheries and Wildlife, updated March 6, 2007.

water, a sandy bottom, and scarce aquatic vegetation. The 0.6-mile shore line is moderately developed, and the pond is accessed off Puritan Road. A 2004 fisheries survey found chain pickerel, largemouth bass, yellow perch, white perch, and bluegill sunfish.

#### ***Great Herring Pond***<sup>202</sup>

Great Herring Pond, historically known as Lake Manomet, exhibits an average depth of 20-feet, with a maximum depth of 42-feet. It outlets into the Herring River (formerly called Monument River), which historically entered Buzzards Bay, but now enters the Cape Cod Canal. The shoreline is moderately developed with residential uses, cranberry bogs, and a summer camp (Camp Bournedale). The pond bottom consists primarily of sand and rubble with areas of mud. Access is provided via a ramp located off Little Sandy Pond Road. Surveys undertaken in 1984 and 2001 found yellow perch, white perch, white sucker, brown bullhead, banded killifish, smallmouth bass, chain pickerel, golden shiner, American eel, largemouth bass, pumpkinseed sunfish, and tessellated darter. Walleye are also occasionally reported, and alewife and blueback herring are plentiful from late spring through the fall. Great Herring Pond was added to the list of Great Ponds of Massachusetts as identified by the Department of Environmental Protection as of 2006. Designation as a Great Pond means that Chapter 91 Applications are required for waterfront construction pursuant to 310 CMR 9.05.

#### **4.5.2 Vernal Pools**

Vernal pools are unique wetlands that provide specialized breeding habitat for a variety of organisms. The pools are typically ephemeral in nature, with water ponded through the spring but drying by the middle to end of summer, although some pools do contain water year-round. Such intermittent drying precludes fish from establishing permanent populations within these wetlands; many amphibian and invertebrate species rely on breeding habitat that is free of fish predators.<sup>203</sup>

NHESP is responsible for certifying such ephemeral water bodies as vernal pools. Certification is based upon documented evidence of breeding by specific species that is submitted by citizens. Once certified, vernal pools become Outstanding Resource Waters (ORWs) and gain additional protection under the Massachusetts Wetlands Protection Act and the Massachusetts Clean Water Act. The Town of Bourne has 22 Certified Vernal Pools.

In addition to CVPs, NHESP also identifies areas that may function as vernal pools, or Potential Vernal Pools (PVPs), using an aerial photo survey. In total, 51 PVPs have been identified by NHESP within the Town of Bourne. Several of

<sup>202</sup> Great Herring Pond Plymouth/Bourne Plymouth/Barnstable Counties Buzzards Bay Watershed, Fact Sheet, Commonwealth of Massachusetts Division of Fisheries and Wildlife, updated March 23, 2007.

<sup>203</sup> <http://www.mass.gov/dfwele/dfw/nhesp/nhvernal.htm>

these PVPs overlay CVPs, while others may not provide the requisite habitat for certification. Several clusters of PVPs, mainly west of Route 25 and Route 28 provide significant habitat value as the character of the pools is varied.<sup>204</sup>

#### 4.5.3 Wildlife Corridors

Wildlife corridors become increasingly important as natural areas are inevitably divided by development. In the resulting isolated natural territories, the long-term survival of various wildlife populations depends upon patch size, the number of patches, and how isolated each patch is from the next. In order to conserve biodiversity, it is imperative to maximize both the number and size of protected individual natural areas, while maintaining bands of undisturbed or minimally disturbed lands to connect them.

Wildlife corridors should both link patches of natural areas, and provide suitable habitat such that wildlife is encouraged to utilize the corridors to migrate between a network of patches.<sup>205</sup> In essence, wildlife corridors facilitate the persistence of species by allowing movement between habitats and populations in an increasingly built environment.<sup>206</sup> Connected undeveloped lands also afford alternate habitats for species as local conditions change and/or vary annually.<sup>207</sup> Important corridors within the Town include Bournedale, Sagamore Beach, the Cape Cod Canal, the Back River and Pocasset River Watersheds, the Red Brook Pond Herring Run, and Camp Edwards.

Bournedale has faced the least development of any other village in Town. Large tracts of undeveloped land and utility easements function as corridors to the north and south of Bournedale Road, and connect to the Herring River ACEC to the east and to rural areas in Plymouth to the north. Despite its relatively undeveloped character, Route 25 and residential developments have encroached upon this corridor. The Sagamore Beach area, including the Scusset State Reservation, contains a noteworthy expanse of connected wetlands and open space.

Although man-made and therefore highly altered, the Cape Cod Canal links the warmer waters of Buzzards Bay and the cooler open waters of Cape Cod Bay. Tidal flows and water quality associated with the Canal impact the Herring River and Bourne Pond Herring Runs, and the man-made saltwater swimming pool at the Bourne Scenic Park joins salt marsh to the Canal. Despite the Canal's

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<sup>204</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 1, 2007.

<sup>205</sup> Planning for Wildlife: Improving Wildlife Conservation Through Better Open Space and Recreation Plans. Manomet Center for Conservation Sciences, Regional Conservation Planning Program, 2003.

<sup>206</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>207</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 2, 2007.

potential to function as a corridor for marine animals, it acts as a significant barrier to terrestrial species, the majority of which are unlikely to utilize the bridges to cross the Canal.

Estuaries within the Back River and Pocasset River Watersheds offer valuable habitat, and the Town of Bourne owns a linear parcel of land linking Red Brook Pond to Red Brook Harbor, which functions as a herring run. The Bourne Conservation Trust owns additional lands surrounding the Pond.<sup>208</sup>

The three herring runs within Bourne (Bourne Pond, Monument River, and Red Brook) also comprise (or historically comprised) wildlife corridors, although the number of herring using these runs has declined. Bourne Pond no longer functions as a run, likely due to man-made restrictions preventing herring passage.

In addition to these wildlife corridors, the Military Reservation itself represents the largest contiguous tract of undeveloped land on all of Cape Cod, although it is sporadically intensely impacted by training exercises.<sup>209</sup> The northern 15,000-acres of the Reservation have been permanently protected through legislation.<sup>210</sup> Undeveloped land to the north of Camp Edwards (some Town-owned) adds to the large amount of forested area that may support “meta populations,” or large moving populations, of insects associated with the Pitch Pine-Scrub Oak communities.<sup>211</sup> It is unlikely, however, that significant numbers of organisms other than insects and birds are able to utilize both Camp Edwards and adjacent undeveloped lands, due to the fencing/man-made obstructions that surround the Military Reservation.

Although the above-discussion focuses on local wildlife corridors, parts of Bourne also play important roles in broader migratory corridors. Specifically, coastal areas on Cape Cod are renowned for their importance to migrating birds. Passerines utilize shrub thickets, for example. Core Habitat BM 1237 (discussed further in Section 4.6.1), located in the southeastern corner of that portion of Town north of the Canal, provides important songbird migration habitat. Essentially, any open space with cover and food is important to migrating birds, while the waters of Buzzards Bay proximate to Bourne provide important feeding habitat for terns during the summer. The air space above Bourne is full of migrating birds, although they may not touch down in Bourne, since many of the

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<sup>208</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>209</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>210</sup> The Massachusetts Military Reservation (MMR) Story on the Community Preservation Act web page, <http://commpres.env.state.ma.us/bestPractice/bestPractice.asp?communityName=Bourne&categoryCode=All&categoryDesc=All>, viewed on March 9, 2007.

<sup>211</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 2, 2007.

birds passing through Massachusetts during migration do not follow narrow routes.<sup>212</sup>

#### 4.5.4 Rare Animal Species

The population status of rare animals in Massachusetts is described using three categories: 1) special concern; 2) threatened; and 3) endangered:

- Special concern species have either experienced a decline that could threaten the species without intervention, or whose populations are so small, localized, or dependant upon specialized habitats that they could become threatened.
- Threatened species are likely to become endangered in the foreseeable future.
- Endangered species are in danger of extirpation from Massachusetts.

The majority of Bourne (approximately 65%) is mapped as Priority and/or Estimated Habitat.

- Priority Habitat (PH) is the geographical extent of habitat for all state-listed plant and animal species.
- Estimated Habitat (EH) depicts the geographical extent of habitat of state-listed rare wildlife.<sup>213</sup>

As discussed in the “Rare Plants” section of this report, two Priority Habitats are located within Bourne; PH 1213 and PH 1232. The first consists of ±90-acres of land extending across the Town boundary from Sandwich. The latter, PH 1232 includes ±17,025-acres of Bourne, encompassing nearly all of the land east of Route 28, with portions also extending across the highway and Cape Cod Canal into the western and northern parts of Town. Two Estimated Habitats also occur within Bourne; EH 522 and EH 821. These are generally contiguous with PH 1213 and PH 1232, and are ±58- and ±16,626-acres in size, respectively.

Thirty-three special concern, threatened, or endangered animal species, as designated by the Natural Heritage and Endangered Species Program, occur within the Town of Bourne. Five previously state-listed species have been delisted. The table below lists these animals.<sup>214</sup>








<sup>212</sup> Email from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, received March 1, 2007.

<sup>213</sup> <http://www.mass.gov/dfwele/dfw/nhesp/nhenvprioahab.htm>

<sup>214</sup> Letter from Patricia C. Swain, Ph.D., Ecologist, Natural Heritage and Endangered Species Program, Division of Fisheries & Wildlife, dated January 3, 2007.



**Table #.** State-listed animal species occurring within the Town of Bourne as of August 28, 2006. Associated ranking and Priority/Estimated Habitat identifier are also included. N/A denotes species whose photographs were not readily available.

	Common Name	Scientific Name	Status	Last Documented Observation	Habitat ID
	barrens buckmoth <sup>215</sup>	<i>Hemileuca maia</i>	Special Concern	2006	PH 1232
N/A	barrens daggermoth	<i>Acronicta albarufa</i>	Threatened	1999	PH 1232
	bridle shiner <sup>216</sup>	<i>Notropis bifrenatus</i>	Special Concern	1993	PH 1232
	chain dot geometer <sup>217</sup>	<i>Cingilia catenaria</i>	Special Concern	2005	PH 1232
N/A	coastal heathland cutworm	<i>Abagrotis nefascia</i>	Special Concern	1996	PH 1213 PH 1232
N/A	coastal swamp metarranthis moth	<i>Metarranthis pilosaria</i>	Special Concern	1998	PH 1232
N/A	comet darner	<i>Anax longpipes</i>	Special Concern	2005	PH 1232
	common tern <sup>218</sup>	<i>Sterna hirundo</i>	Special Concern	1990	PH 1232
	Cooper's Hawk <sup>219</sup>	<i>Accipiter cooperii</i>	Delisted	1997	
	diamondback terrapin <sup>220</sup>	<i>Malaclemys terrapin</i>	Threatened	2004	PH 1232
	eastern box turtle <sup>221</sup>	<i>Terrapene carolina</i>	Special Concern	2005	PH 1213 PH 1232
N/A	eastern pondmussel <sup>222</sup>	<i>Ligumia nasuta</i>	Special Concern	1997	PH 1232

<sup>215</sup> <http://www.biology.lsu.edu/heydrjay/Cicindelidae/Hemileucamaia.html>

<sup>216</sup> <http://fish.dnr.cornell.edu/nyfish/Cyprinidae/cyprinidae.html>

<sup>217</sup> Canadian Biodiversity Information Facility,

[http://www.cbif.gc.ca/spp\\_pages/geometroidea/jpgs/image\\_e.php?image%5B%5D=106898.jpg,Cingilia+catenaria&image%5B%5D=106898a.jpg,Cingilia+catenaria](http://www.cbif.gc.ca/spp_pages/geometroidea/jpgs/image_e.php?image%5B%5D=106898.jpg,Cingilia+catenaria&image%5B%5D=106898a.jpg,Cingilia+catenaria)

<sup>218</sup> <http://www.camacdonald.com/birding/DesJardin/CommonTern.htm>










<sup>219</sup> <http://birdsofsanibel.free.fr/Images/2004/Cooper%27s%20Hawk.jpg>

<sup>220</sup> Photograph shown on <http://people.wcsu.edu/pinout/herpetology/mterrapin/index.html>, taken from [www.umbi.umd.edu/~panchara/turtle.html](http://www.umbi.umd.edu/~panchara/turtle.html)


<sup>221</sup> Photograph by S. Speak, Wellfleet, MA, July 2004.

[http://gallery.cs.umb.edu/gallery/easternbox/box\\_cover\\_species](http://gallery.cs.umb.edu/gallery/easternbox/box_cover_species)

<sup>222</sup> New York Metropolitan Region and New Jersey Freshwater Mussel Identification Handbook, <http://cbc.amnh.org/mussel/definegrowthlines.html>

	eastern spadefoot <sup>223</sup>	<i>Scaphiopus holbrookii</i>	Threatened	2003	PH 1232
	four-toed salamander <sup>224</sup>	<i>Hemidactylum scutatum</i>	Special Concern	1936	PH 1232
N/A	Gerhard's underwing moth	<i>Catocala herodia gerhardi</i>	Special Concern	1999	PH 1232
	grasshopper sparrow <sup>225</sup>	<i>Ammodramus savannarum</i>	Threatened	2004	PH 1232
	least tern <sup>226</sup>	<i>Sterna antillarum</i>	Special Concern	2004	PH 1232
	marbled salamander <sup>227</sup>	<i>Ambystoma opacum</i>	Threatened	1936	
N/A	Melsheimer's sack bearer	<i>Cicinnus melsheimeri</i>	Threatened	1998	PH 1232
N/A	New England bluet	<i>Enallagma laterale</i>	Special Concern	2004	PH 1232
	northern harrier <sup>228</sup>	<i>Circus cyaneus</i>	Threatened	2004	PH 1232
	northern red-bellied cooter <sup>229</sup>	<i>Pseudemys rubriventris</i> pop. 1	Endangered	2003	PH 1232
	osprey <sup>230</sup>	<i>Pandion haliaetus</i>	Delisted	1989	
	pine barrens bluet <sup>231</sup>	<i>Enallagma recurvatum</i>	Threatened	1998	PH 1232
N/A	pine barrens itame	<i>Itame sp. 1 nr. inetricata</i>	Special Concern	1999	PH 1232
N/A	pine barrens zale	<i>Zale sp. 1 nr. lunifera</i>	Special Concern	1997	PH 1232

<sup>223</sup> Biological Sciences @ Town University<http://wwwnew.towson.edu/herpetology/amphibians/Scaphiopus%20holbrookii.htm><sup>224</sup> Photograph by Mark Tegges, Biological Sciences @ Town University,<http://wwwnew.towson.edu/herpetology/amphibians/Hemidactylum%20scutatum.htm><sup>225</sup> Photograph courtesy of Brad Sillasen,[http://www.museum.state.il.us/muslink/prairie/htmls/popups/birds\\_grsparrow.html](http://www.museum.state.il.us/muslink/prairie/htmls/popups/birds_grsparrow.html)<sup>226</sup> Photograph by William K. Hayes, Loma Linda University School of Science and Technology,<http://www.llu.edu/llu/grad/natsci/hayes/research-i-bahama-seabirds.html><sup>227</sup> Catawba River Corridor Coverboard Program, Central Carolina Amphibian & Reptile Initiative,<http://www.ccari.org/crcbpd/datapages.htm><sup>228</sup> Thi Illinois Raptor Center, A Pictorial Guide to Illinois Birds,<http://www.illinoisraptorcenter.org/Field%20Guide/harrier.html><sup>229</sup> John White-Virginia Herpetological Society,[http://esasuccess.org/reports/profile\\_pages/NorthernRedbelliedCooter.html](http://esasuccess.org/reports/profile_pages/NorthernRedbelliedCooter.html)<sup>230</sup> Ocean Oasis Field Guide, <http://www.oceanoasis.org/fieldguide/pand-hal.html><sup>231</sup> Speciation and Patterns of Species Diversity, <http://www.dartmouth.edu/~mcpeek/speciation.html>

	piping plover <sup>232</sup>	<i>Charadrius melodus</i>	Threatened	2002	PH 1232
	purple tiger beetle <sup>233</sup>	<i>Cicindela purpurea</i>	Special Concern	1935	PH 1232
	roseate tern <sup>234</sup>	<i>Sterna dougallii</i>	Endangered	1990	PH 1232
	sharp-shinned Hawk <sup>235</sup>	<i>Accipiter striatus</i>	Special Concern	2001	
	spatterdock damselfly <sup>236</sup>	<i>Aeshna mutata</i>	Special Concern	2005	PH 1232
N/A	spiny oakworm	<i>Anisota stigma</i>	Delisted	1999	
	spotted salamander <sup>237</sup>	<i>Ambystoma maculatum</i>	Delisted	1969	
	spotted turtle <sup>238</sup>	<i>Clemmys guttata</i>	Delisted	1999	
N/A	straight lined mallow moth	<i>Bagisara rectifascia</i>	Special Concern	1998	PH 1232
	tidewater mucket <sup>239</sup>	<i>Leptodea ochracea</i>	Special Concern	1996	PH 1232
	tule blue <sup>240</sup>	<i>Enallagma carunculatum</i>	Special Concern	1987	
N/A	water-willow stem borer	<i>Papaipema sulphurata</i>	Threatened	1994	PH 1232

#### 4.5.5 BioMap Habitat

NHESP has created the BioMap to identify the most critical areas whose protection will protect the state's biodiversity. Although the BioMap concentrates on state-listed plants and animals and significant natural communities, it also considers more prevalent species and ecosystems. *"The goal of the BioMap is to promote strategic land protection by producing a map showing areas, that if*

<sup>232</sup> <http://wildlifepark.gov.ns.ca/walking/morePlover.html>

<sup>233</sup> Tiger Beetles of Connecticut, <http://collections2.eeb.uconn.edu/collections/insects/CTBnew/purpurea.html>

<sup>234</sup> <http://www.justbirds.org/Cuba/Roseate%20tern.htm>

<sup>235</sup> <http://www.ownbyphotography.com/newpage93html.htm>

<sup>236</sup> [http://www.odolep.com/d\\_aeshnidae/aeshna\\_mutata11.jpg](http://www.odolep.com/d_aeshnidae/aeshna_mutata11.jpg)

<sup>237</sup> Cortland Herpetology Connection, <http://www.cortland.edu/herp/keys/images/salamand/amacullg.jpg>

<sup>238</sup> <http://www.geocities.com/RainForest/Vines/8524/spotted.html>

<sup>239</sup> New York Metropolitan Region and New Jersey Freshwater Mussel Identification Handbook, <http://cbc.amnh.org/mussel/leptodeagenustext.html>

<sup>240</sup> Iowa Odonata Survey, [http://www.iowaodes.com/pond\\_damselfs/blue-tule.asp](http://www.iowaodes.com/pond_damselfs/blue-tule.asp)

*protected, would provide suitable habitat over the long term for the maximum number of Massachusetts' terrestrial and wetland plant and animal species and natural communities.*"<sup>241</sup>

In general, Core Habitat encompasses the eastern half of Bourne south of the Canal, as well as the central portion of Bourne north of the Canal. Several other smaller areas of Core Habitat are also present throughout the Town. Overall, ±14,223-acres are designated as Core Habitat within Bourne.<sup>242</sup>

In addition several areas within Bourne have been designated as BioMap Supporting Natural Landscapes. Generally, these surround or are located adjacent to the Core Habitat. Such Supporting Natural Landscapes *"provide buffers around and connectivity between Core Habitats, ensure sufficient space for ecosystems to function, and provide contiguous undeveloped habitat for common species."*<sup>243</sup> Approximately 416-acres within Bourne are designated as Supporting Natural Landscapes.

#### 4.5.6 Living Waters

The Living Waters project identifies the *"most critical sites for freshwater biodiversity in the Commonwealth."* Conservation efforts should be focused on these rivers, streams, lakes, and ponds identified as Core Habitats. Furthermore, for Living Waters Core Habitats, conservation and protection efforts should focus on lands adjacent to water bodies. Vegetated buffers (preferably a minimum of 100 meters wide) maintain cooler water temperatures as well as supplying the nutrients and natural hydrology required by freshwater species.<sup>244</sup>

Only one Living Waters Core Habitat is located within Bourne, LW 339, which consists of Great Herring Pond. The majority of this pond lies within Plymouth, however the southern portion extends into Bourne. Herring Pond is a warmwater fishery supporting a variety of freshwater mussels (including two state-listed species) in addition to the fish present. One of the three known populations of the fish Bridle shiner (special concern) in the South Coastal Watershed is present in Herring Pond, and the pond also contains spawning habitat for alewife.

The Living Waters Critical Supporting Watershed associated with LW 339 also extends into Bourne. Supporting Watersheds depict that portion of the

<sup>241</sup> <http://www.mass.gov/dfwele/dfw/nhesp/nhbiomap.htm>

<sup>242</sup> BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts. Core Habitats of Bourne. Produced by Natural Heritage and Endangered Species Program Massachusetts Division of Fisheries and Wildlife Executive Office of Environmental Affairs Commonwealth of Massachusetts, 2004.

<sup>243</sup> BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts. Core Habitats of Bourne. Produced by Natural Heritage and Endangered Species Program Massachusetts Division of Fisheries and Wildlife Executive Office of Environmental Affairs Commonwealth of Massachusetts, 2004.

<sup>244</sup> <http://www.mass.gov/dfwele/dfw/nhesp/nhaqua.htm>

surrounding area most likely to impact (either positively or negatively) Living Waters Core Habitats.<sup>245</sup>

## 4.6 Cultural, Archaeological and Historic Resources

### 4.6.1 Archaeological and Historic Resources

Despite the plethora of older homes (including the Leonard Wood house in Pocasset), the presence of railroad centers, and Bournedale's Little Red Schoolhouse, only three properties are listed in the State Register of Historic Places.<sup>246</sup> The George I. Briggs House is located at 22 Sandwich Road in North Sagamore, the Cleveland Ledge Light House and the Wing's Neck Light on Wing's Neck Road. However, the Massachusetts Historic Commission's Inventory contains 438 listings, ranging from historic homes, to neighborhoods, to churches.<sup>247</sup> Refer to Appendix 2 for this listing.

The Aptuxcet Trading Post and the Cape Cod Canal area also valuable historic amenities to the Town of Bourne and are noted in detail in Section 3.1 of this plan.

### 4.6.2 Cultural Resources

#### Village of Buzzards Bay

The Village of Buzzards Bay is the seat of the Town government, housing the Town Hall, Memorial Community Building, and several park parcels. The Village is also characterized by the excellent transportation access (surpassing all other areas within the Town of Bourne) available via the Bourne Bridge, Route 6, and Route 25. Due to its prime location, the Village of Buzzards Bay has been identified as a growth center.<sup>248</sup>

#### Route 6A

Route 6A stretches from Sagamore Village east to the Town of Orleans. Thought to have been started by Native Americans as the Cape Cod Trail between Plymouth and Provincetown, the roadway developed into the chief east-west route for settlers in the 1600's. Later, during the 17<sup>th</sup> and 18<sup>th</sup> century agricultural period, homes, farms, and even small villages grew up along the road. Maritime activity during the 18<sup>th</sup> century gave rise to captain's houses and commercial ventures along the thoroughfare. Today, Old Kings Highway functions as a

<sup>245</sup> BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts. Core Habitats of Bourne. Produced by Natural Heritage and Endangered Species Program Massachusetts Division of Fisheries and Wildlife Executive Office of Environmental Affairs Commonwealth of Massachusetts, 2004.

<sup>246</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>247</sup> Massachusetts Cultural Resource Information System (MACRIS), on <http://mhc-macris.net/index.htm>, viewed February 23, 2007.

<sup>248</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

secondary rural road, and passes by many early homes and other historic structures.

The Cape Cod Commission created the Old King's Highway/Route 6A Corridor Management Plan and the Route 6A Vegetation Management Plan in 1995. Confirmation of whether these plans have since been updated was not available. These plans inventory scenic and sensitive environmental resources and include suggestions for various improvements and scenic overlay districts.<sup>249</sup> Open space and recreation management actions taken along the Route 6A corridor should consider the recommendations of these reports.

### **Bourne Railroad Bridge**

The Bourne Railroad Bridge was put into operation on December 27, 1935 as a part of a Cape Cod Canal improvement project undertaken by the US Army Corps of Engineers during the 1930s. The new bridge replaced a single span drawbridge which was built by August Belmont's original canal company. The Railroad Bridge is 544 feet long and it weighs 2,050 tons.

### **Scenic Landscapes**

The Town of Bourne contains a wide variety of scenic landscapes, from coastal inlets, beaches and marshes to mature wooded uplands, scenic roads, panoramas of the Canal (including the railroad bridge) and agricultural vistas. As discussed at the Public Forum on March 12, 2007, Bourne residents identified the following scenic landscapes and viewsheds:

- Monks Park,
- Looking down the Cape Cod Canal from the Upper Cape Technical School dining room (both bridges and both windmills are visible),
- Many beautiful views of sunrises and sunsets in the community (e.g. looking West on Main Street and the Monument Beach Pier),
- Seal Lane at low tide- views of seals on exposed rocks,
- Watching July 4<sup>th</sup> fireworks from the Mashnee Island Dike and Monument Beach,
- Buttermilk Bay, Little Buttermilk Bay, and the many marshes and inlets,
- Large/Tall ships passing through the Canal,
- Back River Estuary,
- Squeteague Harbor,
- Amarita Island,
- 6:00 am jets from Otis Air Force Base,
- Four Ponds Conservation Area in the fall,
- Great Herring Pond from Herring Pond Road,

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<sup>249</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

- Taking a boat ride to Cleveland Ledge Light, and
- Cranberry bogs.

### Scenic Roads<sup>250, 251</sup>

The Town of Bourne presently contains approximately 51 scenic roads as designated under the Scenic Roads Act, MGL Chapter 40, Section 15C. These roads were adopted as scenic through a Town Meeting in 1975, and the list includes several larger roads, such as County Road, Shore Road, and Barlows Landing Road.

### Cape Cod Pathways<sup>252</sup>

Cape Cod Pathways, initiated in 1993, is the name of a network of walking trails that would extend from Provincetown to Falmouth to Bourne (in 15 Cape Cod towns total) providing access and connections to seashore areas on Cape Cod, wooded interior areas and historic villages. The effort to make Cape Cod Pathways a reality is being undertaken by the Cape Cod Commission, the Barnstable County Commissioners and a host of volunteers from numerous Cape Cod communities. The regional significance of this program is to attract visitors to Cape Cod during all seasons of the year to be able to appreciate and experience the natural, cultural and historical resources of multiple Cape Cod communities.

The basic premise of the program begins with local community volunteers who assist the Cape Cod Commission in identifying where existing walking trails are in the community and where new connections may be appropriate. Trails are marked with small aluminum signs and maintenance on them is performed by volunteers who coordinate with landowners. The overall purpose of the trail network is to allow residents and visitors of Cape Cod the opportunity to enjoy the natural surroundings, to enhance public access to woodlands, beaches, ponds, and historic villages and to foster the preservation of open space in order to protect scenic views, wildlife habitat and sensitive natural areas. Currently the Town of Bourne has designated the following trails and areas as a part of the Cape Cod Pathways program, they include:



- **Bournedale Hills Trail:** 1.4 mile trail along north side of Cape Cod Canal between Herring Run Visitor's Center and Bourne Scenic Park;

<sup>250</sup> Telephone conversation with Michael Leitzel, Bourne Engineering Department, on April 24, 2007

<sup>251</sup> Town of Bourne Open Space and Recreation Area Plan - 1997

<sup>252</sup> For more information, go to <http://www.capecodcommission.org/pathways/>



includes 0.8 mi. loop near the Visitor's Center which interprets the historic and natural features of the Canal.

- **Four Ponds Conservation Area:** Color coded trails around Freeman Pond, Upper Pond, the Basin and Shop Pond and through the Town Forest. Trail is accessed by a trail through the Bourne Water District off Valley Bar Road, or by the main entrance and parking area on Barlow's Landing Road.
- **Nivling-Alexander Reserve:** 0.5 mi. of wooded trails on 40 acres bordering Red Brook Pond and cranberry bogs. Trail entrance and parking near intersection of Shore Road and Thaxter Road.
- **DeNormandie Woods Conservation Area:** 9 acres of wooded upland with 2/3 mile trail to the Broyer and Robinson Conservation Area via Joyce Path. Entrance on Shore Road between Red Brook Harbor Road and County Road.
- **Broyer and Robinson Conservation Areas:** 30 acres of wooded upland joined by a 1/2 mile wooded trail. Watch for ladyslippers and rhododendrons in late spring/early summer. Entrances along Red Brook Harbor Road, between Scraggy Neck Road and Parker's Boat Yard.
- **Sagamore Beach:** 169 Phillips Road in Sagamore Beach provides handicapped access to the waterfront. There is a small gravel parking lot and a handicapped-accessible boardwalk, with a widened viewing area at the highest point of the boardwalk overlooking the dunes, Cape Cod Bay, and "The Strand," which is a long stretch of sandy beach owned by the town. The parking area does not require a Bourne beach sticker.

## 4.7 Environmental Challenges

### 4.7.1 Hazardous Waste

Appendix 5 catalogues reportable releases as listed by the Department of Environmental Protection at <http://db.state.ma.us/dep/cleanup/sites/search.asp> on February 20, 2007.

### 4.7.2 Landfills

Refer to Section 3.5.5 for information regarding Bourne's solid waste management, and to Section 4.8.6 for information pertaining to contamination from the Military Reservation's landfill.

**4.7.3 Erosion**<sup>253, 254, 255</sup>

The Bourne Conservation Commission is responsible for ensuring that wetlands within its jurisdiction are not subjected to erosion from proposed/new development, while the Planning Board may require erosion control measures for utility and road construction. Additionally, Town zoning requires the permanent stabilization of slopes in excess of 15% as a result of site grading, and the Bourne Wetland and Natural Resources Protection Bylaw prohibits new dwellings on slopes greater than 25% (if the site in general is subject to jurisdiction under this Bylaw).

The 1997 Open Space and Recreation Plan noted that the following areas constituted eroding areas that may require development restrictions in order to minimize hazards. An update on current conditions, where known, is also provided.

- Sagamore Highlands
  - Stairs built with some erosion control measures installed
- Toby Island
  - Bank re-vegetation project
- Mashnee Island
  - Many revetments/seawalls are present on Mashnee Island
- Bassetts Island
  - Two large revetments constructed 5 – 10 years ago
- Buttermilk Bay
  - Many revetments are present at Hideaway Village Condominiums
- Scraggy Neck/Eustis Beach (bank revegetation project)

**4.7.4 Chronic Flooding**

Fourteen properties, within the Town of Bourne constitute “repetitive loss” properties. Of these, twelve have made two flood insurance claims and two have made three claims.<sup>256</sup> Generally, development/re-development within flood zones is controlled by insurance rates and building code/zoning regulations.

<sup>253</sup> Town of Bourne Open Sapce and Recreation Area Plan – 1997

<sup>254</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

<sup>255</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received March 1, 2007.

<sup>256</sup> Repetitive Loss Properties Information provided by the Massachusetts Emergency Management Agency on January 14, 2004- from an email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

#### 4.7.5 Development Impact

##### **Industrial Facilities**

Bourne's commercial and industrial uses include several manufacturers, warehouses, and sand and gravel operations. There is also a seafood packing plant within the Back River ACEC.<sup>257</sup>

##### **Underground Storage Tanks**

An inventory of non-commercial underground storage tanks is maintained by the Barnstable County Department of Health & Environment.<sup>258</sup> Bourne requires that underground storage tanks be registered, however there may be residential tanks present that were never registered, and so are not shown in this list. Although the Bourne Fire Department is responsible for issuing permits for commercial underground storage tanks, the Board of Selectmen issue licenses for these tanks. Based upon MassGIS information downloaded on November 21, 2006, there are 41 underground storage tanks within Bourne.

##### **Pesticide and Fertilizer Application**

Utility easements, railroads, golf courses, and cranberry bogs are obvious sites for the application of pesticides and fertilizers, however residential lawns can also contribute significant amounts of these substances to downstream resources due to overapplication by homeowners. The majority of Bourne's ponds as well as Buttermilk Bay show varied levels of eutrophication due to nutrient loading, which may be more influenced by septic systems than pesticide and fertilizer application.<sup>259</sup>

Although the Town of Bourne does not have an educational/public outreach program regarding impacts from pesticide and fertilizer application, the Conservation Commission has a brochure produced by the Coalition for Buzzards Bay regarding these issues available at its office.<sup>260</sup>

##### **Public Sewer and Private Septic Systems**

Only two areas of Bourne are sewered: 1) downtown Buzzards Bay; and 2) Hideaway Village, off Head of the Bay Road. Sewer from both areas goes to the Wareham Treatment Plant.<sup>261</sup>

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<sup>257</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>258</sup> Telephone conversation with Susan Rask, Barnstable County Department of Health & Environment, February 26, 2007.

<sup>259</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received February 16, 2007.

<sup>260</sup> Email from Brendan Mullaney, Conservation Agent, Town of Bourne, received March 1, 2007.

<sup>261</sup> Email from Cynthia Coffin, Town of Bourne Board of Health Agent, received February 26, 2007.

Areas not serviced by sewer rely upon individual disposal systems, which may be located proximate to sensitive natural resources. Both the Board of Health and the Conservation Commission have established replacement and installation criteria for systems in sensitive areas.<sup>262</sup> The Buzzards Bay National Estuary Program awarded grant monies to Bourne in 1999 to purchase SepTrak, which is a software program that facilitates septic system inspection and maintenance by local officials.<sup>263</sup>

#### 4.7.6 Ground and Surface Water Pollution

##### Surface Water Pollution

Bourne has received a number of grants from the Buzzards Bay National Estuary Program to remediate stormwater discharges that were contributing to water quality decline and subsequent shellfish bed and swimming area closures. Specifically, grants were received for Hen Cove, Queen Sewell Pond, Taylor's Point (Bourne Marina), Electric Avenue, Eel Pond, and Barlows Landing, as well as shared monies for Buttermilk Bay, including the purchase of oil spill containment boom. Tidal flushing studies for the Pocasset River, Hen Cove, and Eel Pond were also undertaken to develop maximum nitrogen loadings in these waters. All of these projects have been satisfactorily completed.<sup>264</sup> In addition to these completed projects, the Town of Bourne received a grant from Coastal Zone Management's Wetlands Restoration Program on January 18, 2007 to assess the feasibility of improving tidal flushing at Conservation Pond by installing a larger culvert under Circuit Avenue. Currently, restricted flows contribute to the accumulation of bacteria in the pond, which in turn causes the closure of about 17 acres of shellfish beds in Hen Cove. This grant award is an extension of a stormwater remediation project that was funded by CZM's Coastal Pollution Remediation Program.<sup>265</sup>

Excessive pollution to surface waters is further prevented through the Town's General Regulations, which prohibit the feeding of wild waterfowl and exclude pets from beaches. These measures serve to reduce nutrient impacts that accrue from waste deposited by these animals.

##### Groundwater Contamination

The Massachusetts Military Reservation Main Base Landfill (LF-1) Groundwater Plume resulted from approximately 100-acres of landfill operations between 1940 and 1984, as well as from a chemical spill associated with a former motor pool.

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<sup>262</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>263</sup> Buzzards Bay National Estuary Program: Grants awarded by the Buzzards Bay NEP website, <http://www.buzzardsbay.org/grantsaw.htm>, viewed March 5, 2007.

<sup>264</sup> Email from Tracy Warncke, Buzzards Bay National Estuary Program, received March 2, 2007.

<sup>265</sup> Coastal Zone Management Wetlands Restoration Program Update on Massachusetts Wetlands Restoration March 2007, <http://www.mass.gov/czm/wrp/education/currentupdate.htm#Funding>, viewed March 6, 2007.

Various forms of industrial waste, including solvents (e.g. trichloroethylene and tetrachloroethylene) were disposed of within the landfill.<sup>266</sup> According to State and Federal drinking water standards, levels of contaminants were unsafe, three contributing disposal areas were therefore capped in 1995.<sup>267</sup> Migration had previously caused the temporary closure of the Cataumet well, although this closure was a result of the test pulling the contamination into the well. Additionally, the plume has traveled to the Squeteague Harbor shoreline, as well as the Red Brook area in Cataumet. Seep testing is performed periodically.<sup>268</sup>

As part of the remediation, a groundwater extraction system was installed at the leading edge and along the northern lobe of the plume to prevent further migration. Cleaned water is then returned to the aquifer proximate to the extraction wells.<sup>269</sup> In addition to the five extraction wells originally installed, three more wells have been installed in recent years. These eight groundwater extraction wells clean the landfill plume as well as the Chemical Spill 23 plume, which is located adjacent to the southern portion of the landfill plume.<sup>270</sup>

#### 4.7.7 Impaired Waters

Several of Bourne's water bodies/waterways are impaired due to pathogens. These impaired waters include Buttermilk Bay, the Cape Cod Canal, Phinney's Harbor, Pocasset Harbor, Red Brook Harbor, Herring River.<sup>271, 272</sup> Great Herring Pond is also listed as impaired by metals (other than mercury).<sup>273</sup>

#### 4.7.8 Invasive Species

Although both plants and animals can be invasive species, the discussion of invasive species within this report is limited to invasive plant species, as invasive animal species are not likely to be present in sufficient numbers to pose a serious and immediate hazard to Bourne's natural resources.

With the exception of development, invasive species are the most significant threat to biodiversity, and are of increasing concern on Cape Cod especially.

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<sup>266</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>267</sup> Telephone conversation with Doug Karson, Community Involvement Specialist, Base Installation Program on March 1, 2007.

<sup>268</sup> Email from Cynthia Coffin, Town of Bourne Board of Health Agent, received February 26, 2007.

<sup>269</sup> Town of Bourne Open Space and Recreation Area Plan – 1997

<sup>270</sup> Telephone conversation with Doug Karson, Community Involvement Specialist, Base Installation Program on March 1, 2007.

<sup>271</sup> Final Massachusetts Section 303(d) List of Waters – 1998 – Commonwealth of Massachusetts Executive Office of Environmental Affairs Department of Environmental Protection Division of Watershed Management. February 1999.

<sup>272</sup> U.S. Environmental Protection Agency Total Maximum Daily Loads, List of Impaired Waters website, [http://iaspub.epa.gov/tmdl/waters\\_list.control?state=MA&huc=01090002&p\\_cycle=2002](http://iaspub.epa.gov/tmdl/waters_list.control?state=MA&huc=01090002&p_cycle=2002), viewed on April 24, 2007

<sup>273</sup> U.S. Environmental Protection Agency Total Maximum Daily Loads, List of Impaired Waters website, [http://iaspub.epa.gov/tmdl/waters\\_list.control?state=MA&huc=01090002&p\\_cycle=2002](http://iaspub.epa.gov/tmdl/waters_list.control?state=MA&huc=01090002&p_cycle=2002), viewed on April 24, 2007

Generally, invasive plants “*disrupt and dominate native plant communities*” via their natural history, which often includes prolific seed production and/or vegetative expansion of populations with vines or underground runners.<sup>274</sup> Additionally, they may also alter the hydrology, fire regime, soil and water chemistry, and topography of natural systems.<sup>275</sup> Because these species originate from outside Massachusetts, and usually outside the United States, natural competitors are not present to check the plants’ growth. Invasive species therefore often “*reproduce freely...and displace the diverse [native] plant communities on which native wildlife depends for food and habitat.*”<sup>276</sup>

Due to their insidious and aggressive nature, the spread of invasive species is often extremely difficult to control, and complete eradication of existing populations can be nearly impossible. The sooner that action is taken against invasive species (preferably prior to the establishment of a large population), the greater the likelihood of success is. Although the State implemented a ban on the sale and importation of over 140 invasive plants on January 1, 2006, existing invasive plant populations will continue to spread.<sup>277</sup> Control/eradication options are species-specific, but often entail the use of herbicides, sometimes in addition to other control measures, including mowing, burning, covering with black plastic, and excavation.

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<sup>274</sup> Invasive Plants in Massachusetts brochure produced by the Town of Orleans Invasive Species Committee

<sup>275</sup> Understanding and Managing Invasive Plants in Wetlands, by Karen Lombard, Assistant Director of Conservation Science, The Nature Conservancy, in AMWS Newsletter No. 49, April 2004

<sup>276</sup> Invasive Plants in Massachusetts brochure produced by the Town of Orleans Invasive Species Committee

<sup>277</sup> Invasive Plants in Massachusetts brochure produced by the Town of Orleans Invasive Species Committee

## Section 5.0 Inventory of Lands of Conservation and Recreational Interest

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*Herring Run, Photo By: Mary McCrann*



## 5.0 INVENTORY OF LANDS OF CONSERVATION AND RECREATIONAL INTEREST

The following section details specifically where open space resources and recreational amenities are located in the Town of Bourne. Open space can mean different things to different people. It can be anything from a picturesque bog, cemetery or woodsy area, to a farm, beach, park or walking trail. Recreational amenities might include playgrounds, baseball or football fields, running paths or bicycle trails.

*According to the Buzzards Bay National Estuary Program, “protecting open space makes sense from an ecological standpoint as well as a financial one. Open space provides critical habitat and corridors for wildlife and plants, protects important water supplies, provides areas for recreational activities, protects historically significant places, and preserves the charm and character of the area in which we live. Open space also make sense for a town's tax base because undeveloped, protected land costs the town nothing, as community services, such as schools, police, and road services, are not required.”*

The full Bourne inventory includes land owned by the Town of Bourne, the Bourne Conservation Trust, the Wildlands Trust of Southeastern Massachusetts, the Water District, Federal Government, Massachusetts Department of Conservation and Recreation and land in some form of Chapter 61 designation. The open space and recreation properties listed include details such as ownership, level of protection, acreage, whether or not there is public access, what type of facilities might be present and what condition the property is in.

Open space data obtained from the Town of Bourne Planning Department was the basis of information used to compile the open space and recreation land inventory. Beals and Thomas, Inc. cross referenced the Town's data with Mass GIS's open space data layer. Recreation and open space land in the state datalayer that was NOT in the town's open space datalayer was queried and saved. The existing open space map shows all of the parcels from the Town's open space layer, and the queried layer from the MA GIS data. For the purposes of this project, the Military Reservation was not included. Although there is a large acreage of the reservation in Bourne that is undeveloped and provides habitat area to a variety of wildlife, the Open Space Committee and Town Planner felt that it was not a resource that the Town can utilize or manage since it is owned by the Federal Government.

The open space and recreation inventory column headings include:

**Site Name:** Indicates the name of the site

**Acres:** Total number of acres or a close approximation. One acre equals 43,560 square feet.

**Owner:** Name of the owner of the property and the agency or department responsible for managing the property.

**Level of Protection:** Notes whether the site if by virtue of zoning, or by the receipt of state or federal funding, is protected from sale and building development. Mass GIS notes the following characteristics about level of protection:

*In perpetuity* – Legally protected in perpetuity and recorded in a property’s deed. Public land is in perpetuity if it is owned by the Conservation Commission, if there is a conservation restriction on the property, if it is owned by a State conservation agency, if it is owned by a non-profit land trust or if state or federal monies were used to purchase or improve the property. Private land is in perpetuity if it has a deed restriction in perpetuity, if there is an agriculture preservation restriction, or if there is a conservation restriction on the property. Land is considered “protected” if it falls under one of the following categories: 1. Federal land owned by a federal conservation agency (PL 88-578), 2. State owned land owned by a state conservation agency (Article 97), 3. Town land owned by or under the jurisdiction of the Conservation Commission or Water Department, 4. Private land if it is owned by a non-profit agency dedicated to land conservation, or if it is protected in perpetuity by a conservation deed restriction, or if it is protected by the Agricultural Restriction Program, or if it is protected by a conservation restriction under the DEP’s Wetland Restriction Program. Also, Division of Conservation “assisted sites”, that is municipal conservation or recreation areas that received assistance from the state’s Urban Self-Help, Self-Help or federal Land and Water Conservation Fund are protected under Article 97 and, if federal funds were used, by P.L. 88-578.

*Temporary* – Legally protected for less than perpetuity (short term conservation restriction) or temporarily protected through a functional use. Example: water district lands are only temporarily protected while water resource protection is their primary use.

*Limited* – Protected by legal mechanisms other than those listed above. Land might be protected by a requirement of a majority municipal vote for change in status or Chapter 61 land.

*Unknown* – Should be researched through the property deed to see if any protection level is listed.

*None* – Totally unprotected by legal or functional means. Land is usually privately owned. In addition, land is considered “unprotected” if it falls into one or more of the following categories: 1. Unrestricted federal land, 2. Unrestricted state land, 3. town land not owned by the Conservation Commission, Park Department or otherwise restricted or tax title parcels

**Public Access:** Notes whether or not the site is open to public use.

**Type of Facility/Condition:** Details what kind of condition the site or facility is in and what the site might be used for (ballfields, beach etc).

Open Space for the purposes of the 2007 Bourne update is defined as parks, playgrounds, fields, recreational amenities forests, land of significant size owned and managed for agricultural, conservation, open space or recreation purposes. According to the Division of Conservation Services, the degree of protection from destruction or degradation that is afforded to individual parcels of land varies considerably. Public recreation and conservation lands may have deed restrictions which state that they have been dedicated to park, recreation or conservation use. Conversion of these sites would invoke Article 97 of the amendments to the state constitution and possibly trigger federal involvement if Land and Water Conservation Funds were used at the site. Private lands registered with the Town under Chapter 61, 61A, and 61B can be taken out of these special taxation programs at the will of the owner. If the owner decides to sell the property, the community has the first option to purchase, but this can be costly. Public lands purchased by water service providers for watershed and aquifer protection are considered protected.

## 5.1 Types of Open Space and Recreation Land Protection

In this section of the Open Space and Recreation Plan update, areas in Bourne that are significant for their open space, natural resource or recreational amenities have been highlighted. The inventory is inclusive of private and public sites (both developed and undeveloped) and is meant to be comprehensive.

According to the Division of Conservation Services, land that is protected (or in perpetuity) is typically owned by the Conservation Commission, a State conservation agency, a nonprofit land trust or if the Town was awarded state or federal money for the improvement of purchase of a specific piece of property. Some private property can also have a protected designation if it is indicated in the property deed, if the property has an Agricultural Preservation restriction or if the Department of Environmental Protection has placed a restriction on the property for wetland protection or conservation purposes. Land owned by other agencies is often times not protected. For example, many of the parks and playgrounds or baseball fields may not be permanently protected and in danger of development in the future.

More specifically, the types of programs below illustrate different types of protection that could be available to property in Bourne. Some of the programs are already in use such as Chapter 61.

**Article 97 Protection:** Article 97 protects publicly owned lands used for conservation or recreation purposes. In order for a property to be sold, transferred or converted to a

different use, Article 97 requires a vote of the Town in which the land use would be changed (by Conservation Commission, Parks Department, other, whichever is appropriate), a 2/3 vote at Town Meeting or City Council in support of the disposition, a 2/3 vote of the legislature in support of the disposition, they must demonstrate compliance with applicable funding sources and the municipality must file an ENF with MEPA.

**Conservation Restriction:** A conservation restriction is an agreement that is bound legally between a landowner and a “holder” or grantee. The landowner would agree to limit the amount and/or use of a specific property in order to protect the unique or specific conservation values that are evident on the property or important to the landowner or “holder.” A specified amount of time for the conservation restriction can be noted, or the conservation restriction can be in perpetuity. A conservation restriction is recorded at the Registry of Deeds.

**Easements:** An easement is typically listed on a property deed and it allows permanent access to a property for a specific purpose. It is a right of use, not a right of possession.

**Chapter 61:** Chapter 61 encourages preservation of agricultural, recreation and forest land in Massachusetts. Landowners can ensure the long-term protection of their property by receiving a tax benefit if they agree to the terms of Chapter 61. If an owner wants to take property out of Chapter 61 designation, the Town can recover the tax benefits given and they have the right of first refusal to purchase the property if the land is sold for residential, commercial or industrial purposes.

The following table is a listing of open space and recreational resources located in the Town of Bourne.

Inventory of Parcels of Conservation and Recreation Interest								
Site Name	Acres	Owner	Manager	Zoning	Grant Received? Funding?	Level of Protection	Public Access	Type of Facility/Condition
Town of Bourne								
Indian Trail	1.75	Town of Bourne	BOS	R40		Limited	Yes	Walking Cemetery
Indian Burial Ground	1.12	Town of Bourne		R40		Unknown	???	
Indian Trail	2.39	Town of Bourne		R40		Perpetuity	Yes	Conservation/Recreation
The Strand - Sagamore Beach	16.42	Town of Bourne	BOS	R40		Limited	Yes	Public Beach, Parking Lot
Clark Road Playground	16.15	Town of Bourne	BOS	R40		Limited	Yes	Playground, Baseball & Multi-Use Field, Parking Lot /Fair Condition
Carter Beal Conservation Area	29.70	Town of Bourne	BOS	R80, SDD, VB		Limited	Yes	ACEC Area, Passive Recreation, Trails, Benches
Carter Beal Conservation Area	51.38	Town of Bourne		R80, SDD, VB		Perpetuity	Yes	Conservation, Passive Recreation
Bournedale Woodlot	3.39	Town of Bourne	BOS	R80		Limited	Yes	Forested
Buzzards Bay Playground	8.06	Town of Bourne	BOS	R40		Limited	Yes	Playground, Fields, Tennis & Basketball Courts, Park, Passive Recreation/ Good Condition
Bourne Marina	10.57	Town of Bourne	BOS	R40		Limited	Yes	Marina Facility/Good Condition
South Taylors Point Beach	7.78	Town of Bourne	BOS	R40		Limited	Yes	Beach
Burial Hill	1.74	Town of Bourne	BOS	VB		Limited	Yes	Passive Recreation, Off Scenic Highway
Queen Sewall Cove Beach/Landing	2.51	Town of Bourne	BOS	R40		Limited	Yes	Small Beach, Playground, Parking, Boat Ramp, Open Space, Softball Field
North Taylors Point	0.84	Town of Bourne	BOS	R40		Limited	Yes	Beach, Shellfishing
Buzzards Bay Park	5.37	Town of Bourne	BOS	B2, R40		Limited	Yes	Park, Gazebo/ Good Condition
Canal Conservation Area	1.01	Town of Bourne	BOS	R40		Limited	Yes	Open Space, Water and Bike Path Access
Gray Gables Beach	4.33	Town of Bourne	BOS	R40		Limited	Yes	Beach
Gray Gables Park/Stackpole Park	0.54	??	BOS	R40		Limited	Yes	Open Park for Walking
Back River Marsh	2.30	Town of Bourne	BOS	R40		Limited	Yes	Conservation, Salt Marsh
Eel Pond Landing	0.22	Town of Bourne	BOS	R40		Limited	Yes	Boat Ramp/Poor Condition
Monument Beach	6.70	Town of Bourne	BOS	R40		Limited	Yes	Beach, Marina, Parking, Snack Bar, Bathroom/ Good Condition
Town Forest	148.80	Town of Bourne	BOS	R40		Limited	Yes	Trails, Watershed Area, Forest, Open Space
Monks Park Adjunct	1.81	Town of Bourne	BOS	R40		Limited	Yes	Open Space, Open Water, Coastal Bank, Shellfishing, Small Parking Area, Trails
Pocasset River	7.80	Town of Bourne	BOS	R40		Limited	Yes	Wetlands, Marsh
Shore Road Salt Marsh	1.10	Town of Bourne	BOS	R40		Limited	Yes	Conservation, Salt Marsh
Pocasset River Marsh	1.85	Town of Bourne	BOS	R40		Limited	Yes	River, Salt Marsh
Wings Neck Marsh	7.10	Town of Bourne	BOS	R40		Limited	Yes	Wetlands, Marsh
Lily Pond Beach & Access	0.69	Town of Bourne	BOS	R40		Limited	Yes	Beach, Water Access
Pocasset Marina	3.69	Town of Bourne	BOS	R40		Limited	Yes	Waterfront Facility, Marina, Parking/ Good Condition
Barlows Landing Beach	1.13	Town of Bourne	BOS	R40		Limited	Yes	Beach, Boatramp, Pier, Parking/Good Condition
Flax Pond Park & Access & Shoreline	2.79	Town of Bourne	BOS	R40		Limited	Yes	Open Space, Park, Pond
Lake Drive Park	1.18	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Picture Lake	6.48	Town of Bourne	BOS	R40		Limited	Yes	Beach/Open Space
Circuit Avenue Beach	4.50	Town of Bourne	BOS	R40		Limited	Yes	Beach, Parking/Good Condition
Squeteague Beach	2.50	Town of Bourne	BOS	R40		Limited	Yes	Beach
Leonard Wood Park	4.25	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Falmouth Avenue	0.59	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Sagamore Beach	0.13	Town of Bourne	BOS	R40		Limited	Yes	Beach
Keith Field	2.79	Town of Bourne	BOS	B2		Limited	Yes	Baseball Field, Parking/Good Condition
Electric Avenue Beach	1.03	Town of Bourne	BOS	R40		Limited	Yes	Beach, Shellfishing, Small Playground, Boat Ramp/Good Condition
Monument Neck	0.18	Town of Bourne	BOS	R40		Limited	Yes	Abuts Federal Open Space, Railroad ROW
Massasoit Avenue	0.03	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Patusset Point	1.08	Town of Bourne	BOS	R40		Limited	Yes	Very Small Beach
Red Brook Herring Run	0.38	Town of Bourne	BOS	R40		Limited	Yes	Open Space, Herring Run/Poor Condition
Taylor's Point Park	1.56	Town of Bourne	BOS	R40		Limited	Yes	Park
Buchanan Property	0.49	Town of Bourne	BOS	R40		Perpetuity	Yes	Beach Access, Walkway, Parking Lot
Clark Pond	1.68	Town of Bourne	BOS/ConCom	R40		Perpetuity	Yes	Open Space, Conservation
Little Bay Lane	0.53	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation
Snow Circle	0.33	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation
Town Forest	133.00	Town of Bourne	BOS	R40		Perpetuity	Yes	Town Forest, Trails
Pocasset Salt Marsh	15.83	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation, Salt Marsh
Patusset Point	2.20	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation, Beach Access
Bassetts Island	16.00	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation, Water Access
Monks Park	11.98	Town of Bourne	BOS	R40		Perpetuity	Yes	Open Space, Shellfishing, Beach
Clay Pond	6.40	Town of Bourne	BOS	R40		Perpetuity	Yes	Conservation, Water Access, Trails, Small Parking Area
Flax Pond Park	1.43	Town of Bourne	BOS	R40		Perpetuity	Some	Park, Wetland
Bourne Scenic Park	5.66	US Army Corps	Bourne Recreation Authority	R2		Unknown	Yes	Camping, Park, Canal Access
Aptuxet Trading Post	11.63	Town of Bourne	Bourne Historical Society	R40		Unknown	Yes	Trading Post Museum, Open Space, Parking
Pocasset River Marsh	4.13	Town of Bourne	BOS	R40		Unknown	???	Conservation, Wetland, Marsh
Sandwich Road/Gallo Ice Arena	0.5	Town of Bourne	Bourne Recreation Authority	R40, SDD		Unknown	Yes	Ice Arena, Parking, Canal Access, Passive Recreation
Bourne Public Library	5.85	Town of Bourne	BOS	R40		Limited	Yes	Multiuse Field, Open Space, Parking
Bournedale Herring Run	2.29	???	DNR	SDD, VB		Unknown	Limited	Herring Run, Parking
Cedar Point Landing	1.62	Town of Bourne	BOS	R40		Limited	Yes	Beach, Shellfishing
Chester Park	1.20	Town of Bourne	BOS	R40		Limited	Yes	Tennis, Swing Set, Small Field
Whitmore Playground	3.78	Town of Bourne	BOS	VB, R40		Limited	Yes	Playground, Baseball Field, Basketball Court

Inventory of Parcels of Conservation and Recreation Interest								
Site Name	Acres	Owner	Manager	Zoning	Grant Received? Funding?	Level of Protection	Public Access	Type of Facility/Condition
Salt Marsh Lane Landing	0.75	Town of Bourne	BOS	R40		Limited	Yes	Salt Marsh
Mashree Village Beach	6.54	???	BOS	R40		Unknown	Limited	Beach
Massasoit Avenue Landing	0.13	Town of Bourne	BOS	R40		Limited	Yes	Small Boat Ramp
OTHER OPEN SPACE								
Off of Williston Road	9.64	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Marsh	16.50	Town of Bourne	BOS	R40		Limited	Yes	Wetlands/Marsh
County Road	5.12	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Irwin Property	17.13	Town of Bourne	OS Acquisition	R40	May 2000 Town Meeting	Limited	Yes	Open Space Acquisition
Bournedale Road	0.19	Town of Bourne	BOS	R80, SDD		Limited	Yes	Former Chapter 61 Land
Studio Drive	0.24	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Van Bummel Road	0.24	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Old Dam Road	7.00	Town of Bourne	BOS	R40		Limited	Yes	Open Space
Off Buttermilk Way	0.06	Town of Bourne	BOS	R40		Limited	Yes	Town Beach/Recreation/Shellfishing
Fishway	0.70	Town of Bourne	BOS	R40		Limited	Yes	Wildlife Habitat/Conservation/Water Access
Timberknoll Road	0.59	Town of Bourne	BOS	R40		Limited	Yes	Open Space/Conservation
Megansett Road	14.38	Town of Bourne	BOS	R40		Limited	Yes	Open Space
South of Whimbrel Drive	2.03	Town of Bourne	BOS	R40		Limited	Yes	Residential Open Space
Cypress & Maple Street	0.49	Town of Bourne	BOS	R40		Limited	Yes	Residential Open Space
Heather Hill Road	1.28	Town of Bourne	BOS	R80, SDD	Tax Title	Limited	Yes	Open Space/Conservation
Harding Lot of Bournedale	0.83	Town of Bourne	BOS	R80		Limited	Yes	Open Space/Conservation
Wasque Realty Trust	35.70	Town of Bourne	OS Acquisition	SDD, R80	May 2000 Town Meeting	Perpetuity	Yes	Open Space Acquisition
Cape Schooner Property	50.47	Town of Bourne	OS Acquisition	SDD, R80	May 2000 Town Meeting	Perpetuity	???	Open Space Acquisition
Nuovo/Stephens Property	3.11	Town of Bourne	OS Acquisition	R80	May 2000 Town Meeting	Perpetuity	???	Open Space Acquisition
Seafarer/Nuovo Property	49.35	Town of Bourne	OS Acquisition	R80, SDD	May 2000 Town Meeting	Perpetuity	???	Open Space Acquisition
Scusset Beach Road	3.70	Town of Bourne	ConCom	R40		Perpetuity	Yes	Conservation/Recreation
Quinn Property	82.95	Town of Bourne	OS Acquisition	R80	May 2001 Town Meeting	Perpetuity	???	Open Space Acquisition
Bournedale Road	51.81	Town of Bourne	OS Acquisition	R80	Nov. 2004 Town Meeting	Perpetuity	???	Open Space Acquisition
Head of the Bay Road	75.12	Town of Bourne	ConCom	R80	May 2003 Town Meeting, Nov. 2004 Town Meeting	Perpetuity	???	Open Space Acquisition
Puritan Road	12.18	Town of Bourne	ConCom	R80, R40	May 2003 Town Meeting	Perpetuity	???	Open Space Acquisition
Off Deseret Drive	28.99	Town of Bourne	ConCom	R80		Perpetuity	???	Conservation/Wetland/Water Access
Hillside Avenue	1.58	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Recreation
Hunters Ridge Lots	3.05	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Open Space/Wetland
Pearl Property	5.05	Town of Bourne	OS Acquisition	R40	Nov. 2001 Town Meeting	Perpetuity	???	Open Space Acquisition
Sandwich Road	14.78	Town of Bourne	ConCom	SDD		Perpetuity	???	Conservation/Recreation
Jackson Property	12.50	Town of Bourne	ConCom	B3	Nov. 2001 Town Meeting	Perpetuity	???	Open Space Acquisition
County Road	61.78	Town of Bourne	ConCom	R40, B2		Perpetuity	???	Conservation/Wetland/Marsh
Back River Marsh/Road	11.75	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland/Marsh
Central Boulevard	1.11	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland/Marsh
Shore Road	46.32	Town of Bourne	ConCom	R40	Tax Title	Perpetuity	???	Conservation/Wetland
Harbor Drive	3.46	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Recreation
Island Drive	1.55	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland
Circuit Avenue	3.05	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland/Water Access
Depot Road	12.85	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation
Red Brook Harbor Road	18.91	Town of Bourne	ConCom	B2, R40		Perpetuity	???	Conservation
Route 28A	143.26	Town of Bourne	ConCom	B2, R40		Perpetuity	Limited	Conservation
Megansett Road	0.90	Town of Bourne	ConCom	R40		Perpetuity	Yes	Conservation/Water Access
Pinnacle Road	5.75	Town of Bourne	ConCom	R40		Perpetuity	Yes	Conservation/Wetland
Eel Pond Road/Shore	20.22	Town of Bourne	ConCom	R40		Perpetuity	Yes	Conservation/Water Access
Waterhouse Road	0.54	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation
Off Shaw Avenue	0.16	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Near Beach
Off Williston Road	7.55	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Marsh
Sachem Drive	1.53	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Near Marsh
Venn Lane	0.26	Town of Bourne	ConCom	R80		Perpetuity	???	Conservation
Old Forge Lane	2.18	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland
Sunny Lane	0.60	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Marsh
Kendrick Lane	1.27	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Marsh
Wings Neck Road	69.54	Town of Bourne	ConCom	R80		Perpetuity	???	Conservation/Marsh
Mercury Avenue	0.23	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland
Penobscot Avenue	0.06	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Marsh
Tax Title Property	0.26	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation
Willert Circle	1.56	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland/Stream
Harding Property	26.00	Town of Bourne	OS Acquisition	R80	May 2000 Town Meeting	Perpetuity	???	Conservation/Passive Recreation
Warren Road	1.19	Town of Bourne	ConCom	R40		Perpetuity	???	Conservation/Wetland/Marsh
188 County Road	3.78	Town of Bourne	ComPresAct	R40	CPA Vote Oct. 2005 Town Meeting			
Above Scenic Highway	26	Town of Bourne		R80, SDD		Perpetuity	???	Open Space Acquisition
Off Route 28	75.7	Town of Bourne		R40		Unknown	???	Open Space
Benedict Road Landing	0.34	Town of Bourne	BOS	R40		Limited	Yes	Conservation/Upland
Town Way to Pocasset River	0.09	Town of Bourne	BOS	R40		Limited	Yes	???
Bryant Road Landing	0.28	Town of Bourne	BOS	R40		Limited	Yes	Access to Pocasset River
Town Way to Wenaunet Bluff	0.33	Town of Bourne	BOS	R40		Limited	Yes	???
Jefferson Road Row	0.47	Town of Bourne	BOS	R40		Limited	Yes	???
Unknown	6.863	Town of Bourne		R40		Unknown	Limited	Open Space Acquisition (Multiple Parcels)

Inventory of Parcels of Conservation and Recreation Interest								
Site Name	Acres	Owner	Manager	Zoning	Grant Received? Funding?	Level of Protection	Public Access	Type of Facility/Condition
Total		1,676.11						
Bourne Conservation Trust								
MacArthur Boulevard	14.57	BCI	BCI	B2, B3, R40	Private	Perpetuity	Yes	Trails / Forest
Mashnee Road	5.13	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Wetland / Marsh
Paulinda Road	0.54	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Wetland / Marsh
Red Brook Terrace	33.70	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Recreation / Water Access
Thaxter Road	5.36	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Recreation / Water Access
Red Brook Harbor Road	3.30	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Water Access
Shore Road & County Road	1.50	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation
Depot Road	5.48	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation
Scraggy Neck Road	0.85	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation
Lawrence Island	7.80	BCI	BCI	R40	Private	Perpetuity	Yes	Recreation / Water Access / Beach
Waterhouse Road	0.52	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Wetland
Post Office Lane	1.20	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation
Barlows Landing Road	0.94	BCI	BCI	R40, VB	Private	Perpetuity	Yes	Conservation
Old North Road / Wings Neck	0.55	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation
County Road	31.70	BCI	BCI	R40, B2	Private	Perpetuity	Yes	Conservation
Shore Road	21.44	BCI	BCI	R40	Private	Perpetuity	Yes	Conservation / Recreation
Total		134.57						
Plymouth County Wildlands Trust								
Glacier Way	26.26	Plymouth County Wildlands Trust	PCWT	R80	Private	Perpetuity	???	Conservation / Deep Marsh
Goat Pasture Pond Area	98.19	Plymouth County Wildlands Trust	PCWT	R80	Private	Perpetuity	???	Conservation / Recreation
Head of the Bay Road Parcel	16.56	Plymouth County Wildlands Trust	PCWT	R80	Private	Perpetuity	???	Conservation / Recreation
Total		141.01						
Water District Property								
Off Pilgrim Road	9.42	North Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Church Lane	103.45	North Sagamore Water District	Water District	R80, SDD		Temporary	No	Watershed Protection
Winston Avenue	10.39	North Sagamore Water District	Water District	R80		Temporary	No	Watershed Protection
Little Black Pond Road	10.07	North Sagamore Water District	Water District	R80		Temporary	No	Watershed Protection
Off Herring Pond Road	22.00	North Sagamore Water District	Water District	R80		Temporary	No	Watershed Protection
Scenic Highway	13.32	North Sagamore Water District	Water District	R80, SDD		Temporary	No	Watershed Protection
Off Norris Road	0.32	North Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Squanto Road	0.49	North Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Mayflower Road	0.14	North Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Route 3	47.44	North Sagamore Water District	Water District	R40, B2, R80		Temporary	No	Watershed Protection
Waldons Road	23.90	North Sagamore Water District	Water District	R80		Temporary	No	Watershed Protection
Wellfield on Bournedale Road	48.03	Buzzards Bay Water District	Water District	R80		Temporary	No	Watershed Protection
Wellfield # 1	21.37	Buzzards Bay Water District	Water District	R80		Temporary	No	Watershed Protection
Wellfield # 2	12.79	Buzzards Bay Water District	Water District	R80		Temporary	No	Watershed Protection
Franklin Avenue	0.31	Buzzards Bay Water District	Water District	B2		Temporary	No	Watershed Protection
Main Street	0.69	Buzzards Bay Water District	Water District	B2		Temporary	No	Watershed Protection
Off Highland Avenue	0.83	Buzzards Bay Water District	Water District	B2		Temporary	No	Watershed Protection
Off Sandwich Road	12.26	South Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Freeman Lane	11.76	South Sagamore Water District	Water District	R40		Temporary	No	Watershed Protection
Valley Bars Road	34.52	Bourne Water District	Water District	R40		Temporary	No	Watershed Protection
MacArthur Boulevard	79.26	Bourne Water District	Water District	B2, B3		Temporary	No	Watershed Protection
Town Forest Road	25.08	Bourne Water District	Water District	R40		Temporary	No	Watershed Protection
County Road	310.92	Bourne Water District	Water District	R40, B2		Temporary	No	Watershed Protection
Route 28 & 28A	45.94	Bourne Water District	Water District	R40		Temporary	No	Watershed Protection
Barlows Landing Road	0.23	Bourne Water District	Water District	R40		Temporary	No	Watershed Protection
Total		844.91						
Department of Conservation & Recreation								
Scusset Beach Reservation	80.00	Commonwealth of MA	DCR	R40		Perpetuity	Yes	Open Space / Woodland / Marsh
Great Herring Pond	1.06	Commonwealth of MA	DCR	R80		Perpetuity	Yes	Water Access / Boat Launch
Bournedale Road	29.50	Commonwealth of MA	DCR	R80, SDO		Perpetuity	Yes	Open Space / Wildlife Habitat
Shawnee-Crowell State Forest	678.71	Commonwealth of MA	DCR	GD, R40		Perpetuity	Yes	State Forest
Sandwich Road	4.31	Commonwealth of MA	DCR	SDD, R40		Perpetuity	Yes	Conservation / Canal Access
Off Sandwich Road	5.48	Commonwealth of MA	DCR	R40		Unknown	???	Open Space / Canal View
Total		799.06						
Federal Government								



Inventory of Parcels of Conservation and Recreation Interest								
Site Name	Acres	Owner	Manager	Zoning	Grant Received? Funding?	Level of Protection	Public Access	Type of Facility/Condition
Hog Island/Mashnee Dike	68.53	ACOE	ACOE	R2		Perpetuity	Yes	Conservation/Wetland/Passive Recreation
Cape Cod Canal Access	559.34	ACOE	ACOE	R40, B2, GD, SDD		Perpetuity	Yes	Canal Access
Total	627.87							
Town of Sandwich								
Off Williston Road	0.64	Town of Sandwich	Town of Sandwich	R40		Perpetuity	Yes	Conservation/Wetland/Marsh
Total	0.64							
Barnstable County								
Pocasset Assisted Living Facility	72.50	Barnstable County	Barnstable County	R40		Limited	Yes	Assisted Living, Open Space
Total	72.50							
Educational Institutions								
Bourne High School, Bourne Middle School, Peebles Elementary	79.4	Bourne School Department		B2, R40, B4		Limited	Yes	Multi-use fields, softball field, baseball field, basketball courts, tennis courts
Cataunet Granmer School Lot	0.79	Bourne School Department		R40		Unknown	Yes	Tennis Court
Coady Junior High School/Waldorf Private School	8.39	Bourne School Department		R40		Limited	Yes	Fields, ballfields
Hoxie Elementary School	4.39	Bourne School Department		R40		Limited	Yes	Playground
Mass Maritime Academy	34.16	Department of Education		R40		Limited	Yes	Open Space, Multi-Use Fields, Swimming Pool, Gym
Regional Vocational Technical School at Otis Air Force Base	74.34	???		R40		Limited	Yes	Baseball Field, Multi-Use Field, Open Space
33.10	33.10	???		IN		Unknown	Yes	Open Space
Total	234.57							
Other								
Scraggy Neck Forest	77.91	???		R2		Temporary	No	???
Total	77.91							
Chapter 61 Land								
Chapter 61	23.29							
Chapter 61B	113.20							
Chapter 61A	631.05							
Total	767.54							
Privately Owned Open Space								
Total	854.81							
TOTAL BOURNE OPEN SPACE	6,231.51							

## Section 6.0 Community Vision

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## **6.0 COMMUNITY VISION**

### **6.1 Description of the Process**

The public participation approach to the Bourne Open Space and Recreation Plan update includes three components, monthly meetings with the volunteer Open Space Committee (made up of Bourne residents), holding a public forum for Bourne residents and conducting focus groups. Public participation is a component of the project that was strongly emphasized.

The Town of Bourne held a public forum facilitated by Beals and Thomas, Inc. for the Open Space and Recreation Plan update project on March 12, 2007 at the Bourne High School Library, Bourne, MA. The focus of the evening was to engage local residents in a discussion about open space and recreation resources in the community. The Chair of the Open Space Committee started the evening by welcoming attendees and providing a brief introduction. Beals and Thomas, Inc. then made a presentation that included a discussion of why the OSRP update is important, demographic data, open space data and open ended questions to help the audience think about what aspect of open space and recreation in the community is important. (A full summary of the public forum can be found in Appendix 3.)

In addition to the Public Forum, two Focus Groups were held in April 2007, one with the local Recreation Committee and one with a group of Bourne High School students. The purpose of the Focus Groups was to discuss with the Recreation Committee more specifically the strengths, weaknesses, opportunities and areas of improvement regarding programs, field space and participation in Bourne. The Focus Group conducted with the Bourne High School students provided an opportunity for them to provide their insight and perspective into the OSRP update project.

Beals and Thomas, Inc. discussed the goals and objectives of the 1997 OSRP with the Open Space Committee, at the public forum and with both of the Focus Groups to help determine what items are no longer relevant and what items would make sense to update and include in the 2008 OSRP. Several new goals have also been added based on the public participation component of this project and working with Town staff and the Open Space Committee.

### **6.2 Statement of Open Space and Recreation Goals**

Town character, the uniqueness of each different village, water access, better information about open space and recreation resources, wastewater treatment and preservation of natural resources were all mentioned a number of times throughout this planning process by participants at the Public Forum, Focus Groups and the Open Space Committee. Bourne's natural environment, its harbors, open spaces, scenic vistas and accessibility are all characteristics that make the community unique. The history and character of the Bourne can in part be preserved by providing continued opportunities to recreate and enjoy open space to residents and visitors.

Goals and objectives for the Bourne Open Space and Recreation Plan update were developed from evaluating a number of resources and from input at the Public Forum, Focus Groups and from the Bourne Open Space Committee. Beals and Thomas, Inc. also reviewed the 2006 Local Comprehensive Plan to determine what goals were specified a year ago that would pertain to the more specific Open Space and Recreation Plan project. In January 2007, the goals and objectives from the 1997 Open Space and Recreation Plan were discussed in detail at the monthly Open Space Committee meeting. The goals and objectives were also discussed at the March 2007 public forum where attendees were asked whether or not there was any validity to them a decade later. For the purposes of this project, goals were formed around a general vision or concept and objectives are more concrete ideas for accomplishing the stated goals. The action items that will be included in section 9.0 are specific activities that make achieving the goals and objectives realistic.

Bourne's major challenge is to protect the numerous sensitive natural resources and recreational amenities that exist and give the community character while also utilizing them to help promote sustainable development.

The primary goals of the Open Space and Recreation Plan update are to:

- ❖ Protect unique and sensitive community resources and acquire or otherwise ensure the protection of key parcels,
- ❖ Provide multiple-use, accessible facilities to all user groups, residents and visitors,
- ❖ Continue to educate and increase awareness of Bourne residents regarding conservation, land protection, natural resources and pollution of water supply,
- ❖ Work with neighboring towns, the Cape Cod region and the Commonwealth to further regional open space and recreation goals and projects.

In addition to the specific goals stated during this planning process, the Open Space Committee would also like to recognize and support the main goal stated in the 2006 Local Comprehensive Plan update that pertained to open space and recreation which was:

- The open space goal of the Bourne Local Comprehensive Plan is to preserve at least half of the remaining undeveloped land as open space for recreation, resource protection, wildlife habitat and groundwater recharge; to maintain the esthetic beauty and character of the community; and to limit the visual and fiscal impacts of over-development.
- The recreation goal of the Bourne Local Comprehensive Plan is to provide a wide range of opportunities for active and passive recreation to meet the needs and desires of residents and visitors of all ages, abilities and interests.



## Section 7.0 Analysis of Needs

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## **7.0 ANALYSIS OF NEEDS**

### **7.1 Resource Protection Needs**

The Town of Bourne is a unique community with regard to its location, recreational and open space amenities and sensitive natural resources. The community is not only home to over 21,000 residents (as of the 2007 Census according to the Town Clerk); it also welcomes hundreds of thousands of visitors every summer to Cape Cod. Bourne has an opportunity to continue acquiring additional properties (in addition to managing existing ones) that would add to the open space and recreation inventory as well as increase and enhance recreational programming and facilities. Local residents are proud of the numerous sensitive natural resources, like the designated ACECs for example, as well as the larger more obvious characteristics of the town like the Cape Cod Canal.

#### **Water Supply and Groundwater**

Bourne's water supplies are derived from groundwater sources that are highly vulnerable to contamination due to permeable soils and the absence of hydrogeologic barriers that can prevent contamination movement into aquifer recharge areas. Non-point source pollution from septic systems, businesses, hazardous waste, and improper disposal of chemical products are also threats to Bourne's water supplies.

Potential contaminate sources for the Buzzards Bay Water District, North Sagamore Water District and Bourne Water District are identified in Section 4.0 of the report. Bourne will need to continue to monitor these contaminants and the groundwater in these areas and work with the DEP to further improve water quality and prevent degradation.

The Town of Bourne has continued to take steps in terms of remediation of storm water discharges that contribute to water quality decline and shellfish and swimming area closures as detailed in Section 4.8.6. Water quality for shellfish and swimmers is something that needs to continue to be protected and monitored in the future. In addition, groundwater contamination from the Massachusetts Military Reservation Main Base Landfill Groundwater Plume needs to continue to be monitored and further technology utilized (such as the groundwater extraction system that was installed) to continue the remediation efforts.

#### **Wastewater Management**

The January 2007, Tighe & Bond prepared a Wastewater Management Study to identify wastewater management solutions that will facilitate the revitalization of Main Street Buzzards Bay and provide a framework for long-term wastewater management in greater Bourne. The report prioritized several areas of Bourne for sewer service in the future. The study identified the Buzzards Bay-Main Street/Hideaway Village areas as having an imperative need for such service and Monument Beach and Tahanto/North Shore/Hen Cove were identified as having near-term need for the service. Numerous factors were evaluated to determine areas of need and for additional information, contact Sallie Riggs, Executive Director of the Bourne Financial Development Corporation. As of September

2007, the report is still being discussed and the Board of Selectmen have not officially adopted the study.

### **Invasive Species**

On Cape Cod, invasive species are the most significant threat to biodiversity because of the disruption they cause to native species. Massachusetts did implement a ban on the sale and importation of over 140 plants in 2006, however, existing invasive plant populations will continue to spread. Control, eradication options and education of residents and visitors is needed to help manage invasive species (see Section 4.4.7 for more information).

### **Other Needs**

According to NHESP, Bourne has both coastal and inland natural resource areas. Coastal areas include dune systems, barrier beaches and salt marshes and inland resources include Atlantic white cedar swamps and vernal pools for example. Coastal Plain Pondshores, Sandplain Heathlands and Scrub Oak Shrublands, as well as other unique natural communities, all either occur in Bourne or have a high likelihood of being in Bourne and should be priority areas for conservation.

Bourne should continue to work with the Massachusetts Estuaries Project (MEP) regarding managing nitrogen to coastal embayments. The addition of excessive amount of nitrogen to coastal waters from human sources is one of the most serious long-term problems threatening Buzzards Bay. The areas of Buzzards Bay most affected are poorly flushed coastal embayments, particularly those areas with significant potential for new development. Currently, MEP is evaluating the Pocasset River and Pocasset Harbor/Hen Cove/Red Brook Harbor to determine the specific problems that are affecting the estuaries. Typical problems include changes in water quality and the buildup of invasive weed and algal growth causing fish kills, closed beaches, destroyed productive shellfish areas and creating aesthetically displeasing waters that adversely affect the valuable tourist industry and coastal property values. The Town should continue to work with MEP, monitor the projects and whenever possible, implement recommendations.

## **7.2 Land Resources**

### **Demand for Open Space and Conservation Land**

Bourne has slightly more than 3,000 acres of protected open space. This represents approximately 11% of Bourne's total area. Physically, most of these lands are located south of the bridges, with a deficiency in the dense villages of Buzzards Bay, North Sagamore and South Sagamore.

These protected lands provide a wide range of functions, from preservation of environmentally and culturally sensitive resources to buffering developed areas and providing opportunities for recreation. As the community grows into the next century, demands for these areas will increase and overuse at the Town's most popular areas (Four



Ponds, Leary, and Carter Beal) may lead to their degradation without implementation of management strategies and regular maintenance. Town-wide development can also affect both protected and unprotected open space resources, resulting in traffic congestion, degradation of water quality, loss and/or fragmentation of critical habitat areas, loss of community character and increased demand for municipal services.

### Land Acquisition Needs

The 1997 Open Space and Recreation Plan (OSRP) developed a list of priority open space parcels targeted for acquisition. Parcels were ranked based on a number of factors including their location within watershed zones or near a public well, relative habitat value, development potential, location relative to other protected parcels, and tax title status. For the 2007 update, the Open Space Committee again was interested in updating and ensuring that they had a system for targeting and prioritizing land for future property acquisition. In lieu of identifying specific parcels for this project, the Open Space Committee decided to continue to use its criteria used for the 1999 ranking sheets which is listed in the table below.

**Table: Land Acquisition Prioritization**

<b>Criteria</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Score</b>
Water Supply	Within 1,000 feet of public well or well site (30)	In watershed protection zone (20)	Within recharge zone (10)	
Flood Plain	Velocity Zone (20)	Zone A (10)	Zone X (5)	
Agricultural	Operating Farm (20)	Chapter Lands, 61, 61A, 61B (10)	Other (5)	
Linkage	Current linkage to waterfront, conservation or protected land (20)	Potential linkage to waterfront or conservation land (10)	Other (5)	
Recreation	Strong need land appropriate (10)	Suitable if modified (5)	Not suitable (0)	
Urban Green Space	Open land in densely settled area, suitable for pocket park (20)	Not densely settled area, suitable for pocket park (10)	Not likely (0)	
Beach Front	Yes (20)	No (0)	No (0)	
Wildlife Habitat	Endangered or Rare Species (20)	Part of wildlife corridor (10)	Other (5)	
Wetlands	Yes, upland buffer greater than 50 feet (20)	Yes, buffer less than 50 feet (10)	No (5)	
Development Potential	High (20)	Medium (10)	Low (5)	
Scenic Value	High (20)	Medium (10)	Low (5)	
Local Preference	High (20)	Medium (10)	Low (5)	
Buildings Present	High (20)	Medium (10)	Low (5)	
Unique, Townwide, Historic or Public Value	High (5)	Medium (10)	Low (20)	
			<b>Total Score</b>	

<b>High Priority</b> Land Acquisition Total Score:	Range of 200 to 136
<b>Medium Priority</b> Land Acquisition Total Score:	Range of 135-56
<b>Low Priority</b> Land Acquisition Total Score:	Range 56 or less

Recommended additional criteria or property characteristics that the committee should consider when looking at property for acquisition in the future includes:

- If the property is in or adjacent to an Area of Critical Environmental Concern (ACEC),
- In addition to the wildlife habitat criteria, if the property is in a specifically identified NHESP priority or estimated habitat area,
- Additional wetland criteria should be if the property contains wetlands or lands subject to the Wetlands Protection Act or Rivers Protection Act,
- If the property contains a vernal pool,
- If the property provides a buffer to minimize the disruption of ecological processes on it or abutting lands,
- If the property will provide accessibility with ADA standards,
- If the property already contains trails or linkages or would serve the purpose,
- If the property will be available for public use for active or passive outdoor recreation,
- If the property contains significant archaeological or historic resources based upon the State or National Register of Historic Places or the Massachusetts Historical Commission's inventory,
- If the property maintains a sense of agricultural tradition or rural character,
- If the property provides a sense of openness or scenic view, if it is isolated from roads/structures and serves as a buffer to other land uses or if the property would enhance the scenic aspect of an existing open space parcel.

### 7.3 Recreation and Community Needs

Enhancing, maintaining and preserving the recreation amenities that currently exist in the Town of Bourne is an important goal of this OSRP update. The community is somewhat unique in that each village in the community has some type of recreational amenity, whether it is a baseball field, playground or local beach.

#### Open Space and Recreation Plan Public Forum

In March 2007 at the Public Forum held for this project, a number of needs were identified by attendees in terms of open space and recreation. Field space for sports activities and field maintenance and funding for upkeep and repairs were mentioned numerous times as unmet needs. Several months after the public forum, Bourne passed at town meeting the expansion of two existing fields behind the Middle School and the addition of three more fields for a total of five multipurpose fields to be used by the school system and other local sports teams. All of the fields will be natural turf and they will be irrigated. The project is being funded by the Community Preservation Act and is

anticipated to be completed sometime in 2008. The addition of this multipurpose field space in the Town of Bourne helps to mitigate what in the past, has been a significant recreation need.

### **Recreation Facilities and Programs**

The Town of Bourne employs a full time Recreation Director and an active volunteer Recreation Committee. The current Recreation Director has been managing the department with oversight of the Recreation Committee for the past four years. The budget for the Recreation department for FY2007 was \$92,000.

According to the Town Bylaws Section 1.7.3 the Recreation Committee has numerous responsibilities, some include:

- Reviews all requests from private organization for town funding of athletic and recreation programs,
- Transmits its recommendations therefore to the Selectmen and finance committee in the form of its annual budget submission,
- May develop town sponsored athletic and recreation programs, and
- Develops, and regularly updates, a written master plan for development and coordination of recreation programs and utilization of recreation facilities for all age groups in the town.

In addition, the Recreation Committee also:

- Votes on actions to be undertaken by the Recreation Director,
- Discusses local organizations and volunteer groups that pertain to recreation,
- Permits field use, and
- Develops guidelines for volunteer organizations to follow if groups want to obtain a field permit.

Listed below is a general summary (not all inclusive) of the types of recreational amenities available to residents of Bourne. (Note not all are owned or managed by the Town of Bourne.)

Baseball/Softball Fields:

Keith Field, Doran Park, Cody Field, Monument Beach, Clark Field, Queen Sewell, Whitmore, Bourne High/Middle School, Eldridge Memorial Park, Ordello Swift Field

Skateboarding Park:	Located behind Veterans Memorial Community Center
Ice Rink:	Gallo Ice Arena
Soccer/Football Fields:	Bourne High/Middle School, North Sagamore Playground, Clark Field, Cody Field, Ordello Swift Field
Basketball Courts:	Pocasset Playground, Veterans Memorial Community Center (indoor), Buzzards Bay, Whitmore, Bourne High/Middle School, Bourne Town Hall, Chester Park, Eldridge Memorial Park, Gray Gables, North Sagamore Playground at Clark Field, Waldorf School, Upper Cape Tech
Tennis Courts:	Pocasset Playground, Buzzards Bay, Chester Park, Peebles Elementary School, Bourne Town Hall, Cataumet Schoolhouse, Eldridge Memorial Park, Keith Field, North Sagamore Playground at Clark Field
Playgrounds:	Queen Sewell, Electric Avenue Beach, Chester Park, Whitmore, Eldridge Memorial Park, North Sagamore Playground at Clark Field, Washington Park
Swimming:	Local Beaches, MA Maritime Academy
Trails:	Indian Trail, Carter Beal, Canal Conservation Area, Town Forest, Monks Park, Clay Pond Area, Four Ponds
Beaches:	Barlow's Landing Beach, Buzzards Bay, Gray Gables, Hen Cove, Monks Park, Monument Beach, Queen Sewell, Sagamore Beach, Taylor's Point Picture Lake (aka Flax's Pond), Monks Park
Passive Recreation:	Buzzards Bay Park, Gray Gables Park, Monks Park, Picture Lake, Town Forest
Campgrounds:	Bourne Scenic Park, Bayview Campground
Public Golf Course:	Brookside

Running Track: Jackson Field at Peebles Elementary School

Participation in local sports and local recreational programming is excellent in the Town of Bourne. The Recreation Department is responsible for overseeing the summer and school vacation programming for the Town and there is coordination with the DPW regarding maintenance of recreational amenities like fields and playgrounds. Programming provided by the Recreation Department includes:

- Musical Theatre Productions
- Tae-Kwon Do
- Swimming Lessons (not run by the Recreation Department separate entity within the Town)
- Tennis Lessons
- Volleyball Clinic

Sports that are available for Bourne youth during the various sports seasons include:

- Bourne Youth Baseball
- Bourne Babe Ruth
- Bourne Pop Warner
- Bourne Girls Youth Softball
- Bourne Youth Soccer
- Canal Youth Hockey, Boys and Girls
- Bourne Skating Club
- Cheerleading for Pop Warner
- Cape Cod Swim Club
- Bourne Youth Lacrosse
- Bourne Youth Hockey
- Bourne Swish Basketball

The Recreation Director tries to collaborate as much as possible with other organizations or individuals in the community to provide outstanding programming. For example, at the fall Volleyball Clinic, she utilizes the Bourne High School Volleyball Coach and Varsity Volleyball players to help teach participants. Information about programming is distributed by flyers that are sent out through the local schools and advertising in the local newspaper and on the town website. Participants in these programs are mostly children in grades K-8; however a number of the events are family focused such as the annual trip to Boston to attend a Red Sox game. Finding facility space for programming can often be a challenge, the Recreation Director utilizes the local school facilities as much as possible in addition to the Bourne Veterans Memorial Community Center (when it is not being used by the Council on Aging).

There are a number of local organizations that have taken on their own responsibility for organizing and maintaining some of the baseball fields. The Town of Bourne does not charge user fees for fields and these separate organizations often pay for their own utilities (night-time lighting, electricity for score boards).

### **National Park Land Standards<sup>278</sup>**

According to the National Park Land Standards, below is a guideline for what types of amenities a typical community should have in terms of recreation based on their population size. For comparison purposes, the standards are listed below so that the Town of Bourne can further consider what types of facilities it may need in the future.

<b><u>Facility</u></b>	<b><u>Area Needed</u></b>	<b><u>Units per Population</u></b>	<b><u>Service Area</u></b>
Basketball Court	7,280 sq. ft.	1 per 5,000	1/4-1/2 mile
Tennis Court	1 court	1 per 2,000	1/4-1/2 mile
Volleyball	4,000 sq. ft.	1 per 5,000	1/4-1/2 mile
Baseball	1.2 acres minimum	1 per 5,000	1/4-1/2 mile
Football	1.5 acres	1 per 20,000	20 min travel
Soccer	1.7-2.1 acres	1 per 10,000	popularity level
Softball	1.5-2 acres	1 per 5,000	1/4-1/2 mile
Multi-use Court	9,840 sq ft	1 per 10,000	1/4-1/2 mile
Swimming Pool	2 acres minimum	1 per 20,000	30 min travel
Trails	1 trail system per region		

### **Bourne Council on Aging (COA)<sup>279</sup>**

Recreational programming in Bourne is available for not only the local youth, but for the older population as well thanks in part to the Bourne Council on Aging. The COA is located in the Bourne Veterans Memorial Community Center located on Main Street in Buzzards Bay. The COA annually serves approximately 5,000 Bourne residents. The Friends of Bourne Council on Aging is a nonprofit organization that was founded in 1979 to enhance the programs and services provided by the Council on Aging. The Friends do a tremendous amount of fundraising for the COA like the annual Holiday Fair.

Programming at the COA changes from month to month and ranges from physical activity programming (Senior Stretch, Exercise and Chat) to clinics (blood pressure, health screening, tax preparation) to mystery rides (bus driver takes a group out for an afternoon) to educational programs. Additional programs include computer classes, crafts, quilting, knitting, woodcarving, line dancing and support groups for diabetes and grieving. Some of the most popular programs are the exercise programs, art class, current events discussions and the Triad program. Triad is a commitment shared by chiefs of police, the sheriff, senior leaders and affiliated organizations. Working together, they

<sup>278</sup> NRPA Standards, School of Park and Recreation Management, INTERNET  
[[http://www.ci.big-spring.tx.us/Recreation/park\\_standards.html](http://www.ci.big-spring.tx.us/Recreation/park_standards.html)], March 2007.

<sup>279</sup> Council on Aging Assistant to Mary C. McCrann, Beals and Thomas, Inc. 22 Jan 2007

reduce elder victimization and increase law enforcement services to older persons. In Bourne seniors to work with the DPW and COA to help define things about daily life that Bourne seniors perceive to be a problem. For example, T.R.I.A.D. volunteers worked with the local Fire Department to educate seniors about smoke detectors and they worked with DPW to put in crosswalks at key locations around town.

Many seniors in Bourne participate in activities outside of the Council on Aging facility as well such as shellfishing at local beaches, walking, attending concerts and functions at the park on Main Street, Buzzards Bay and there is even a local bicycling group that is extremely active for those seniors who are physically able to participate called Bay Area Senior Cyclists.

### **Bourne High School Student Focus Group**

On April 30, 2007, Beals and Thomas, Inc. conducted a Focus Group with eight Bourne High School students to discuss open space and recreation in the community. The students were asked for their comments on what their favorite place is in Bourne, what they perceived to be as unmet recreational needs, what kind of activities they thought their peers would participate in and for any other information they wished to share. According to the Focus Group, some of their favorite places in Bourne are:

- Cape Cod Canal
- Monks Park
- Gray Gables Beach
- Buzzards Bay Theatre
- Hoxie School
- Entire Cataumet area
- Scraggy Neck
- Gym at the Bourne Veterans Memorial Community Center
- Clark Playground at Sagamore Beach
- Monument Beach

Activities that teenagers are participating in at the places listed above include bike riding, running, hanging out with friends, practicing soccer and enjoying the peaceful surroundings. Several significant needs were identified by the students, including:

- A music venue/place for local bands to play live music (the stage in Onset was mentioned as a good example)
- A more central place to hang-out, Bourne's downtown area is "like a highway." The Falmouth Main Street area was given as an example of a more walkable, fun place for teenagers to gather.
- A Recreation Center with amenities such as a café, basketball area, pool tables, arcade, computer space, study space, foosball, ping pong, stage area and place to study.



- More fields and fields in better conditions.
- Regarding existing fields, better amenities and seating and bathrooms or outhouses.
- More activities for teenagers on the South Sagamore side of the bridge.
- More recreation department sponsored or school sponsored trips to areas such as Six Flags, New York City, ski resorts, students could sign up at lunch or at the main office.
- More opportunities for students to put in volunteer hours such as tutoring or mentoring other students at a facility such as a Recreation Center.
- Better communication with local teenagers (they are willing to participate in discussions about additional recreational opportunities).

### **Bourne Department of Natural Resources (DNR)**

The Town of Bourne's Department of Natural Resources was established in 1972 to enforce Federal, State and Town laws, bylaws, rules and regulations pertaining to conservation, boats, dogs, fish & game, herring, shellfish, waterways and wetlands; and to manage, protect, enhance, and educate the public regarding them. Assisting boaters in distress and responding to other maritime emergencies, maintaining Town navigational aids, operation of the Monument Beach, Taylor Point and Pocasset River Marinas, operation of the Pumpout Boat Program, maintaining the mooring registration system, maintaining the beach sticker system, maintaining the shellfish permit system, and the management and propagation of the shellfish beds are additional functions that the DNR performs.

The Open Space Committee should review with DNR and the Town Planner the full plan and determine if it can be of assistance in either implementing recommendations or re-prioritizing areas for protection, acquisition or improvement. For example, one weakness identified in the DNR plan draft is that there is a lack of planning and management regarding facilities and equipment at Monument Beach. The Open Space Committee could assist DNR in applying for Community Preservation Act funding or other monies to improve facilities and equipment.

### **Needs/Areas of Improvement**

Areas of need in the Town of Bourne regarding open space, recreation and natural resources include:

- More outreach to seniors on the Cape Cod side of the bridge. A satellite Council on Aging office may be appropriate.
- A dedicated facility for recreational programming (there is no designated facility for the Recreation Director to utilize for programming). Currently, the director coordinates with the schools and there is a good relationship there, but any school related activity always comes first.
- Adding another staff person to the Recreation Department would be ideal to help with the many responsibilities of the Recreation Director and programs.

- Improvement of access to information about open space and recreational programming. The user friendliness of town website could be improved, particularly for recreational programming.
- Accessibility for handicapped individuals at a number of facilities in Bourne, which have been identified in the ADA Study section of this report. Considering applying for CPA money to fund improvements may be appropriate.
- Finding and utilizing additional sources of funding. The recreation director should review and research potential grant funding opportunities listed in this plan and set up a system for identifying which grants may be applicable to Bourne, monitor the grant type, submission deadlines, enlist local support and keep the Town and CPC informed of grants that may require matching funds.
- Improved coordination and communication amongst the various boards, departments and key stakeholders in Bourne involved with open space and recreation.

#### 7.4 Potential Funding Sources

There is a wealth of funding sources available through the Massachusetts Department of Conservation and Recreation (DCR) that the Town of Bourne may want to consider utilizing for future open space and recreation acquisitions and relevant projects. Below is a list of the many programs that exist. The Open Space Committee and the Recreation Committee should consider assigning several committee members to monitor grant funding opportunities and coordinate accordingly with the Town Planner and Recreation Director. Additional information can be obtained from <http://www.mass.gov/dcr/grants.htm>.

*Greenways and Trails Demonstration Grants Program* – According to the Department of Conservation and Recreation, greenways are corridors of land and water that protect and link a variety of natural, cultural, and recreational resources. The Division of Conservation and Recreation provides grant awards to municipalities, non-profits and regional planning agencies to support innovative projects, which advance the creation and promotion of greenway and trail networks throughout Massachusetts. DCR provides grants of up to \$5,000 to non-profit organizations, municipalities, and regional planning associations to support innovative greenway and trail projects throughout Massachusetts. DCR will also consider requests of up to \$10,000 for multi-town greenway and trail projects. These additional funds are intended to promote linkages across town boundaries and foster partnerships among neighboring communities. This grant program was not funded for 2007, however, it should be monitored for future grant funding rounds. <http://www.mass.gov/dcr/stewardship/greenway/grants.htm>

*Recreational Trails Grant Program* - The Recreational Trails Program, part of the federal "Transportation Efficiency Act for the 21st Century (TEA-21)," provides for the transfer of fuel tax revenue generated by the use of off-highway vehicles and in backcountry camping to a statewide grants program. These grants provide reimbursement to non-profit organizations, government agencies and municipalities for a variety of trail protection,

construction, and stewardship projects. Recreational Trails Grants must be submitted this year by October 1, 2007.

<http://www.mass.gov/dcr/stewardship/greenway/regionalGrants.htm>

*Flood Management Grants* – The Federal Department of Flood Hazard Management, in coordination with the Massachusetts Emergency Management Agency, offers two grant programs to local government in order to reduce the risks and costs of natural disasters, especially floods, on homeowners and community infrastructure. These programs include pre-disaster grants through the annual Pre-Disaster Mitigation Program and post-disaster grants through the Hazard Mitigation Grant Program (HMGP).

<http://www.mass.gov/dcr/stewardship/mitigate/grants.htm>

*Lake and Pond Grant Program* – The Lake and Pond grant program awards grants for the protection, preservation and enhancement of public lakes and ponds in the Commonwealth. A maximum grant of \$25,000 is available to eligible applicants on a 50/50 cost-sharing basis. The grant program helps municipalities and local organizations that are struggling to meet the challenges of providing long-term solutions for lake and ponds management.

<http://www.mass.gov/dcr/waterSupply/lakepond/lakepond.htm>

*Urban Forest Planning and Education Grants* - The goal of the Urban Forestry program is to assist communities and nonprofit groups in building support for the long-term protection and management of community trees and forests. The USDA Forest Service provides the grant funds that the DCR administers with guidance from the Massachusetts Community Forestry Council. A maximum of \$10,000 is available per project.

<http://www.mass.gov/dcr/stewardship/forestry/urban/urbanGrants.htm>

*Rivers and Harbors Grant Program* - A statewide program of matching grants from DCR's Office of Waterways to towns and municipalities for design and construction to address problems on coastal and inland waterways, lakes and great ponds.

<http://www.mass.gov/dcr/grants.htm>

The Division of Conservation Services (DCS) also administers several grants that the Town of Bourne may be interested in pursuing. According to the DCS website (<http://www.mass.gov/envir/dcs/default.htm>), they are:

*Massachusetts Self-Help Program* - The Self-Help program started in 1961 to help conservation commissions acquire land for natural resource and passive outdoor recreation purposes. Lands acquired may include wildlife, habitat, trails, unique natural, historic or cultural resources, water resources, forest, and farm land. Compatible passive outdoor recreational uses such as hiking, fishing, hunting, cross-country skiing, bird observation and the like are encouraged by this grant program. Projects that are applying for funding must allow access by the general public (a requirement). This state program

pays for the acquisition of land, or a partial interest (such as a conservation restriction), and associated acquisition costs such as appraisal reports and closing costs.

<http://www.mass.gov/envir/dcs/selfhelp/default.htm>

*Massachusetts Urban Self-Help Program* - The Urban Self-Help Program started in 1977 to assist cities and towns in acquiring and developing land for park and outdoor recreation purposes. Any town with a population of 35,000 or more year-round residents, or any city regardless of size, that has an authorized park /recreation commission and conservation commission, is eligible to participate in the program. **Communities that do not meet the population criteria listed above may still qualify under the "small town," "regional," or "statewide" project provisions of the program.** Only projects that are to be developed for suitable outdoor recreation purposes, whether active or passive in nature, shall be considered for funding. Grants are available for the acquisition of land, and the construction, restoration, or rehabilitation of land for park and outdoor recreation purposes such as swimming pools, zoos, athletic play fields, playgrounds and game courts. Access by the general public for the proposed project is required.

<http://www.mass.gov/envir/dcs/urban/default.htm>

*Massachusetts Land and Water Conservation Fund* - The Federal Land & Water Conservation Fund (P.L.88-578) provides up to 50% of the total project cost for the acquisition, development and renovation of park, recreation or conservation areas. Municipalities, special districts and state agencies are eligible to apply. Nearly 4000 acres have been acquired and hundreds of parks renovated using the \$90.5 million that Massachusetts has received from the state side portion of the federal program since 1965. DCS administers the state side Land & Water Conservation Fund program in Massachusetts. Access by the general public for proposed projects is required. To apply for a park acquisition or park development project grant, see the Recreation Application Package. To apply for a conservation acquisition grant, see the Conservation Application Package. <http://www.mass.gov/envir/dcs/landwater/default.htm>

The National Fish and Wildlife Foundation offers two different types of grant programs, they include:

*Keystone Initiative Grants* – The National Fish and Wildlife Foundation seeks to achieve measurable outcomes on a select set of conservation issues through our Keystone Initiatives. Within each of the initial Keystone Initiatives (i.e., Birds, Freshwater Fish, Wildlife & Habitat, Marine & Coastal), the Foundation has established specific funding priorities. Federal, state, and local governments, educational institutions, and nonprofit organizations are welcome to apply for matching grants twice annually, in accordance with the Keystone Initiative Grant guidelines. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal

match. For more information, go to the following website:  
[http://www.nfwf.org/AM/Template.cfm?Section=Keystone\\_Initiatives\\_Grant\\_Guidelines](http://www.nfwf.org/AM/Template.cfm?Section=Keystone_Initiatives_Grant_Guidelines)

*Special Grant Programs* - In addition to the general matching grant, the Foundation administers a number of special grant programs with specific guidelines and time-lines. If your project does not meet the criteria of any program described below, please consider applying under the general matching grant program. Also, please note, if your project is not funded under the grant program for which it was submitted, Foundation staff may move your project to the general matching grant program or a different special grant program if it has the potential of being funded under it. Program deadlines are listed for the most recent grant cycle and are updated when a new call for proposals is released. For more information, go to:

[http://www.nfwf.org/AM/Template.cfm?Section=Browse\\_All\\_Programs](http://www.nfwf.org/AM/Template.cfm?Section=Browse_All_Programs)

## 7.5 State Open Space and Recreation Efforts

In 2000, the Commonwealth of Massachusetts prepared a document called the *Statewide Comprehensive Outdoor Recreation Plan* (SCORP). The SCORP document looks at open space and recreation from a regional perspective. The purpose of the document is to help cities and communities in Massachusetts better direct local investment into protecting and enhancing open space and recreational amenities. Bourne is located in the Cape Cod and the Islands region of the report which as a whole as a fairly high percentage of recreation and protected land (42%).

The Cape Cod and the Islands region is fortunate to have a variety of open space, natural and recreational resources. According to the SCORP report, it ranked the highest in popularity for swimming and walking activities. Other common activities that residents and visitors to the region participate in include sight-seeing, wildlife and nature study, fishing, golfing, road biking, hiking and picnicking. Low levels of participation were recorded for baseball, ice-skating, soccer, running, jogging and photography which may come as a surprise; however there are a large number of older adults and retirees that reside in communities on Cape Cod.

Specifically mentioned in the SCORP report is the state involvement with Bourne, Falmouth and Mashpee regarding the clean-up effort at the Massachusetts Military Reservation. Groundwater contamination at the site has occurred over a number of years due to the site's use as a military facility. Formerly viewed as not having much value, the reservation (state-owned) is now viewed as a major ecological resource due to its pine barren and aquifer.

With the wide variety of natural resources and open space amenities, Cape Cod residents are fortunate in that they do not have to travel far to utilize them. Compared to other regions throughout the state, Cape Cod sees a higher user level of its wildlife conservation areas, historic and cultural sites and bikeways. In terms of funding, residents feel that restoring and improving existing outdoor recreational areas,

maintaining existing facilities, improving access for people with disabilities and adding environmental education programs is a good way to spend dollars.

In terms of facilities need, Cape and Island residents indicated that more swimming, road biking, walking, playground and tennis facilities are necessary. Since Cape Cod has numerous public beaches and swimming areas, better access and parking to these areas could be the underlying issue for more swimming facilities. Many of the regional needs for Cape Cod and the Islands are echoed in the local needs specific to the Town of Bourne.

## 7.6 Management Needs

Moving forward, in order to ensure successful implementation of the 2007 Open Space and Recreation Plan update, outstanding communication will need to be paramount between boards, committees, town staff and local residents. The Board of Selectmen, Town Administrator, Town Planner, Conservation Commission, Open Space Committee, Recreation Committee, Recreation Director, Community Preservation Committee, Department of Natural Resources, Planning Board and Council on Aging all need to make a commitment to work together so that the goals, objectives and action items of this plan can be addressed and attained. In order to set the stage for good communication, a specific entity or contact in the Town of Bourne should be assigned to oversee the implementation of the overall OSRP. A committee consisting of members of the Open Space Committee and the Recreation Committee makes the most sense however may not be feasible. At the minimum the Town Administrator should oversee and direct department heads to spearhead and implement the goals and action items listed in this plan.

The Town of Bourne is fortunate to have a number of non-profit/volunteer organizations that take the initiative to do extensive work in the community in terms of conservation, education and natural resource protection. Some of the organizations include:

**Bourne Conservation Trust (BCT):** A private nonprofit land trust with a primary objective of acquiring land and leaving it in its natural state to protect habitats, provide groundwater recharge, preserve rural ambience, and make it available for recreational and educational purposes. The BCT owns and maintains over 200 acres of open space. <http://www.bourneconservationtrust.org/>

**The Wildlands Trust of Southeastern Massachusetts:** The Wildlands Trust actively seeks to permanently protect land with significant natural and scenic resource value using techniques such as land donations, conservation restrictions (also known as conservation easements), trade lands, and other conservation methods. The Trust's primary focus areas encompass Plymouth and Bristol counties, but it is empowered to protect land in Barnstable and Norfolk counties also. <http://www.wildlandstrust.org/index.html>

One way that Bourne could take some of the burden of managing and supporting the Open Space and Recreation Plan away from existing departments that are already responsible for providing a tremendous amount of services to the town (primarily the Board of Selectmen, DPW, the Conservation Commission, the Recreation Committee and local volunteers) is by partnering with non-profits and encouraging the creation of “Friends of” groups. Non-profit organizations are often the only groups eligible for certain types of funding sources or grants.

Partnering with existing non-profit groups to apply for monies for certain projects may be a viable option towards preservation or enhancement of specific areas. In addition, the management of such areas (conservation/public lands) typically falls under the umbrella of the Conservation Commission, Board of Selectmen or another designated organization that is often times equally busy. Encouraging the creation of “Friends of” groups (for example Friends of Monks Park or Friends of Four Ponds) would transfer the property management from the town to the new organization that would actively manage a piece of land assigned by the Board of Selectmen.



## Section 8.0

### Goals and Objectives

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*Ballfield, Photo By: Mary McCrann*

## **8.0 GOALS AND OBJECTIVES**

Goals and objectives for the Bourne Open Space and Recreation Plan update were developed from evaluating a number of resources and from input at the Public Forum, Focus Groups and from the Bourne Open Space Committee and Recreation Committee. In January 2007, the goals and objectives from the 1997 Open Space and Recreation Plan were discussed in detail at the monthly Open Space Committee meeting. The goals and objectives were also discussed at the March 2007 public forum where attendees were asked whether or not there was any validity to them a decade later. For the purposes of this project, goals were formed around a general vision or concept and objectives are more concrete ideas for accomplishing the stated goals. The action items in section 9.0 are specific activities that make achieving the goals and objectives realistic.

Beals and Thomas, Inc. also reviewed the 2006 Local Comprehensive Plan to determine what goals were specified a year ago that would pertain to the more specific Open Space and Recreation Plan project.

### **MANAGEMENT**

**GOAL 1: Formally designate and entity or individual to help monitor and orchestrate implementation of the 2008 Open Space and Recreation Plan with approval of the Board of Selectmen and Town Administrator.**

- Have the Open Space Committee and Recreation Committee work together on the OSRP implementation initiative.
- Continue to recruit new members of the Open Space Committee who can maintain a high level of commitment to the other members and the task,
- Inform other local Boards and Committees (Conservation Commission, Planning Board, DPW, Board of Health, Department of Natural Resources, Historic Commission) of the formal designation and work with Town staff to ensure proper procedures are followed and ask for their input and assistance in implementing the plan.
- Designate two members of each committee to work with the Town Planner or Recreation Director to thoroughly research and monitor the types of grant funding listed in the body of the OSRP update so as to better target specific projects and maximize the potential to apply for and receive grant funding (See Section 7.0).

**GOAL 2: Improve the management of town-owned open space and recreational areas.**

- Strengthen (adequately fund and staff) the existing park functions of the DPW by taking more active role in improving maintenance of existing recreational playing fields, courts and outdoor facilities.
- The Town of Bourne should develop a five year Capital Improvement Program.
- Continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs.

- Consult with other management entities like the Bourne Conservation Trust for information on how they manage their land.
- Continue the Town's efforts to upgrade its mapping resources and technology to produce maps of its existing and planned resource management efforts.

## RECREATION

**GOAL 3: Enhance, maintain and preserve passive and active recreational opportunities for Bourne residents and visitors of all ages, abilities and interests.**

- Maintain an accurate inventory of all of the recreational facilities (playing fields, courts, playgrounds etc.) and conservation areas in Bourne.
- Maintain an accurate inventory of all the recreational programming provided in the Town of Bourne.
- Improve pedestrian access to Bourne's open space and recreational assets, including working with the Army Corp to provide additional entry points to the Cape Cod Canal, and improved signage and markings for historical buildings and features such as herring runs.
- Use the ADA section of this plan and start to address needs of special user groups including handicapped and elderly and provide additional facilities and programs adequate to meet the identified needs.
- Inventory available parking at all town-owned conservation/ recreation areas and add parking where needed/appropriate.
- Research and apply for additional funding sources for the maintenance and upgrading of Bourne's parks and playgrounds (*See Section 7.0 for funding sources*).
- Address recreational needs identified in the Statewide Comprehensive Outdoor Recreation Plan. Needs include more swimming, road biking, walking, playground and tennis facilities (*See Section 7.0 for more information*).
- Renew the effort to work on developing a north-south bikeway to the Falmouth/Bourne boundary.

**GOAL 4: Improve public awareness and public access regarding Bourne's Open Space and Recreation assets.**

- Improve access to information on the Town of Bourne's website regarding the Recreation Department and programming. The website should be updated regularly and better utilized to communicate information regarding available programming, program and field scheduling and to increase the effective use of existing facilities.
- Consider creating an Open Space Committee webpage, including a point

of contact. Also consider adding a map to the webpage showing trails, shellfish locations and open space.

- Consider adding seasonal beach shuttles between facilities and public parking areas.
- Complete the water access mapping effort that details water access points in Bourne for shellfishing, boat ramps and beach goers. In addition, create a brochure that also highlights parking and amenities.
- Maintain, increase and protect public access that exists for recreation to both freshwater and saltwater bodies.
- Develop an inventory of existing recreation and cultural service providers that are associated with area organizations.

## COMMUNITY CHARACTER

**GOAL 5: Protect existing cultural and landscape assets. Such features are critical to Bourne's self-understanding and sense of community. They provide linkages between the history and the present and help shape the Town's unique character.**

- Continue to implement projects, which heighten public awareness of Bourne's unique natural and cultural resources.
- Develop an approach to enhance and improve signage and landscaping at gateway locations throughout the community.
- Continue to support the Town's guidelines for Scenic Roads. Scenic Roads are now regulated, but without clarity regarding process or intentions.
- Continue to support the local Demolition of Historic Structures regulation within the Town Bylaw Article 3.14

**GOAL 6: Protect coastal areas and resources from adverse impacts and improve appropriate types of access.**

- Promote donation of land or easements over land in coastal areas and convey those interests to the Conservation Commission or other appropriate organizations.
- Formally designate and/or reestablish traditional rights of way to the shore.
- Aggressively seek grants and contributions through which coastal access and use of the shore can be provided and enhanced and maintain a list of specific desired projects
- The Town should continue implementing dredging projects to a point where future work will be maintenance related and therefore generally smaller in scope.

**GOAL 7: Consistently collaborate and communicate with other organizations, committees and towns regarding open space and recreation initiatives.**

- Revive the Cape Cod Commission's Greenbelt Pathways Program in Bourne and actively protect areas that are suggested components of the Cape-wide open space/greenbelt network.
- Communicate with the Plymouth, Sandwich, Mashpee and Falmouth Open Space Committees to collaborate where possible and share goals and ideas.
- Continue to work with Bourne Conservation Trust, Southeastern Wildlands Trust, Recreation Committee the Community Preservation Committee and others on projects whenever possible and to identify, acquire and manage open space to meet projected community needs. Offer support to each other on initiatives that organizations take on separately.
- Establish/foster a relationship with the ACOE and the Buzzards Bay Vitalization Association regarding establishment of the Greenbelt Pathway in Buzzards Bay using town owned property.

**OPEN SPACE AND NATURAL RESOURCES****GOAL 8: Continue to work with the appropriate boards and committees to implement projects which heighten public awareness of Bourne's unique natural and cultural resources.**

- Support the Conservation Commission and Town Planner to develop Resource Management Plans for Bourne's ACEC areas that are consistent with the ACEC Resource Management Plan Guidelines, June 2004 available from the MA Department of Conservation and Recreation <http://www.mass.gov/dcr/stewardship/acec/plantools.htm>
- Educate Bourne residents and visitors about local open space and recreation.
- Educate Bourne residents and visitors about conservation and land protection, why it is important and different tools and techniques that can be used.
- Introduce Bourne's children to the Town's natural resources through school programming.
- Encourage the use of Town-owned lands for environmental education (nature walks, annual litter clean up events, etc...).
- Prepare a Coastal Resource Management Plan that includes components on shellfish habitat, navigation, public recreation and details regarding harbor areas.

**GOAL 9: Be proactive regarding sensitive environmental issues in the community.**

- Continue to monitor and participate with other communities the Massachusetts Military Reservation pollution cleanup.
- Work with the Integrated Solid Waste Management advisory committee to help monitor environmental issues that exist or arise in the future.
- Continue to seek funding for support for remediation efforts at impaired

coastal embayments. For each location, studies could be undertaken to explore alternative options, including upgrading of existing on-site disposal systems, small community systems using alternative treatment technology, and further drainage system improvements.

- Work with the Pollution Task Force formed by the Board of Selectmen on their initiatives.
- Support the Town's efforts towards resolving local wastewater issues.
- Work with neighboring communities where coastal pollution involves two-town resources.
- Develop a comprehensive inventory of wetland restoration sites currently being adversely impacted and those areas that have the potential to be impacted. Circulate the inventory to all local boards and committees for their information and help in implementation.
- Encourage measures to restore altered or degraded wetlands including non-structural bank stabilization, re-vegetation, pond restoration and salt marsh restoration.
- Implement strategies to control invasive species on publicly owned land, including volunteer days to remove specific stands. Monitor conservation land, and remove non-native species before they become a problem and impact native species.
- Reduce the human/species conflicts by focusing land protection for those specialized species, particularly birds and plants noted by NHESP <http://www.mass.gov/dfwele/dfw/nhesp/nhesp.htm> (See Appendix 1 for Maps).

**GOAL 10: Continue to acquire additional open space, and as noted in the local LCP, preserve at least half of the remaining undeveloped land as open space for recreation, resource protection, wildlife habitat and groundwater recharge; to maintain the esthetic beauty and character of the community; and to limit the visual and fiscal impacts of over-development.**

- Give priority to those open space acquisitions within identified Areas of Critical Environmental Concern, Water Resource Districts, NHESP habitat areas and parcels adjacent to existing protected open space (See Appendix 1 for Maps).
- If a property is already designated as open space, but does not have permanent protection work to protect the parcels in perpetuity.
- Acquire tax title lands for community purposes, including open space, recreation, affordable housing, or municipal services.

**GOAL 11: Encourage sustainable growth and development consistent with the carrying capacity of Bourne's natural environment.**

- Preserve significant natural and fragile resource areas during the design/permitting stage of developments. At the pre-application meeting

discuss these resources in terms of the project. Such resources include critical wildlife and plant habitats, water resources (lakes, rivers, aquifers, shorelines, wetlands, etc...) and historical, cultural and archaeological areas, scenic roads and views, and significant landforms.

- Add provisions to Bourne's regulations that ensures development that is consistent with Town character and move them further to help promote good design.
- Strengthen coastal zoning to better protect sensitive features by improving buffer areas.
- Work with developers that propose developments that adjacent to land that is protected open space to to prevent adverse impacts and to maximize contiguous open space.

**GOAL 12: Enhance public access to and appropriate use of existing conservation lands; establish green corridors/connections.**

- Inventory natural resources present on conservation lands, and identify the appropriate level and type of public access by developing and maintaining:
  - Data base of conservation lands and degree of public access,
  - Management plans to allow public access without harming environmentally sensitive areas, and
  - Rules and regulations pertaining to the use of public lands.
- Identify additional potential greenbelts connecting existing private/undeveloped and conservation parcels to maintain wildlife areas. Such corridors may also be used as walking/bicycling trails that are also being discussed for the Greenbelt Pathways program and the North/South bike trail, if appropriate:
  - Identify landowners of affected parcels and investigate methods of protection/public access, especially during review of land development plans
  - Involve town residents and officials in the implementation of a greenway program.
  - Contact UTILITIES regarding opportunities to utilize their rights-of-way for recreational/trail/corridor purposes.
- Regularly maintain public access to conservation parcels.
  - Establish a group of volunteers responsible for creating and maintaining trails. This group should include a member of the Conservation Commission, or at a minimum, review placement of new trails in order to avoid impacts to important natural resources, including wetlands and rare species.

**GOAL 13: Provide long-range protection of public drinking water supplies.**

- Target vacant lands within the zones of contribution of public drinking water supplies for acquisition.



- Coordinate recreation and conservation land acquisition between the Water Districts and other Town entities as much as possible to provide additional water resource protection.
- Establish a more formal community education and outreach program regarding public drinking water by partnering with Water Districts to educate households and businesses located within the zones of contribution of public drinking water supplies about household contaminants, septic systems, and other threats to water quality.
- Encourage use of environmentally friendly products.
- Remove unauthorized and/or non-water supply related uses within the various zones of contribution for the public water supply wells.
- Enforce the provisions and performance standards of the Water Resources District overlay zoning.

## Section 9.0 Five Year Action Plan

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## **9.0 FIVE YEAR ACTION PLAN**

The Action Plan is the section that details for the next five years, a timetable of specific actions and activities that should occur for successful implementation of the Bourne Open Space and Recreation Plan. The action items (or priorities) are based on the goals and objectives that were formulated in Section 8.0 and the needs analysis prepared in Section 7.0. The key to ensuring implementation of this plan on a year-to-year basis will be by designating a committee (or committees) or identifying an individual that will be in charge of ensuring this Action Plan is implemented. The committee(s) or the individual will be responsible not only for overall implementation of the Plan, but also for public outreach and education regarding actions being taken and to help make this effort successful.

The Five Year Action Plan is often the most difficult component of an Open Space Plan. An Action Plan can be difficult to commit to and be problematic to review over time. Items that have been accomplished fade from view, while the more intractable problems continue to haunt the town. Financial and political trends may change, advancing some items while leaving others untouched. For these reasons alone, many communities are hesitant to put in writing the full scope of their intentions.

The following Action Plan intends to deliver on the promise of the goals and objectives expressed throughout this process, with a program of tangible steps for the Town to take over the next five years. There is a high level of activity on these issues, based upon the input received during the planning process (the public forum and focus groups). While all actions listed are recognized as important, three areas in particular rise to the top as being absolutely essential for any future progress towards meeting the goals of this Plan:

- *In coordination with the Town Administrator, the collaboration of the Open Space Committee and the Recreation Committee to implement the Open Space and Recreation Plan.* Although there are many groups and departments active in open space and recreation issues in Bourne, their activities are not totally coordinated or focused. If the ambitious goals and objectives of this Plan are to be achieved, there needs to be a collaborative effort between these committees to oversee this progress and coordinate the actions and priorities of the various groups. This effort should be overseen and directed by the Town Administrator through the use of the appropriate department heads. Other groups to involve throughout the process include but are not limited to:
  - Conservation Commission, Planning Board, Community Preservation Committee, Council on Aging, Department of Natural Resources, Department of Public Works, Private Non-Profits and State and County Resources
- *Continue to educate and involve the numerous Town Boards and Committees regarding this project and the relevant action items and remind them that Bourne's open space and recreational amenities are a central and lasting priority for the Town.* While there may be competing needs for time and funding, all groups must abide by the central tenet that

open space issues are extremely important to the residents of Bourne. Where open space and recreational resources are concerned, the goals and policies of this Plan and the members and staff of the Town's open space agencies must be consulted. Furthermore, groups must agree in advance on the proper decision making procedures to be followed in such matters.

- *Securing additional sources of funding, staffing, and other support for open space and recreation activities and programs.* The Town of Bourne has an opportunity to seek out additional funding sources to achieve the goals of this Plan in addition to grant funding they have received in the past and Community Preservation Act funds. Support for the goals and objectives may be found in the form of donated community labor or park "adoption" by residents, or from federal, state, and private grants.

**9.1 Five Year Action Plan Summary Table**

**Abbreviation Key:** CC = Conservation Commission, TP = Town Planner, OSC = Open Space Committee, RD = Recreation Director, RC = Recreation Committee, PB = Planning Board, BOS = Board of Selectmen, BOH = Board of Health, CPC = Community Preservation Committee, ISWMAC = Integrated Solid Waste Management Advisory Committee, HC = Historic Commission, TA = Town Administrator

#	Action Item	Year	Responsible Party	What Page is the Action Item on?
<b>Year 1 - 2008</b>				
1	The Open Space Committee and Recreation Committee should meet with the Board of Selectmen and Town Administrator to discuss the Open Space and Recreation Plan and its implementation.	2008	BOS, OSC, RC, TP, RD, TA	9-7
2	Develop a checklist of action items to accomplish that will also identify each committee's goals and organizational responsibilities for the updated Open Space and Recreation Plan and regarding conservation and recreation programs and activities in the community. In addition, the committees should meet at least semi-annually and share progress memorandums.	2008	OSC, RC, RD, TP	9-7
3	Confirm that all commissions, committees and boards have received a copy of the OSRP update and understand their role in implementation.	2008	OSC, RC, TP	9-7
4	Coordinate town-sponsored recreational activities with the School Department's Rec. Programs.	2008	RD, RC	9-8
5	Recommendations regarding how to improve available information and access to the Town of Bourne's website regarding the Recreation Department and programming.	2008	RD, RC, TP, BOS	9-8
6	Bourne Enterprise to do a weekly/monthly series on Bourne open space and recreational resources.	2008	OSC, RD, RC, CC, TP, BOS, HC	9-8
7	Develop an approach regarding how the Open Space and Recreation Plan Implementation Committee can help to enhance and improve signage and landscaping at gateway locations throughout the community.	2008	OSC, RC	9-9
8	Thoroughly read and review Bourne's guidelines for Scenic Roads and the Demolition of Historic Structures regulations.	2008	OSC, RC, TP	9-9
9	Advertise for and promote donation of land or easements over land in coastal areas and convey those interests to the Conservation Commission or other appropriate organizations. Start an information campaign if possible.	2008	OSC, RC, CPC, CC	9-9
10	Seek grants and contributions through which coastal access and use of the shore can be provided and enhanced and develop/maintain a list of specific desired projects.	2008	OSC, RC, TP	9-10
<b>Year 2 - 2009</b>				
11	Institute and maintain a formal Parks and Recreation Department with a town approved budget.	2009	BOS, OSC, RC, DPW	9-11
12	Develop a five year Capital Improvement Program.	2009	BOS, DPW, OSC, RC, TP	9-11
13	Continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs.	2009	RD, RC, OSC, RC	9-11

## Open Space and Recreation Plan

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#	Action Item	Year	Responsible Party	What Page is the Action Item on?
14	Set up a meeting with other management entities like the Bourne Conservation Trust for example regarding how they manage their land.	2009	OSC, RC, CPC, TP, CC	9-12
15	Upgrade and improve mapping resources and technology to produce maps of its existing and planned resource management efforts through equipment upgrades and the hiring of an intern for the Planning Department (may be volunteer).	2009	TP, CC	9-12
16	Improve the irrigation at Clark Field and complete additional maintenance needed.	2009	OSC, RC, RD, DPW, TP, CPC, BOS	9-12
17	Improve/fund needed maintenance at Monument Beach and Chester Park	2009	OSC, RC, RD, DPW, TP, CPC, BOS	9-12
18	Investigate the potential of adding lights to field used for sports to enhance their use after daylight hours have passed.	2009	RD, RC	9-13
19	Review and update where needed the inventory of all of the recreational facilities (playing fields, courts, playgrounds), recreational programming and conservation areas in Bourne.	2009	RC, OSC, CC, TP	9-13
20	Utilizing a base map created by the Planning Department, prepare a map (can be hand drawn) that illustrates where pedestrian access to Bourne's open space and recreational assets (including additional entry points to the Cape Cod Canal) should be improved. Include points where additional signage and markings for historical buildings and features like herring runs should be added.	2009	RC, OSC, CC, TP, HC	9-13
21	Utilizing the ADA section of this plan, develop a priority list of what recreational amenities or conservation areas in Bourne need attention to improve handicapped accessibility.	2009	RC, OSC, TP, ADA Coordinator	9-13
22	Inventory available parking at all town-owned conservation/recreation areas.	2009	OSC, RC, DPW	9-14
23	Research and apply for additional funding sources for the maintenance and upgrading of Bourne's parks and playgrounds.	2009	OSC, RC, RD, TP	9-14
24	Renew the effort to work on developing a north/south bikeway to the Falmouth/Bourne boundary by meeting with the appropriate Falmouth representatives.	2009	OSC, RD, TP, RC	9-14
25	Create and add an Open Space Committee Implementation webpage and Community Preservation Committee webpage to the Town of Bourne's website.	2009	OSC, CPC, TP	9-14
26	Investigate the feasibility of offering beach shuttles between facilities and designated parking areas.	2009	OSC, RC, TP, DPW	9-15
27	Complete the water access mapping effort that details water access points in Bourne for shellfishing, boat ramps and beach goers.	2009	RD, OSC, RC, TP	9-15
28	Develop an inventory of existing recreation and cultural service providers that are associated with area organizations.	2009	RD, RC, HC	9-15
29	Contact the Cape Cod Commission regarding reviving the Greenbelt Pathways Program in Bourne and ask them to schedule a presentation regarding the Greenbelt Pathway Program in the Town.	2009	RC, RD, TP, OSC	9-16
30	Contact the Plymouth, Sandwich, Mashpee and Falmouth Open Space Committees several times a year to discuss potential projects and share goals and ideas.	2009	RC, RD, TP, OSC	9-16

## Open Space and Recreation Plan

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#	Action Item	Year	Responsible Party	What Page is the Action Item on?
31	Continue to work with Bourne Conservation Trust, Southeastern Wildlands Trust, Recreation Committee the Community Preservation Committee and others on projects whenever possible and to identify, acquire and manage open space to meet projected community needs.	2009	CPC, RC, RD, TP, OSC	9-16
32	Establish a main point of contact at the ACOE and the Buzzards Bay Vitalization Association so as to foster a relationship with them regarding the establishment of the Greenbelt Pathway in Buzzards Bay using town owned property.	2009	OSC, RC, TP, BOS	9-17
33	Assist the Conservation Commission and Town Planner in developing Resource Management Plans for Bourne's ACEC areas.	2009	OCS, RC, TP, CC	9-17
34	Brainstorm an effective action plan for educating Bourne residents and visitors about local open space and recreation areas.	2009	OSC, TP, CC, RD, RC, CPC	9-17
35	Work with the Recreation Director regarding how she has approached the schools in the past. Contact school officials and start a dialogue about what types of additional programming may be appropriate to further introduce Bourne's children to the Town's natural resources.	2009	OSC, RC, TP, CC, RD	9-18
36	Provide educators with a list of Town-owned lands appropriate to consider utilizing for environmental education (nature walks, annual litter clean up events, etc...).	2009	OSC, RC, TP, CC	9-18
37	Begin to prepare a Coastal Resource Management Plan that includes components on shellfish habitat, navigation, public recreation and details regarding harbor areas.	2009	CC, OSC, RC, TP	9-18
38	Continue to monitor and participate with other communities the Massachusetts Military Reservation pollution cleanup.	2009	CC, BOS, SMB	9-18
39	Work with the Integrated Solid Waste Management advisory committee to help monitor environmental issues that exist or arise in the future.	2009	CC, ISWMAC, OSC, RC	9-19
40	Continue to seek funding for support for remediation efforts at impaired coastal embayments.	2009	CC, BOS, PTF, BOH, WAC	9-19
41	Initiate contact with the Pollution Task Force formed by the Board of Selectmen and work with them on their initiatives where appropriate.	2009	OSC, RC	9-19
42	Develop a comprehensive inventory of wetland restoration sites currently being adversely impacted and those areas that have the potential to be impacted. Circulate the inventory to all local boards and committees for their information and help in implementation.	2009	CC	9-19
43	Develop several strategies to control invasive species on publicly owned land, including volunteer days to remove specific stands. Monitor conservation land, and remove non-native species before they become a problem and impact native species.	2009	CC, OSC, RC	9-19
44	Prioritize potential open space acquisitions within identified Areas of Critical Environmental Concern, Water Resource Districts, NHESP habitat areas and parcels adjacent to existing protected open space utilizing the worksheet identified in Section 7.0 of the OSRP update.	2009	OSC, RC, TP, CPC	9-20
45	For properties that are already designated as open space, but do not have permanent protection (so temporary and limited designations), work to protect the parcels in perpetuity.	2009	OSC, RC	9-20
46	Preserve significant natural and fragile resource areas during the design/permitting stage of	2009	TP, CC	9-21



## Open Space and Recreation Plan

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	developments. At the pre-application meeting discuss these resources in terms of the project.			
#	Action Item	Year	Responsible Party	What Page is the Action Item on?
47	Consider adding provisions to Bourne's regulations that ensures development that is consistent with Town character and move them further to help promote good design.	2009	TP, BOS	9-21
48	Developments that are proposed adjacent to land that is protected open space should be configured to prevent adverse impacts and to maximize contiguous open space. Utilize bylaw.	2009	TP, BOS	9-21
49	Begin to inventory natural resources present on conservation lands, and identify the appropriate level and type of public access.	2009	CC, RC, TP, OSC	9-21
50	Identify and map additional potential greenbelts connecting existing private/undeveloped and conservation parcels to maintain wildlife areas.	2009	TP, OSC, RC	9-22
<b>Years 3 and 4 – 2010/2011</b>				
51	Regularly maintain public access to conservation parcels.	2010/2011	OSC, RC, CC	9-22
52	In coordination with Action Item #4, continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs.	2010/2011	RC, RD, OSC	9-22
53	Consider addressing recreational needs identified in the Statewide Comprehensive Outdoor Recreation Plan.	2010/2011	OSC, RC, RD	9-23
54	Continue action items 19 and 23.	2010/2011		9-23
55	Continue action item 37.	2010/2011		9-23
56	Continue action items 38, 39, 40, 41, 42, 43.	2010/2011		9-24
57	Continue action items 44 and 45.	2010/2011		9-24
58	Continue action items 46, 47 and 48.	2010/2011		9-24
59	Continue action items 49, 50 and 51.	2010/2011		9-24
60	Review the potential land acquisition worksheet ( <i>Section 7.0</i> ) and evaluate if there are any vacant lands within the zones of contribution of public drinking water supplies that may make sense to acquire.	2010/2011	RC, OSC, TP, CPC	9-24
61	Outreach to and partner with the water districts to see if/how the Open Space and Recreation Plan Implementation Committee could help to educate households and businesses located within the zones of contribution of public drinking water supplies about household contaminants, septic systems and other threats to water quality.	2010/2011	OSC, RC, TP, BOH	9-25
62	Review the provisions and performance standards of the Water Resource District overlay zoning and strengthen if needed.	2010/2011	CC, TP	9-25
63	Continue action items 9 and 10.	2010/2011		9-25
64	Continue action items 30 and 31.	2010/2011		9-25
65	Continue action items 13, 14 and 15.	2010/2011		9-25
<b>Year 5 - 2012</b>				
	Note: See Section 9.0 of the report.			9-26

## 9.2 Five Year Action Plan Summary

### Year 1 (2008) - Plan Implementation

#### MANAGEMENT

**GOAL 1: Formally designate an entity or individual to monitor and orchestrate implementation of the updated Open Space and Recreation Plan with approval of the Board of Selectmen.**

#### **ACTION ITEMS:**

- 1) The Open Space Committee and Recreation Committee should meet with the Board of Selectmen and Town Administrator to discuss the Open Space and Recreation Plan and its implementation.

**Responsibility:** Board of Selectmen, Town Administrator, Open Space Committee, Recreation Committee, Town Planner, Recreation Director

**When:** Immediately upon approval of Open Space and Recreation Plan update by the Division of Conservation Services (Fall 2007)

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 2) The Open Space Committee and Recreation Committee should develop a checklist of action items to accomplish that will also identify each committee's goals and organizational responsibilities for the updated Open Space and Recreation Plan and regarding conservation and recreation programs and activities in the community. In addition, they should meet at least semi-annually and share progress memorandums.

**Responsibility:** Open Space Committee, Recreation Committee, assistance from Town Planner and Recreation Director

**When:** 2008

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 3) Confirm that all commissions, committees, boards and pertinent town staff mentioned in this plan receive a copy of it and understand their role in its implementation.

**Responsibility:** Town Planner, Recreation Director, Open Space Committee, Recreation Committee

**When:** 2008

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

**GOAL 2: Improve the management of town-owned open space and recreational areas.**

- 4) Continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs. Investigate potential sites for a designated recreational programming facility.

**Responsibility:** Recreation Director, Recreation Committee, School Department

**When:** 2008

**Action Item Ongoing Throughout Plan Implementation**

**RECREATION**

**GOAL 4: Improve public awareness of and public access to Bourne's Open Space and Recreation assets.**

- 5) Make recommendations regarding how to improve available information and access to the Town of Bourne's website regarding the Recreation Department and programming.

**Responsibility:** Recreation Director, Recreation Committee, Assistance from Town Planner, Board of Selectmen, Data Processing Department

**When:** 2008

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 6) Ask the local newspapers that serve the Town of Bourne to do a weekly/monthly series on Bourne open space and recreational resources. Make a list of places that residents should be informed about and work with a reporter to profile a different park, playground, recreation area, beach or open space area every week. Include photos, location, how to get there and who to contact for more information. Use the above mentioned final list and prepare Bourne open space and recreation amenity profile sheets and place them all on the Town's website so people can access the information. Also put them all together in a document format and place at Town Hall and the public library.

**Responsibility:** Open Space Committee, Recreation Director, Recreation Committee, Conservation Commission, Town Planner, Board of Selectmen

**When:** 2008

Action Item Complete: ☐ Date: \_\_\_\_\_

### **COMMUNITY CHARACTER**

**GOAL 5: Protect existing cultural and landscape assets. Such features are critical to Bourne's self-understanding and sense of community. They provide linkages between the history and the present and help shape the Town's unique character.**

#### **ACTION ITEMS:**

- 7) Develop an approach regarding how the Open Space Committee and Recreation Committee can help to enhance and improve signage and landscaping at gateway locations throughout the community. (May include making phone calls to key stakeholders, reviewing signage/landscaping that is appealing in other communities and starting a photo library etc.)

**Responsibility:** Open Space Committee, Recreation Department, Town Planner

**When:** 2008

Action Item Complete: ☐ Date: \_\_\_\_\_

- 8) Thoroughly read and review Bourne's guidelines for Scenic Roads and the Demolition of Historic Structures regulations. Meet with the Town Planner if necessary for additional explanation and suggestions regarding how the Open Space Committee and Recreation Committee can help support the Town's guidelines.

**Responsibility:** Open Space Committee, , Town Planner, Historic Commission, Planning Board

**When:** 2008

Action Item Complete: ☐ Date: \_\_\_\_\_

**GOAL 6: Protect coastal areas and resources from adverse impacts and improve appropriate types of access.**

#### **ACTION ITEMS:**

- 9) Advertise for and promote donation of land or easements over land in coastal areas and convey those interests to the Conservation Commission or other appropriate organizations. Start an information campaign if possible. In addition, according to

NHESP, Bourne has both coastal and inland natural resource areas. Coastal Plain Pondshores, Sandplain Heathlands and Scrub Oak Shrublands all either occur in Bourne or have a high likelihood of being in Bourne and should be priority areas for conservation. These areas should be identified and further studied and when that is complete, added as criteria for consideration of properties in the future.

**Responsibility:** Open Space Committee, Recreation Committee, Community Preservation Committee, Conservation Commission

**When:** 2008

**Action Item Ongoing Throughout Plan Implementation**

- 10) Aggressively seek grants and contributions through which coastal access and use of the shore can be provided and enhanced and develop/maintain a list of specific desired projects (*see Section 7.0*).

**Responsibility:** Open Space Committee, Recreation Committee, Town Planner

**When:** 2008

**Action Item Ongoing Throughout Plan Implementation**

**Year 2 (2009) - Plan Implementation****MANAGEMENT****GOAL 2: Improve the management of town-owned open space and recreational areas.****ACTION ITEMS:**

- 11) Adequately fund and staff the existing parks function within the DPW. Take a more active role in improving maintenance of existing recreational playing fields, courts and outdoor facilities. Open Space Committee and Recreation Committee can help inform where the needs are.

**Responsibility:** Board of Selectmen, Town Administrator, DPW, Open Space Committee, Recreation Department

**When:** 2008

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 12) The Town of Bourne should develop a five year Capital Improvement Program.

**Responsibility:** Board of Selectmen, Town Administrator, Department of Public Works, Assistance from Open Space Committee, Recreation Department, Town Planner

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 13) Continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs.

**Responsibility:** Recreation Director, School Department

**When:** 2009

**Action Item Ongoing Throughout**

- 14) Set up a meeting with other management entities like the Bourne Conservation Trust for a dialog on managing land. May want to consider having discussions with them several times a year.

**Responsibility:** Open Space Committee, Community Preservation Committee, Town Planner, Conservation Commission

**When:** 2009

**Action Item Ongoing Throughout**

- 15) Upgrade and improve mapping resources and technology to produce maps of its existing and planned resource management efforts through equipment upgrades and the hiring of an intern for the Planning Department (may be volunteer). Contact county and state resources and ask what additional services may be available to Bourne.

**Responsibility:** Town Planner, Conservation Commission

**When:** 2009

**Action Item Ongoing Throughout**

**RECREATION**

**ACTION ITEMS:**

**GOAL 3: Enhance, maintain and preserve passive and active recreational opportunities for Bourne residents and visitors of all ages, abilities and interests.**

- 16) Continue to upgrade all outdoor facilities, including but not limited to irrigation at Clark Field.

**Responsibility:** Recreation Department, DPW, Community Preservation Committee, Town Administrator

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 17) Improve/fund needed maintenance at the Monument Beach Marina .

**Responsibility:** Department of Natural Resources DPW, Town Administrator , Community Preservation Committee, Board of Selectmen

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_



- 18) Investigate the potential of adding lights to field used for sports to enhance their use after daylight hours have passed. Include what specific fields have been evaluated and an estimated cost for lighting.

**Responsibility:** Recreation Director, Recreation Committee, DPW

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 19) Review and update where needed the inventory of recreational facilities (playing fields, courts, playgrounds), recreational programming and conservation areas in Bourne.

**Responsibility:** Recreation Department, Open Space Committee, Conservation Commission and Town Planner

**When:** 2009

**Action Item Ongoing Throughout**

- 20) Utilizing a base map created by the Planning Department, prepare a map that illustrates where pedestrian access to Bourne's open space and recreational assets (including additional entry points to the Cape Cod Canal) should be improved. Include points where additional signage and markings for historical buildings and features like herring runs should be added.

**Responsibility:** Recreation Committee, Open Space Committee, Conservation Commission, Town Planner, Historical Commission, Army Corp

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 21) Utilizing the ADA section of this plan, develop a priority list of what recreational amenities or conservation areas in Bourne need attention to improve handicapped accessibility. Forward this recommended list to the Town Planner and Community Preservation Committee and develop a plan regarding how to fund projects. Properties to start with may include the Pocasset River Marsh, Leary Property and Carter Beal. See ADA Study appendix of this plan for more details.

**Responsibility:** Recreation Department, Open Space Committee, Town Planner, ADA Coordinator

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 22) Inventory available parking at all town-owned conservation/recreation areas. Where actual spaces are not specified, estimate the number of cars that can be parked in a lot and note whether or not the lot is ever overflowed. Make a note of where additional parking may be needed.

**Responsibility:** Open Space Committee, Recreation Committee, Conservation Commission/Agent, Department of Public Works

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 23) Research and apply for additional funding sources for the maintenance and upgrading of Bourne's parks and playgrounds (*See Section 7.0*).

**Responsibility:** Recreation Committee, Recreation Director,

**When:** 2009

**Action Item Ongoing Throughout**

- 24) Renew the effort to work on developing a north/south bikeway to the Falmouth/Bourne boundary by meeting with the appropriate Falmouth and County/State representatives.

**Responsibility:** Open Space Committee, Recreation Director, Town Planner, Recreation Committee

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

**GOAL 4: Improve public awareness and public access regarding Bourne's Open Space and Recreation assets.**

**ACTION ITEMS:**

- 25) Create an Open Space Committee webpage and Community Preservation Committee webpage and add them to the Town of Bourne's website. Consider additions to include maps of trail and shellfish locations (including closures and open season information) and open space and recreational amenities.

**Responsibility:** Community Preservation Committee, Open Space Committee, Assistance from Town Planner, Data Processing

**When:** 2008/2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 26) Investigate the feasibility of offering beach shuttles between facilities and designated parking areas. Consider finding a sponsor who would operate/run the shuttles.

**Responsibility:** Open Space Committee, Recreation Committee, Department of Natural Resources, Assistance from Town Planner and DPW

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 27) Complete the water access mapping effort that details water access points in Bourne for shellfishing, boat ramps and beach goers. In addition, create a brochure that also highlights parking and amenities. It is important to expand and protect public access to both freshwater and saltwater access points.

**Responsibility:** Recreation Director, Department of Natural Resources, with Assistance from Town Planner

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 28) Develop an inventory of existing recreation and cultural service providers that are associated with area organizations.

**Responsibility:** Recreation Director, Historical Commission

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

**COMMUNITY CHARACTER****GOAL 7: Consistently collaborate and communicate with other organizations, committees and towns regarding open space and recreation initiatives.****ACTION ITEMS:**

- 29) Contact the Cape Cod Commission regarding reviving the Greenbelt Pathways Program in Bourne and ask them to schedule a presentation regarding the Greenbelt Pathway Program in the Town. Then, work to help the CCC actively target areas that make sense to consider for the Cape-wide open space/greenbelt network.

**Responsibility:** Recreation Department, Recreation Director, Town Planner, Open Space Committee

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 30) Contact the Plymouth, Sandwich, Mashpee and Falmouth Open Space Committees to discuss potential projects and share goals and ideas.

**Responsibility:** Recreation Department, Recreation Director, Town Planner, Open Space Committee

**When:** 2009

**Action Item Ongoing Throughout**

- 31) Continue to work with Bourne Conservation Trust, Southeastern Wildlands Trust, the Community Preservation Committee and others on projects whenever possible and to identify, acquire and manage open space to meet projected community needs. Offer support to each other on initiatives that organizations take on separately.

**Responsibility:** Open Space Committee Recreation Committee Assistance from the Recreation Director and Town Planner

**When:** 2009

**Action Item Ongoing Throughout**

- 32) Establish a main point of contact at the Army Corps of Engineers and the Buzzards Bay Vitalization Association so as to foster a relationship with them regarding the establishment of the Greenbelt Pathway in Buzzards Bay using town owned property.

**Responsibility:** Open Space Committee, Recreation Committee, Assistance from the Town Planner

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

### **OPEN SPACE AND NATURAL RESOURCES**

**GOAL 8:** Continue to work with the appropriate boards and committees to implement projects which heighten public awareness of Bourne's unique natural and cultural resources.

#### **ACTION ITEMS:**

- 33) Assist the Conservation Commission and Town Planner in developing Resource Management Plans for Bourne's ACEC areas that are consistent with the ACEC Resource Management Plan Guidelines, June 2004 available from the MA Department of Conservation and Recreation <http://www.mass.gov/dcr/stewardship/acec/plantools.htm>

**Responsibility:** Open Space Committee, Recreation Department,

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 34) Brainstorm an effective action plan for educating Bourne residents and visitors about local open space and recreation areas. Include an education piece regarding why land protection is important and the different tools and techniques that can be used to protect land.

**Responsibility:** Town Planner, Conservation Commission, Recreation Director, Recreation Committee, , Open Space Committee

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 35) Contact school officials and start a dialogue about what types of additional programming may be appropriate to further introduce Bourne's children to the Town's natural resources.

**Responsibility:** Recreation Committee, Conservation Commission, Recreation Director, DNR, School Committee

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 36) Provide educators with a list of Town-owned lands appropriate to consider utilizing for environmental education (nature walks, annual litter clean up events, etc...).

**Responsibility:** Open Space Committee, Town Planner, Conservation Commission

**When:** 2009

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 37) Begin to prepare a Coastal Resource Management Plan that includes components on shellfish habitat, navigation, public recreation and details regarding harbor areas.

**Responsibility:** Conservation Commission, DNR , Shore and Harbor Committee and Town Planner

**When:** 2009

**Action Item Ongoing Throughout**

**GOAL 9: Be proactive regarding sensitive environmental issues in the community.**

**ACTION ITEMS:**

- 38) Continue to monitor and participate with other communities the Massachusetts Military Reservation pollution cleanup.

**Responsibility:** Conservation Commission, Board of Selectmen, Town Administrator, Senior Management Board

**When:** 2009

**Action Item Ongoing Throughout**

- 39) Work with the Integrated Solid Waste Management advisory committee to help monitor environmental issues that exist or arise in the future.

**Responsibility:** Conservation Commission, Integrated Solid Waste Management Advisory Committee, Board of Health

**When:** 2009

**Action Item Ongoing Throughout**

- 40) Continue to seek funding for support for remediation efforts at impaired coastal embayments. For each location, studies could be undertaken to explore alternative options, including upgrading of existing on-site disposal systems, small community systems using alternative treatment technology, and drainage system improvements.

**Responsibility:** Conservation Commission, Pollution Task Force, Board of Health, Wastewater Advisory Committee

**When:** 2009

**Action Item Ongoing Throughout**

- 41) Initiate contact with the Pollution Task Force formed by the Board of Selectmen and work with them on their initiatives where appropriate.

**Responsibility:** Open Space Committee, Conservation Commission/Agent, Town Planner

**When:** 2009

**Action Item Ongoing Throughout**

- 42) Develop a comprehensive inventory of wetland restoration sites currently being adversely impacted and those areas that have the potential to be impacted. Circulate the inventory to all local boards and committees for their information and help in implementation.

**Responsibility:** Conservation Commission Agent

**When:** 2009

**Action Item Ongoing Throughout**

- 43) Develop several strategies to control invasive species on publicly owned land, including volunteer days to remove specific stands. Monitor conservation land, and remove non-native species before they become a problem and impact native species.

**Responsibility:** Conservation Commission /Agent

**When:** 2009

**Action Item Ongoing Throughout**



**GOAL 10: Continue to acquire additional open space, and as noted in the local LCP, preserve at least half of the remaining undeveloped land (that may be highly desirable for development) as open space for recreation, resource protection, wildlife habitat and groundwater recharge; to maintain the esthetic beauty and character of the community; and to limit the visual and fiscal impacts of over-development.**

**ACTION ITEMS:**

- 44) Prioritize potential open space acquisitions within identified Areas of Critical Environmental Concern, Water Resource Districts, NHESP habitat areas and parcels adjacent to existing protected open space utilizing the worksheet identified in Section 7.0 of the OSRP update. Re-evaluate on an annual basis and communicate with the Community Preservation Committee and Town Planner regarding potential funding sources.

**Responsibility:** Open Space Committee, Recreation Department, , Town Planner

**When:** 2009

**Action Item Ongoing Throughout**

- 45) For properties that are already designated as open space, but do not have permanent protection (temporary and limited designations), work to protect the parcels in perpetuity. This may include doing deed research or educating land owners or the Town about more permanent land protection methods.

**Responsibility:** Conservation Commission Agent, Planner

**When:** 2009

**Action Item Ongoing Throughout**

**GOAL 11: Encourage sustainable growth and development consistent with the carrying capacity of Bourne's natural environment.**

**ACTION ITEMS:**

- 46) Preserve significant natural and fragile resource areas during the design/permitting stage of developments. At the pre-application meeting discuss these resources in terms of the project. Such resources include critical wildlife and plant habitats, water resources (lakes, rivers, aquifers, shorelines, wetlands, etc...) and historical, cultural and archaeological areas, scenic roads and views, and significant landforms.

**Responsibility:** Town Planner, Conservation Commission

**When:** 2009

**Action Item Ongoing Throughout**

- 47) Consider adding provisions to Bourne's regulations that ensures development that is consistent with Town character and move them further to help promote good design. Such provisions may include but not be limited to a Transfer of Development Rights Bylaw or Design Guidelines for specific areas of the community.

**Responsibility:** Town Planner, Planning Board

**When:** 2009

**Action Item Ongoing Throughout**

- 48) Developments that are proposed adjacent to land that is protected open space should be configured to prevent adverse impacts and to maximize contiguous open space. Continue to utilize and improve Bourne's Cluster Development Bylaw.

**Responsibility:** Town Planner, Planning Board

**When:** 2009

**Action Item Ongoing Throughout**

**GOAL 12: Enhance public access to and appropriate use of existing conservation lands; establish green corridors/connections.**

**Action Items:**

- 49) Begin to inventory natural resources present on conservation lands, and identify the appropriate level and type of public access by developing and maintaining:
- Data base of conservation lands and degree of public access,
  - Management plans to allow public access without harming environmentally sensitive areas, and
  - Rules and regulations pertaining to the use of public lands.

**Responsibility:** Conservation Commission/Agent, Town Planner, Open Space Committee

**When:** 2009

**Action Item Ongoing Throughout**

- 50) Identify and map additional potential greenbelts connecting existing private/undeveloped and conservation parcels to maintain wildlife areas. Such corridors may also be used as walking/bicycling trails that are also being discussed for the Greenbelt Pathways program and the North/South bike trail, if appropriate:
- Indicate landowners of affected parcels and investigate methods of protection/public access, especially during review of land development plans
  - Involve town residents and officials in the implementation of a greenway program.

**Responsibility:** Town Planner, Conservation Commission/Agent

**When:** 2009

**Action Item Ongoing Throughout**

- 51) Regularly maintain public access to conservation parcels.
- Establish a group of volunteers responsible for creating and maintaining trails. This group should include a member of the Conservation Commission, or at a minimum, review placement of new trails in order to avoid impacts to important natural resources, including wetlands and rare species.

**Responsibility:** Conservation Commission/ Agent

**When:** 2009

**Action Item Ongoing Throughout**

**Years 3 and 4 (2010/2011) - Plan Implementation****RECREATION****GOAL 2: Improve the management of town-owned open space and recreational areas.**

- 52) In coordination with Action Item #4 and #13, continue to coordinate town-sponsored recreational activities with the School Department's Recreation Programs. If the investigation of potential sites for a designated recreational programming facility is complete, make a recommendation to the Board of Selectmen and provide evidence.

**Responsibility:** Recreation Director, Recreation Committee, Assistance from Open Space Committee

**When:** 2010/2011

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

**GOAL 3: Enhance, maintain and preserve passive and active recreational opportunities for Bourne residents and visitors of all ages, abilities and interests.**

- 53) Consider addressing recreational needs identified in the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Needs include more swimming, road biking, walking, playground and tennis facilities (*See Section 7.0 for more information*).

**Responsibility:** Recreation Committee, Recreation Director

**When:** 2010/2011

**Action Item Ongoing Throughout**

- 54) Continue action items 19 and 23.

**OPEN SPACE AND NATURAL RESOURCES****GOAL 8: Continue to work with the appropriate boards and committees to implement projects which heighten public awareness of Bourne's unique natural and cultural resources.**

- 55) Continue action item 37.

**GOAL 9: Be proactive regarding sensitive environmental issues in the community.**

56) Continue action items 38, 39, 40, 41, 42, 43.

**GOAL 10: Continue to acquire additional open space, and as noted in the local LCP, preserve at least half of the remaining undeveloped land as open space for recreation, resource protection, wildlife habitat and groundwater recharge; to maintain the esthetic beauty and character of the community; and to limit the visual and fiscal impacts of over-development.**

57) Continue action items 44 and 45.

**GOAL 11: Encourage sustainable growth and development consistent with the carrying capacity of Bourne's natural environment.**

58) Continue action items 46, 47 and 48.

**GOAL 12: Enhance public access to and appropriate use of existing conservation lands; establish green corridors/connections.**

59) Continue action items 49, 50 and 51.

**GOAL 13: Provide long range protection of public drinking water supplies.**

60) Review the potential land acquisition worksheet (*Section 7.0*) and evaluate if there are any vacant lands within the zones of contribution of public drinking water supplies that should be acquired. Coordinate land acquisitions with the water districts to see how further water resource protection could be undertaken.

**Responsibility:** Open Space Committee, Town Planner  
**When:** 2010

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

61) Outreach to and partner with the water districts to see if/how the Open Space and Recreation Plan Implementation Committee could help to educate households and businesses located within the zones of contribution of public drinking water supplies about household contaminants, septic systems and other threats to water quality. Encourage the use of environmentally friendly products.

**Responsibility:** Open Space Committee, Town Planner, Board of Health

**When:** 2010

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

- 62) Review the provisions and performance standards of the Water Resource District overlay zoning and strengthen if needed.

**Responsibility:** Planning Board, Town Planner

**When:** 2010

**Action Item Complete:** ☐ **Date:** \_\_\_\_\_

### **COMMUNITY CHARACTER**

**GOAL 6: Protect coastal areas and resources from adverse impacts and improve appropriate types of access.**

- 63) Continue action items 9 and 10.

**GOAL 7: Consistently collaborate and communicate with other organizations, committees and towns regarding open space and recreation initiatives.**

- 64) Continue action items 30 and 31.

### **MANAGEMENT**

**GOAL 2: Improve the management of town-owned open space and recreational areas.**

- 65) Continue action items 13, 14 and 15.

### **Year 5 (2012) - Plan Implementation**

The most important items to accomplish in year five of the Open Space and Recreation Plan by the Open Space and Recreation Plan Implementation Committee are to:

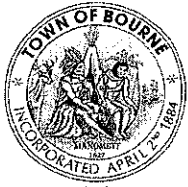
- Review all action items for years 1 through 4 and determine what has and has not been done. Evaluate how complete each action item is and take the necessary steps to plan for how to go about specifically addressing the action item,
- Continue to work on the action items that have not been completed yet or where there is still more work to do,
- Take stock of the five years in which this plan will be active and note what worked well and what did not during implementation, and make note of what to do differently,
- Work with the Town Planner to begin the process of the Open Space and Recreation Plan update before the current one expires so that ideally, the plans will overlap and there will be no gap in a valid, state approved plan.

**Section 10.0**  
**Public Comments**

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## **10.0 PUBLIC COMMENTS**



## TOWN OF BOURNE *Open Space Committee*

Bourne Town Hall  
24 Perry Avenue  
Buzzards Bay, MA 02532  
Phone: (508) 759-0615 ex. 5



December 14, 2007

Ms. Melissa Cryan  
Division of Conservation Services  
Executive Office of Environmental Affairs  
100 Cambridge Street, 9<sup>th</sup> Floor  
Boston MA 02114

Re: Bourne Open Space and Recreation Plan

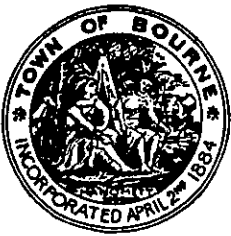
Dear Ms. Cryan,

This Committee fully supports this update to Bourne's Open Space and Recreation Plan. Mary McCrann of Beals and Thomas, Inc. has worked very well with us and had kept it on the timeline. This plan works in conjunction with the Town's Local Comprehensive Plan and will be executed in the same way. After public sessions and meetings we received input from many departments and concerned citizens and have tried to address many of their comments and concerns.

The goals, policies and action steps in the plan will help Bourne to remain a great community and help to educate different Town departments and the public for many years to come. We hope you agree and support this plan.

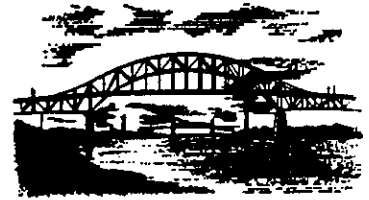
Respectfully,

Charlotte Stiefel, chairman  
Bourne Open Space Committee



**TOWN OF BOURNE**  
**Town Administrator**

24 Perry Avenue  
Buzzards Bay, MA 02532  
Phone 508-759-0600 x304 – Fax 508-759-0620



THOMAS M. GUERINO  
email: tguerino@townofbourne.com

December 17, 2007

Melissa Cryan  
Division of Conservation Services  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, 9<sup>th</sup> Floor  
Boston, MA 02114

Dear Ms. Cryan:

The Board of Selectmen is pleased to endorse the updated 2008 - 2012 Open Space and Recreation Plan as presented by the Bourne Open Space Committee.

The Town of Bourne faces many challenges while trying to protect the natural resources and recreational amenities throughout town. The goals within this plan reflect several of the newly adopted goals in the Local Comprehensive Plan, such as the acquisition and preservation of undeveloped parcels and improved management of town-owned open space and recreational areas.

We support the goals and actions items within this plan and understand that the development and implementation of the Open Space and Recreation plan is an important step in preserving the character and quality of life within the Town of Bourne.

We look forward to participating in the implementation of this plan, thank you for your time and consideration.

Sincerely,

BOARD OF SELECTMEN

\_\_\_\_\_  
Stephen F. Mealy, Chairman

*Jamie Slonecki*  
\_\_\_\_\_  
Jamie Slonecki, Vice Chair

*Judith W. Conron*  
\_\_\_\_\_  
Judith W. Conron, Clerk

*Linda M. Zuern*  
\_\_\_\_\_  
Linda M. Zuern

*John A. Ford, Jr.*  
\_\_\_\_\_  
John A. Ford, Jr.



## CAPE COD COMMISSION

3225 MAIN STREET  
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BARNSTABLE, MA 02630  
(508) 362-3828  
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E-mail: [frontdesk@capecodcommission.org](mailto:frontdesk@capecodcommission.org)

December 17, 2007

Melissa Cryan  
Division of Conservation Services  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, 9<sup>th</sup> Floor  
Boston, MA 02114

Re: Bourne Open Space and Recreation Plan update

Dear Ms. Cryan,

Cape Cod Commission staff has reviewed the 2007 Bourne Open Space and Recreation Plan and recommend its approval by the Division of Conservation Services. The plan provides a comprehensive assessment of the Town's open space and recreation lands, an updated inventory of environmental resources and land use constraints, and an informative catalog of environmental challenges facing the town. The goals and objectives of the plan are consistent with those of the Cape Cod Regional Policy Plan. The Action Plan provides specific action items, together with responsible parties and timelines, that will guide the Town in achieving stated goals and objectives. Actions items of importance to the Town include implementation of the plan, including coordination between town departments and committees, improving management of town owned properties, and working toward the goal of protecting 50% of the remaining undeveloped land in Bourne.

Thank you for the opportunity to comment on this plan.

Sincerely,

A handwritten signature in cursive script, reading "Heather McElroy".

Heather McElroy  
Natural Resources/Open Space Specialist

Cc: Coreen Moore, Town Planner  
Mary McCrann, Beals and Thomas



# TOWN OF BOURNE

## *Planning Board*

Bourne Town Hall  
24 Perry Avenue  
Buzzards Bay, MA 02532  
Phone: (508) 759-0615 Fax: (508) 759-0611



December 13, 2007

Melissa Cryan  
Division of Conservation Services  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, 9<sup>th</sup> floor  
Boston MA 02114

Dear Ms. Cryan:

The Planning Board fully supports the updated Open Space and Recreation Plan. We appreciate all the hard work the Open Space committee has put into this document and wish to thank Mary McCrann of Beals and Thomas, Inc. for a job well done. We are looking forward to implementing this plan in conjunction with the LCP.

Regards,

Christopher Farrell, chairman

Cc: Mary McCrann

atg



*The Commonwealth of Massachusetts*  
*Executive Office of Energy and Environmental Affairs*  
*100 Cambridge Street, Suite 900*  
*Boston, MA 02114*

Deval Patrick  
GOVERNOR

Timothy Murray  
LIEUTENANT GOVERNOR

Ian Bowles  
SECRETARY

Tel: (617) 626-1000  
Fax: (617) 626-1181

March 5, 2008

Mary C. McCrann  
Beals and Thomas  
Reservoir Corporate Center  
144 Turnpike Road  
Southborough, MA 01772-2104

Re: Open Space and Recreation Plan

Dear Ms. McCrann:

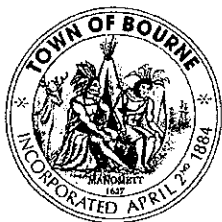
Thank you for submitting Bourne's Open Space and Recreation Plan to this office for review for compliance with the current Open Space and Recreation Plan Requirements. I am pleased to write that the plan is approved. This final approval will allow Bourne to participate in DCS grant rounds through February 2013.

Congratulations on a great job. Please call me at (617) 626-1171 if you have any questions or concerns about the plan.

Sincerely,

Melissa Cryan  
Grants Manager

cc: Board of Selectmen  
Conservation Commission  
Recreation Department



## TOWN OF BOURNE CONSERVATION COMMISSION

24 Perry Avenue  
Buzzards Bay, MA 02532



December 14, 2007

Ms. Melissa Cryan  
Division of Conservation Services  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, 9<sup>th</sup> floor  
Boston MA 02114

Re: Bourne Open Space and Recreation Plan

Dear Ms. Cryan,

This letter serves as support for the proposed Town of Bourne Open Space and Recreation Plan. The Plan has been meticulously crafted over the past year utilizing a number of resources including citizen input, historical documents, site exploration, and research and discussions with prominent members of the community. The Plan aims to show what an admirable and unique area we have in Bourne by laying out our historical framework, describing the current state of our municipality, and setting goals that will enhance the town in years to come.

I hope you will agree that the Open Space and Recreation Plan showcases what a wonderful community we have in Bourne and that the implementation of this Plan will make it even better for future generations.

Respectfully,

Brendan Mullaney, Conservation Agent  
Bourne Conservation Commission

## **Section 11.0**

### **References**

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## **11.0 REFERENCES**

All references used for the Bourne Open Space and Recreation Plan update have been noted within the document as footnotes.

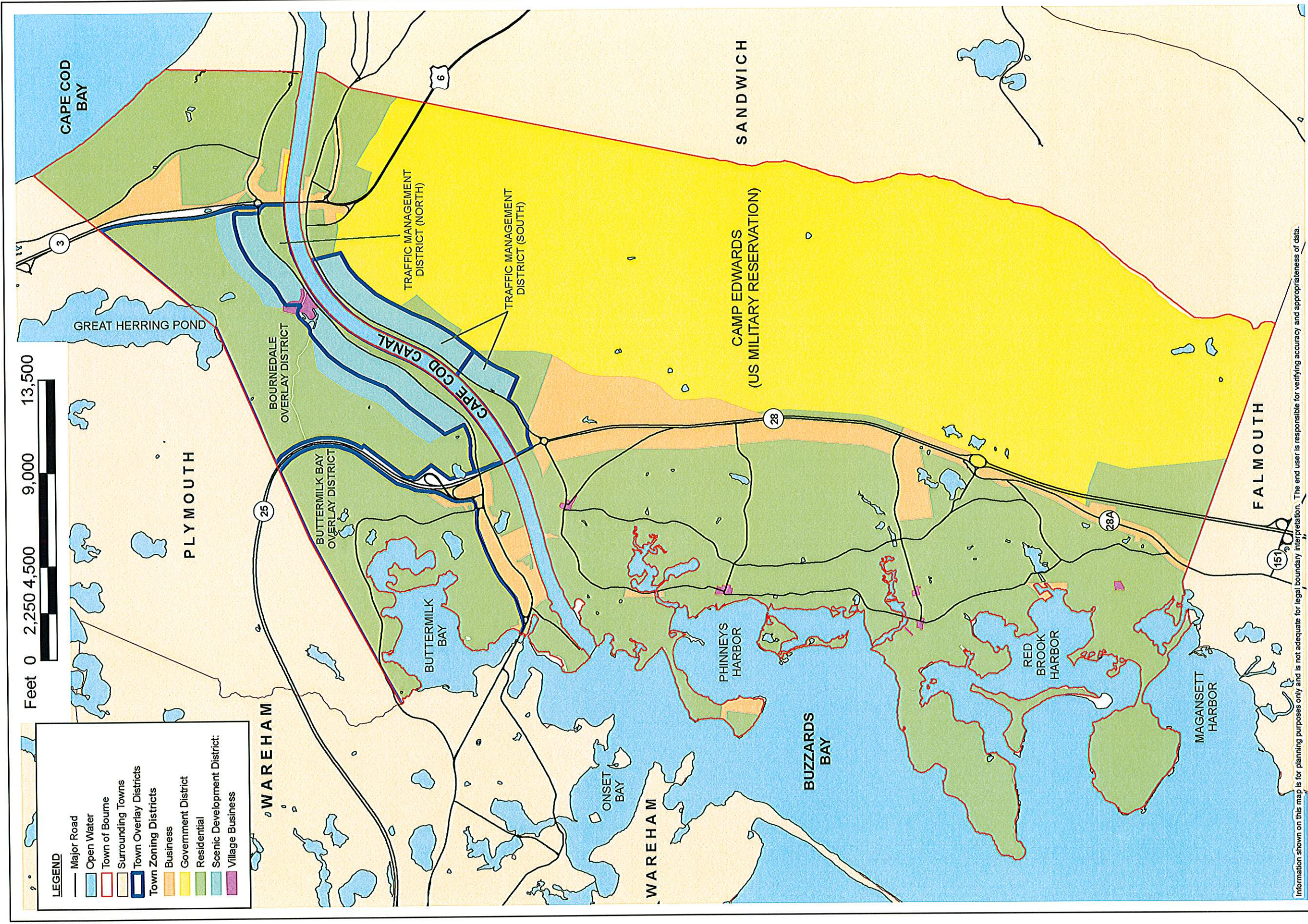
## **APPENDICES**

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## **Appendix 1 Maps**

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**Bourne Open Space**  
Bourne, Massachusetts

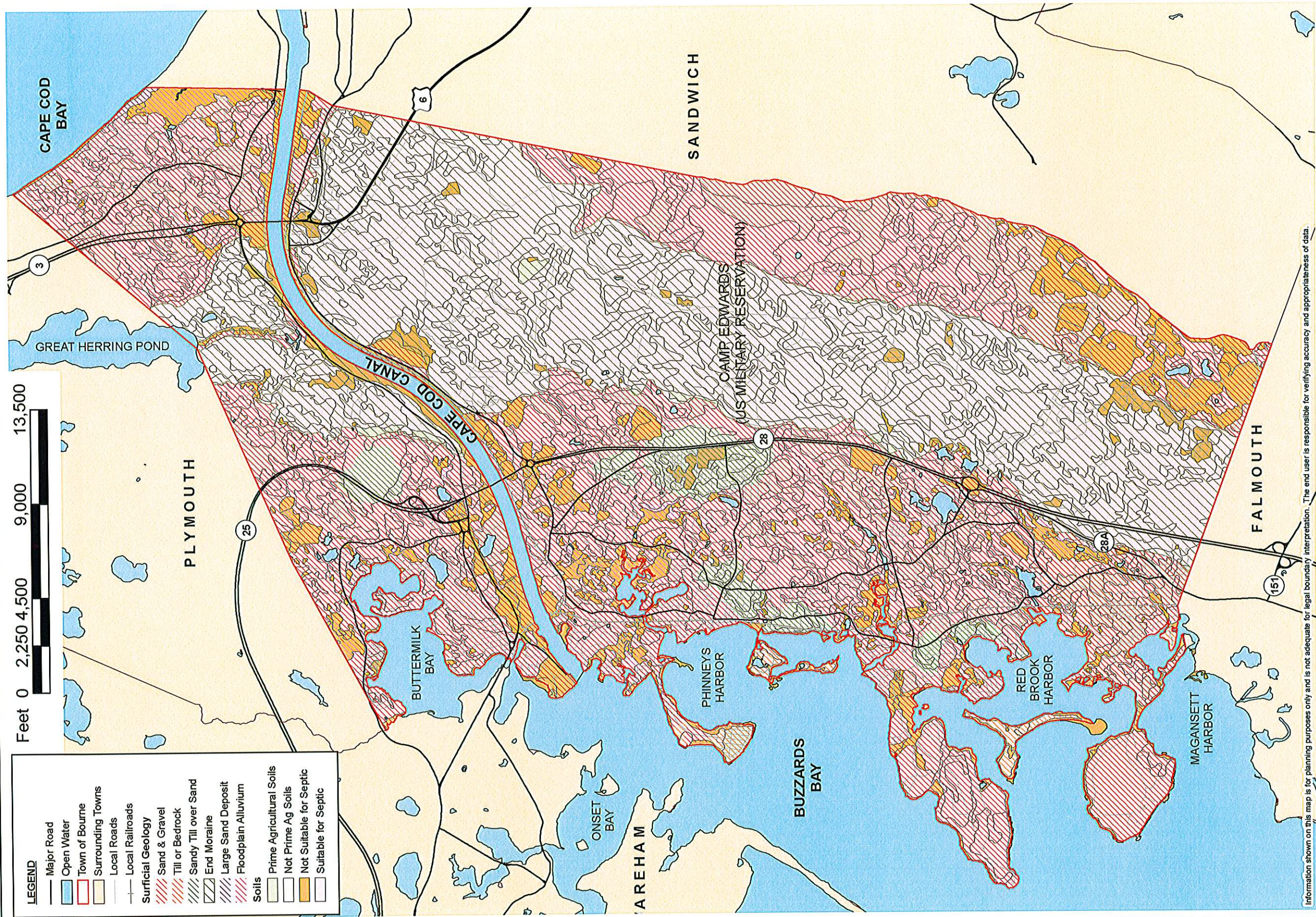
**Town of Bourne**  
24 Perry Avenue  
Bourne, Massachusetts

**Zoning Map**  
Map #1

Scale: 1" = 4,500'      Date: 10/29/2007

Source File 2004P009A-001  
BTI Project No. 2004.00





**Soils and Geologic Features Map**  
Map #2

Scale: 1" = 4,500'

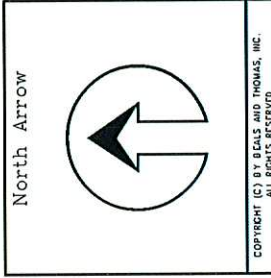
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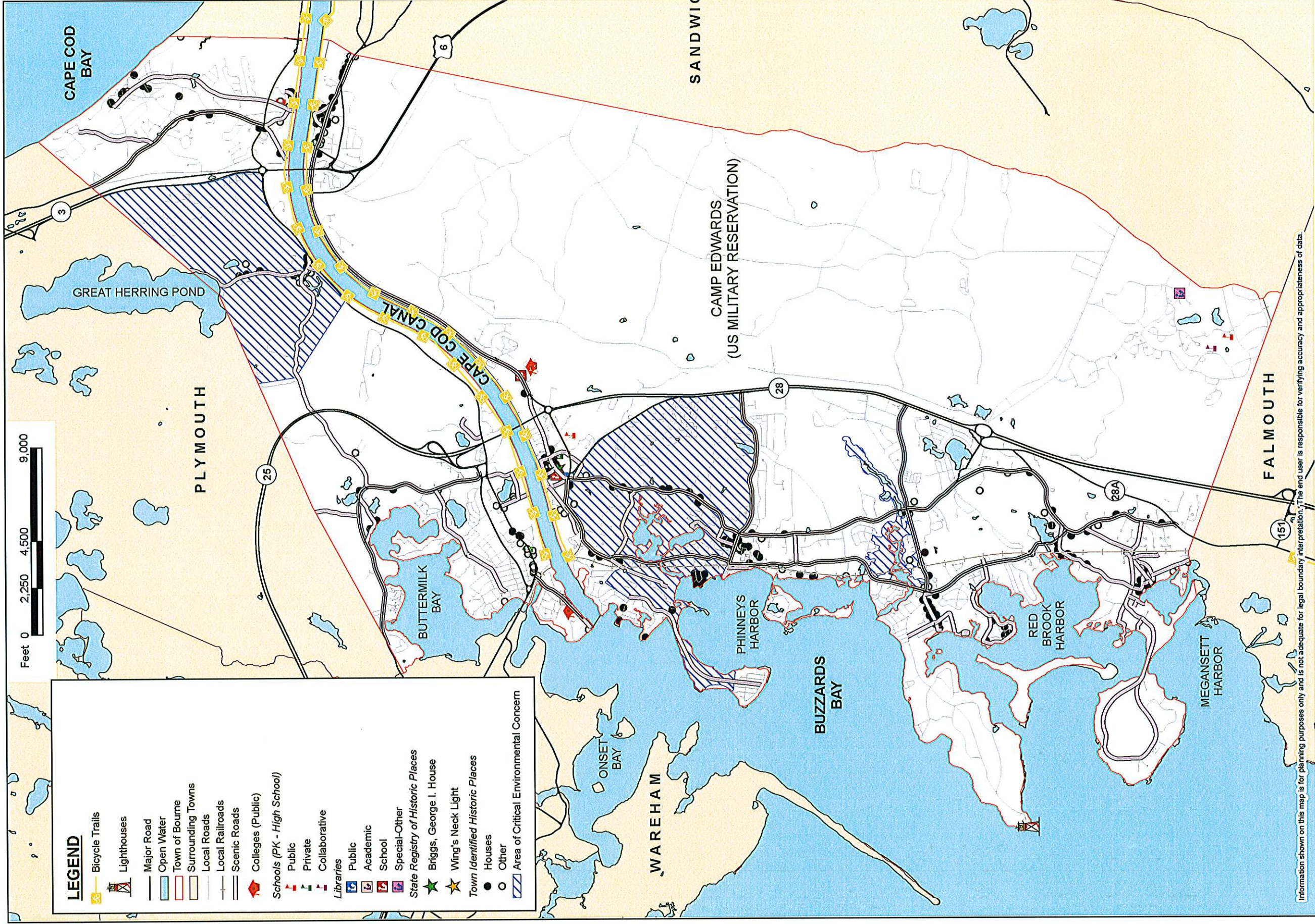
BTI Project No. 2004.00

**Bourne Open Space**  
Bourne, Massachusetts

**Town of Bourne**  
24 Perry Avenue  
Bourne, Massachusetts







Information shown on this map is for planning purposes only and is not adequate for legal boundary interpretation. The end user is responsible for verifying accuracy and appropriateness of data.

North Arrow



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**Bourne Open Space**  
Bourne, Massachusetts

**Town of Bourne**  
24 Perry Avenue  
Bourne, Massachusetts

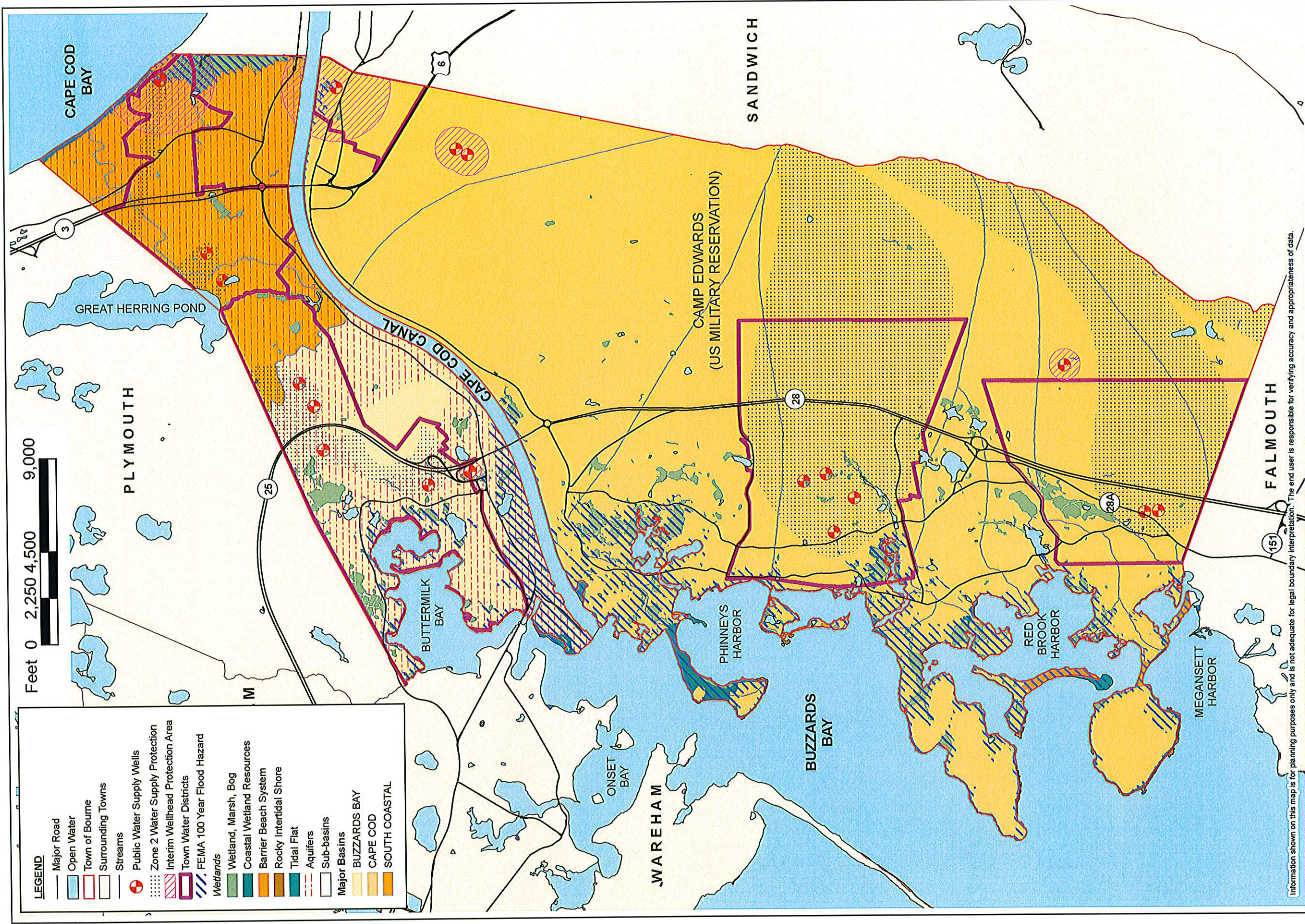
**Scenic Resources and  
Unique Environments Map**

Scale: 1" = 4,500' Map #3 Date: 10/29/2007

Source File 2004P004A-001  
BTI Project No. 2004.00

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**Bourne Open Space**  
Bourne, Massachusetts

**Town of Bourne**  
24 Perry Avenue  
Bourne, Massachusetts

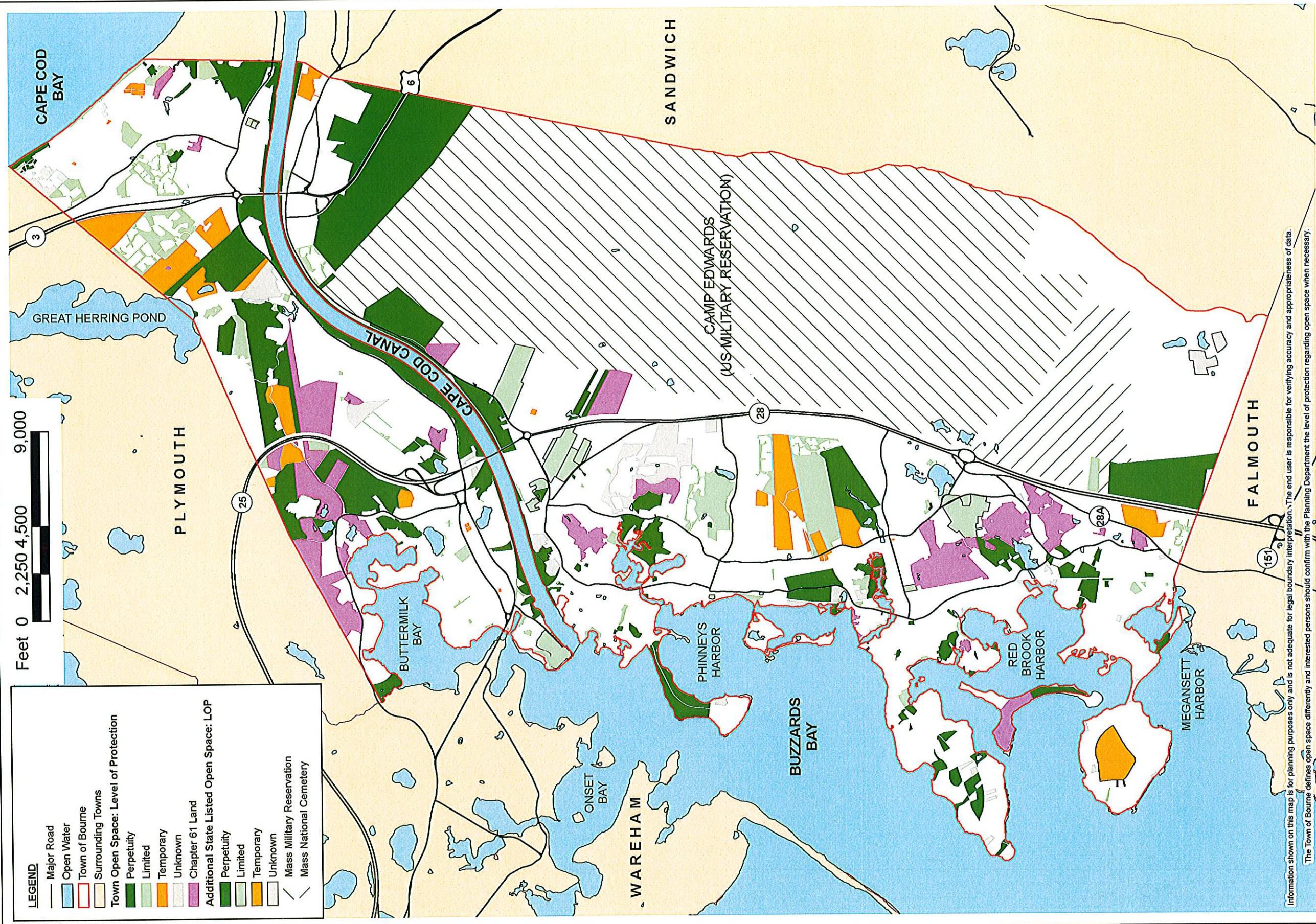
**Water Resources Map**  
Map #4

Scale: 1" = 4,500'

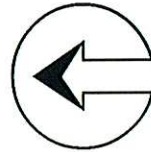
Date: 10/29/2007

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Bourne Open Space  
Bourne, Massachusetts

Bourne. Massachusetts.

Town of Bourne

24 Perry Avenue  
Bourne, Massachusetts

Inventory of Open Space Map  
Map #5

Map #5

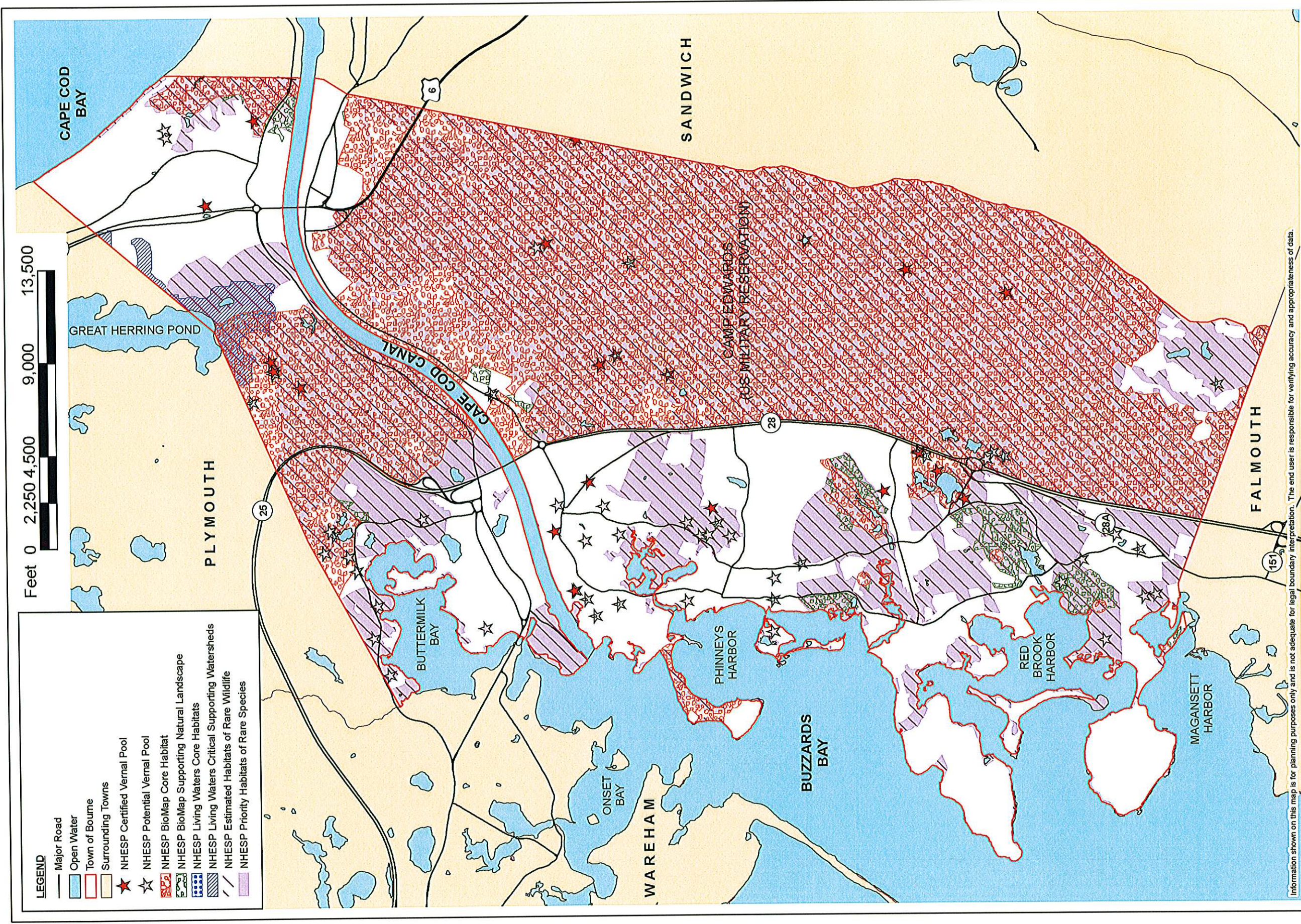
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Date: 10/29/2007

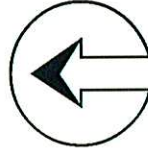
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Bourne Open Space  
Bourne, Massachusetts

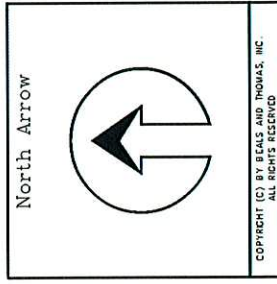
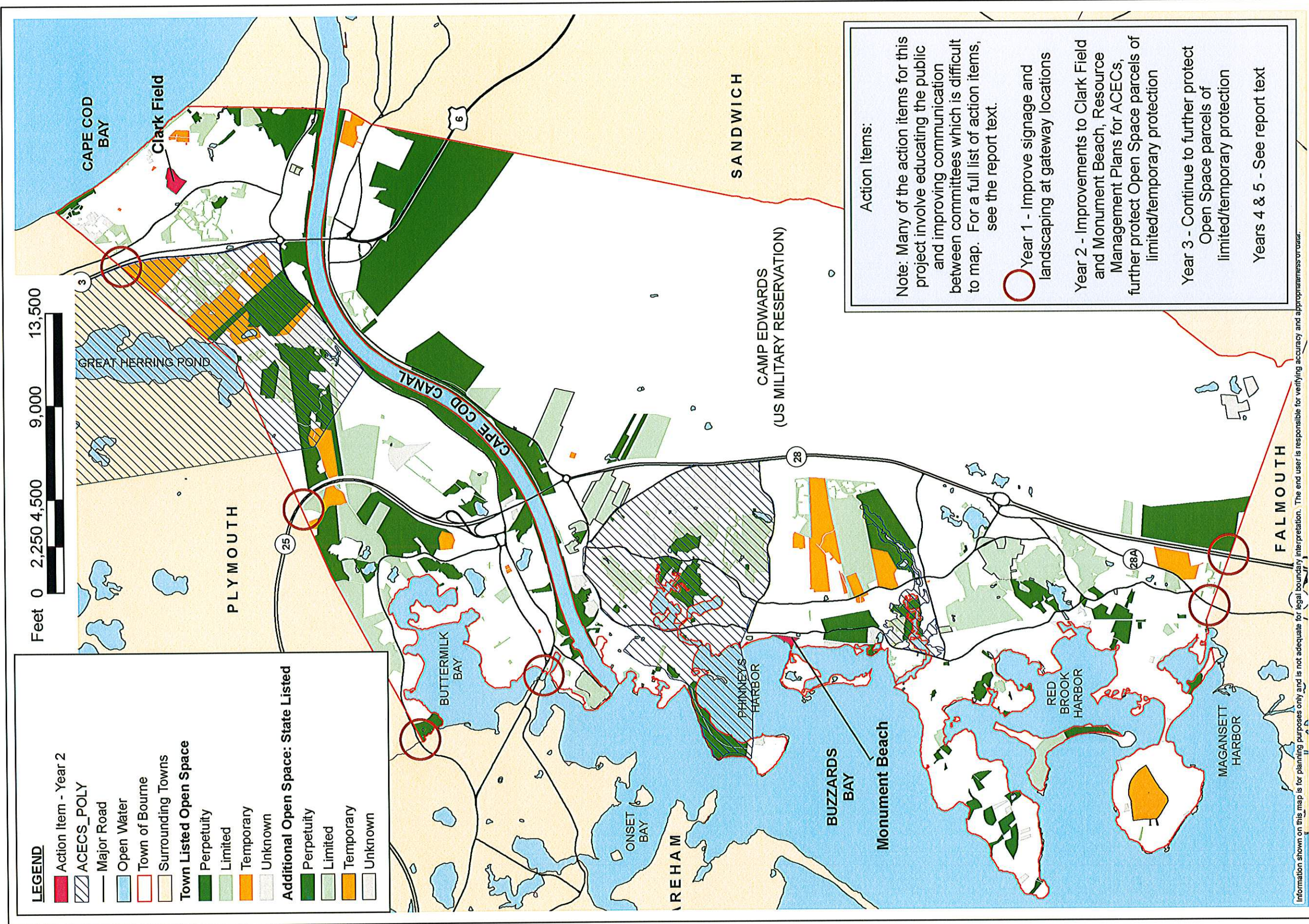
Town of Bourne  
24 Perry Avenue  
Bourne, Massachusetts

Plant and Wildlife Habitat Map  
Map #6

Scale: 1" = 4,500'      Date: 10/29/2007

Source File 2004P007A-001  
BTI Project No. 2004.00





Bourne Open Space  
Bourne, Massachusetts

Town of Bourne  
24 Perry Avenue  
Bourne, Massachusetts

Five-Year Action Plan Map  
Map #8

Scale: 1" = 4,500'      Date: 10/29/2007

Source File 2004P012A-001  
BTI Project No. 2004.00



**Appendix 2**  
**Historical Sites Listing**

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## **APPENDIX 2– HISTORICAL SITES LISTING<sup>1</sup>**

### **BOURNE INVENTORY – AREAS**

Areas listed on the Massachusetts Historical Commission inventory consist of places where there is a group of related resources like houses, commercial buildings or historic markers that together reflect a specific period in time or a historic theme. The listing of areas below has been arranged by village.

#### **Monument Beach**

- Monks Estate – Briarwood
- Phinney's Point
- Monument Beach Area
- Beach, Elm, Chapel Streets Area

#### **Sagamore**

- Savery Avenue Area (Rainbow End)
- South Sagamore
- North Sagamore Area
- Cape Cod Air Station – Otis Air Force Base

#### **Sagamore Beach**

- Sagamore Beach Area

#### **Pocasset**

- Barlows Landing Area
- Barnstable County Hospital – Thorne Clinic
- Pocasset Area

#### **Cataumet**

- Red Brook Harvard Road Area
- Mystery Lane – Squeteague Harbor Road Area
- Cataumet Area
- Cataumet Animal Rescue League

#### **Bourne**

- Camp Edwards Firing Ranges
- Head of the Bay (Little Buttermilk Bay)
- Camp Edwards Range Control Area
- Camp Edwards – Cantonment Blocks 12 and 13
- Bourne Village
- Gray Gables Area

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<sup>1</sup> Massachusetts Cultural Resource Information System (MACRIS) Database, Massachusetts Historical Commission [INTERNET] <http://mhc-macris.net>, 8 February 2007 (Disclaimer: Users of the database should keep in mind that it does not include information on all historic properties and areas in Massachusetts, nor does it reflect all the information on file on historic properties and areas at the Massachusetts Historical Commission.)

- Camp Edwards Ammunition Supply Point Area
- Keene Street – Sandwich Road Area
- Wing's Neck Light

#### **Buzzards Bay**

- Cape Cod Canal Maintenance Area
- Main Street Commercial Area

#### **Bournedale**

- Bournedale Area

### **BOURNE HISTORIC BUILDINGS INVENTORY**

Buildings that are listed in the Massachusetts Historical Commission's (MHC) inventory are not necessarily state or nationally listed historic buildings. Being listed on the MHC inventory means that the appropriate paperwork has been filled out and filed with the organization to recognize a specific building with historic characteristics. The identified buildings are eligible to be listed on the state or national register in the future if it is deemed necessary and they are eligible to be included in historic districts where appropriate.

- Buzzard's Bay Freight and Passenger Terminal, Bourne, 1932
- Aptuxet Trading Post, 24 Aptuxet Road, Bourne
- People's Church, 211 Barlows Landing Road, Bourne, 1890
- Wing, Nathaniel House, 291 Barlows Landing Road, Bourne, 1695
- Pocasset First Baptist Church, 298 Barlows Landing Road, Bourne, 1820
- Traveler's Club, 314 Barlows Landing Road, Bourne, 1910
- Sears, H. - McAllister, Thomas House, 339 Barlows Landing Road, Bourne, 1830
- First Baptist Church Parsonage, 361 Barlows Landing Road, Bourne, 1890
- Dimmock, Capt. J. House, 386 Barlows Landing Road, Bourne, 1887
- Beckerman, William H. Barn, 393 Barlows Landing Road, Bourne, 1914
- Phinney, Roland S. House, 393 Barlows Landing Road, Bourne, 1890
- Alden, Elijah James Barn, 404 Barlows Landing Road, Bourne, 1900
- Barlow, Jesse - Barlow, Capt. Lewis N. House, 404 Barlows Landing Road, Bourne, 1850
- Barlow, Capt. Edward W. Barn, 405 Barlows Landing Road, Bourne
- Barlow, Capt. Edward W. House, 405 Barlows Landing Road, Bourne, 1881B
- Beckerman, Rachel S. House, 409 Barlows Landing Road, Bourne, 1890
- Beckerman, Rachel S. Barn, 409 Barlows Landing Road, Bourne, 1890
- Barlow, Jesse House, 414 Barlows Landing Road, Bourne, 1887
- 414 Barlows Landing Road, Bourne
- Gibbs, Elisha Barn, 415 Barlows Landing Road, Bourne
- Gibbs, Elisha House, 415 Barlows Landing Road, Bourne, 1850
- Gibbs, Elisha House, 415 Barlows Landing Road, Bourne, 1800
- Lumbard, Thomas House, 416 Barlows Landing Road, Bourne, 1799

- Barlow, Jesse Frederick Carriage Barn, 420 Barlows Landing Road, Bourne
- Barlow, Jesse Frederick House, 420 Barlows Landing Road, Bourne, 1893
- Barlow, Jesse Bartlett House, 424 Barlows Landing Road, Bourne, 1890
- Barlow, Jesse Bartlett Garage, 424 Barlows Landing Road
- Wicks, Asaph House, 425 Barlows Landing Road, Bourne, 1870
- Wicks, Asaph Barn, 425 Barlows Landing Road, Bourne, 1870
- Parker, Jonathan House, 428 Barlows Landing Road, Bourne, 1795
- Barlow, Capt. William Thomas Grocery Store, 429 Barlows Landing Road, Bourne, 1880
- Barlow, Capt. William Thomas Barn, 429 Barlows Landing Road, Bourne, 1880
- Barlow, Capt. William Thomas House, 429 Barlows Landing Road, Bourne, 1880
- Kendrick, Daniel H. House, 430 Barlows Landing Road, Bourne, 1820
- Kendrick, Charles E. House, 435 Barlows Landing Road, Bourne, 1840
- Kendrick, George A. Barn - Workshop, 439 Barlows Landing Road, Bourne, 1832
- Kendrick, George A. House, 439 Barlows Landing Road, Bourne, 1832
- Kendrick, George A. Garage, 439 Barlows Landing Road, Bourne, 1832
- Barlow, Jesse and William Double House, 440 Barlows Landing Road, Bourne, 1800
- Kendrick House, 449 Barlows Landing Road, Bourne, 1780
- Burgess, Arthur Barn, 35 Bay View Ave., Bourne, 1880
- Burgess, Arthur C. House, 35 Bay View Ave., Bourne, 1880
- Tobey, Elisha H. House, 42 Beach St., Bourne, 1880
- Dainty, Dr. George W. House, 43 Beach S, Bournet, 1920
- Tobey, Capt. Elisha Barn, 45 Beach St, Bourne, 1890
- Tobey, Capt. Elisha House, 45 Beach St, Bourne, 1890
- Summinsby, J. Warren - Perry, Ervon L. House, 48 Beach St, Bourne, 1906
- Summinsby, J. Warren - Perry, Evron L. Garage, 48 Beach St, Bourne, 1906
- Perry, John Francis House, 50 Beach St, Bourne, 1880
- Perry, Capt. Salathiel Henry Barn, 61 Beach St, Bourne, 1876
- Perry, Capt. Salathiel Henry House, 61 Beach St, Bourne, 1876
- White, Mason - Battles, Josh House, 6 Bournedale Rd, Bourne, 1780
- Bent, Wilson D. House, 9 Bournedale Rd, Bourne, 1836
- Holway, Seth W., Garage, 9 Bournedale Rd, Bourne, 1880
- Gardner, George Peabody, Bungalow, 12 Briarwood Ln, Bourne, 1900
- Burgess, Capt. Benjamin House, 11 Burgess St, Bourne, 1775
- Base Engineering Maintenance Shop, Cape Cod Air Station, Bourne, 1978
- Electric Power Station - Building #023, Cape Cod Air Station, Bourne, 1985
- Electric Power Station - Building 004, Cape Cod Air Station, Bourne, 1978
- Warehouse Supply and Equipment Storage Building, Cape Cod Air Station, Bourne, 1985
- Armory - Sentry Post, Cape Cod Air Station, Bourne, 1978
- Flammable Storage Building, Cape Cod Air Station, Bourne, 1985
- Water Treatment - Chlorination Plant, Cape Cod Air Station, Bourne, 1978
- Scanner Building - Building #002, Cape Cod Air Station, Bourne, 1978
- Cape Cod Maintenance Facility - Storehouse #1, Cape Cod Canal, Bourne, 1931



- Cape Cod Maintenance Facility - Lumber Shed, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Rope Locker, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Equipment Building, Cape Cod Canal, Bourne, 1936
- Cape Cod Maintenance Facility - Winch Shed, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Boat Shop, Cape Cod Canal, Bourne, 1938
- Cape Cod Maintenance Facility - Paint Shop, Cape Cod Canal, Bourne, 1935
- Cape Cod Maintenance Facility - Machine Shop, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Lumber Shed, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Rope Locker, Cape Cod Canal, Bourne, 1945
- Cape Cod Maintenance Facility - Equipment Building, Cape Cod Canal, Bourne, 1936
- Brill, George House, 6 Chapel Ave, Bourne, 1920
- Brill, George Studio, 8 Chapel Ave, Bourne, 1920
- Monument Beach Methodist Chapel, 15 Chapel Ave, Bourne, 1891
- Smith, Angus House, 21 Chapel Ave, Bourne, 1920
- 357 Circuit Ave, Bourne, 1920
- 441 Circuit Ave, Bourne, 1920
- Bourne High School - Bourne Grammar School, Cotuit Rd, Bourne, 1905
- Barnstable County Hospital - Nurse's Ward, County Rd, Bourne, 1918
- Barnstable County Hospital - Service Building, County Rd, Bourne, 1920
- Barnstable County Hospital - Garage, County Rd, Bourne, 1920
- Cataumet Methodist Church, County Rd, Bourne, 1770
- Barnstable County Hospital - Administrative Bldg., County Rd, Bourne, 1918
- Barnstable County Hospital - Service Garage, County Rd, Bourne, 1920
- Barnstable County Hospital - Rear Building, County Rd, Bourne, 1920
- Barnstable County Hospital - Service Building, County Rd, Bourne, 1920
- Barnstable County Hospital, County Rd, Bourne, 1920
- Cataumet Schoolhouse, County Rd, Bourne, 1894
- Hamlin, Stephen House, 92 County Rd, Bourne, 1850
- Perry, Cooper John House, 111 County Rd, Bourne, 1750
- Ellis - Chamberlayne House, 132 County Rd, Bourne, 1750
- Bourne, Capt. Samuel Barn, 191 County Rd, Bourne, 1880
- Perry, Lewis - Bourne, Capt. Samuel House, 191 County Rd, Bourne, 1832
- Perry, Dea. Elijah House, 203 County Rd, Bourne, 1723
- Hamblen, Almira Crocker Ellis Barn, 203 County Rd, Bourne, 1880
- Perry, Salathiel H. Barn, 245 County Rd, Bourne, 1850
- Perry, Salathiel H. House, 245 County Rd, Bourne, 1825
- Perry, Elizabeth Henley House, 267 County Rd, Bourne, 1840
- Phinney, George Otis House, 401 County Rd, Bourne, 1800
- Burgess House, 465 County Rd, Bourne, 1800
- Perry, Howard - Blackwell, William R. House, 710 County Rd, Bourne, 1825
- Wright, Augustus House, 720 County Rd, Bourne, 1845
- Barnstable County Hospital - Caretaker's Cottage, 884 County Rd, Bourne, 1920

- Christadelphian Chapel, 930 County Rd, Bourne, 1940
- Walker, C. F. House, 990 County Rd, Bourne, 1793
- Phillips, Enos Burt Barn, 1122 County Rd, Bourne, 1870
- Phillips, Enos Burt House, 1122 County Rd, Bourne, 1870
- Swift Barn - Crossways Barn, 1170 County Rd, Bourne, 1850
- Swift House, 1170 County Rd, Bourne, 1742
- Snelling, Rev. Joseph House, 1235 County Rd, Bourne, 1800
- Swift, George A. Barn, 1235 County Rd, Bourne, 1870
- Jenkins, Alden House, 1325 County Rd, Bourne, 1785
- Crowell Farm, 31 Crowell Rd, Bourne, 1690
- Douglas, Gov. William Lewis House, 20 Douglas Ave, Bourne, 1880
- Packard, Frederick - Fields, Fred Jr. House, 23 Douglas Ave, Bourne, 1880
- Chisholm, Timothy House, 11 Elm Ave, Bourne, 1880
- Perry, Harry E. House, 12 Elm Ave, Bourne, 1880
- Reynold, Lucy B. - Neal, Harry House, 16 Elm Ave, Bourne, 1880
- Coady, Kempton J. - Brooks, Frank House, 22 Elm Ave, Bourne, 1920
- Tobey, Levi House, 23 Elm Ave, Bourne, 1915
- Perry, Ezra House, 2 Gaffield Ave, Bourne, 1880
- Hawes, Edward S. House, 1 Hawes Rd, Bourne, 1905
- 4 Hawes Rd, Bourne, 1925
- 4 Hawes Rd, Bourne, 1925
- Clark, Rev. Francis E. House, 10 Hawes Rd, Bourne, 1915
- Grazing Fields Farm - Bourne, Bethuel Tavern, Head of the Bay Rd, Bourne, 1785
- Gibbs House, 291 Head of the Bay Rd, Bourne, 1725
- Packard, Leander House, 8 Herring Pond Rd, Bourne, 1840
- Lovell, Reuben House- Ellis, Rufus Store, 12 Herring Pond Rd, Bourne, 1835
- Briggs, Seth House, 26-26B Herring Pond Rd, Bourne, 1883
- Packard, Capt. Harold G. House, 27 Herring Pond Rd, Bourne, 1840
- Packard, Capt. Harness Shop, 29 Herring Pond Rd, Bourne, 1850
- Bournedale Village School, 29 Herring Pond Rd, Bourne, 1897
- Gibbs, Nathan B. - Nightingale, George W. House, 120 Herring Pond Rd, Bourne, 1800
- Allen, Herbert House, 156 Herring Pond Rd, Bourne, 1910
- Ellis, Josiah Barn, 166 Herring Pond Rd, Bourne
- Ellis, Josiah - Nightingale, William House, 166 Herring Pond Rd, Bourne, 1800
- Shamrock, The 44 Hope Ave, Bourne, 1890
- Covell, Capt. John M. House, 21 Hunters Brook Rd, Bourne, 1812
- Swift, William Jr. House, 93 Hunters Brook Rd, Bourne, 1800
- George, Emily House, 14 Keene St, Bourne, 1901
- Harmon, Persia B. House, 20 Keene St, Bourne, 1900
- Reynolds, William House, 23 Keene St, Bourne, 1900
- Bourne, Jonathan Public Library, 30 Keene St, Bourne, 1897
- Waterhouse, Moses C. House, 59 Keene St, Bourne, 1885

- Waterhouse, Moses C. Barn, 59 Keene St, Bourne, 1885
- Swift, Ordello R. Barn, 60 Keene St, Bourne, 1880
- Swift, Ordello R. House, 60 Keene St, Bourne, 1878
- 32 Kennebec Ave, Bourne, 1920
- Buzzards Bay Rail Road Station, Main St, Bourne, 1912
- Buzzards Bay Rail Road Interlocking Tower, Main St, Bourne, 1912
- Buzzards Bay Hotel, 61 Main St, Bourne, 1920
- Buzzards Bay Antique Shop - Bay Kitchen, 71-73 Main St, Bourne, 1920
- Buzzards Bay National Bank Block, 71-73 Main St, Bourne, 1920
- Heirlooms Etc. - Grey Goose - Canal Antiques, 95-97 Main St, Bourne, 1900
- Buzzards Bay Moving Picture House - Hoyts Cinemas, 103-107 Main St, Bourne, 1920
- Bourne Fire Station, 130 Main St, Bourne, 1933
- Eldridge Lumber Company Office, 134 Main St, Bourne, 1935
- Saint Margaret's Roman Catholic Church, 141 Main St, Bourne, 1915
- Ma's Breakfast and Lunch Garage, 149 Main St, Bourne
- Ma's Breakfast and Lunch, 149 Main St, Bourne, 1920
- Saint Peter's Church-on-the-Canal, 165 Main St, Bourne, 1880
- Buzzards Bay Garage, 174 Main St, Bourne, 1940
- 178 Main St, Bourne, 1920
- 195 Main St, Bourne, 1880
- United States Service Organization - USO Clubhouse, 239 Main St, Bourne, 1940
- Bourne Building, 240 Main St, Bourne, 1880
- Keith, Eldon Garage, 15 Maryland Ave, Bourne
- Keith, Eldon House, 15 Maryland Ave, Bourne, 1925
- Keith, Eldon House, 31 Maryland Ave, Bourne, 1925
- Eldon, Keith House, 31 Maryland Ave, Bourne, 1925
- Keith, Eldon House, 32 Maryland Ave, Bourne, 1917
- Cook, Capt. Charles - Furber, Laura P. House, 35 Maryland Ave, Bourne, 1880
- Keith, Rufus P. House, 36 Maryland Ave, Bourne, 1900
- Hastings, A. B. - Keith, Roger House, 38 Maryland Ave, Bourne, 1880
- Kent, John P. Garage, 39 Maryland Ave, Bourne
- Kent, John P. House, 39 Maryland Ave, Bourne, 1900
- Leavitt, Dr. Pierce House, 45 Maryland Ave, Bourne, 1921
- Hastings, A. B. Boathouse, 49 Maryland Ave, Bourne, 1905
- Curry, Amelda - Leach, George House, 51 Maryland Ave, Bourne, 1925
- Hastings, Alton House, 53 Maryland Ave, Bourne, 1925
- Wattles, Benjamin House, 57 Maryland Ave, Bourne, 1925
- Radcliffe House, 61 Maryland Ave, Bourne, 1925
- Hunnewell, Arthur House, Mashnee Rd, Bourne, 1900
- Animal Rescue League Stable, Megansett Rd, Bourne, 1920
- Animal Rescue League Recreational Building, Megansett Rd, Bourne, 1920
- Animal Rescue League Main Building, Megansett Rd, Bourne, 1920
- Animal Rescue League Workshop, Megansett Rd, Bourne, 1920

- Storms, Capt. Peter Barn, 23 Monument Neck Rd, Bourne, 1880
- Storms, Capt. Peter House, 23 Monument Neck Rd, Bourne, 1824
- Davis, Alden P. - Gibbs, Capt. Irving F. House, 19 Mystery Ln, Bourne, 1875
- Breeden, G. House, 42 Mystery Ln, Bourne, 1875
- Breeden, G. Barn, 42 Mystery Ln, Bourne
- Breeden, G. Garage, 42 Mystery Ln, Bourne
- Swift, Abram F. House, 37 Old Bridge St, Bourne, 1906
- Gibbs, Capt. Caleb - Crystal Springs Inn, Old Head of Bay Rd, Bourne, 1783
- Gibbs, Capt. Henry House, Old Head of Bay Rd, Bourne, 1800
- Gibbs, Capt. Sylvanus House, Old Head of Bay Rd, Bourne, 1800
- Gibbs, Capt. Russell House, 8 Old Plymouth Rd, Bourne, 1720
- Swift, Francis C. Barn, 95 Old Plymouth Rd, Bourne, 1880
- Swift, Francis C. House, 95 Old Plymouth Rd, Bourne, 1880
- 219 Old Plymouth Rd, Bourne, 1850
- Gibbs, Capt. William Crowell Garage, 252 Old Plymouth Rd, Bourne
- Gibbs, Capt. William Crowell Garage, 252 Old Plymouth Rd, Bourne
- Gibbs, Capt. William Crowell House, 252 Old Plymouth Rd, Bourne, 1840
- Ellis, A. 2nd House, 255 Old Plymouth Rd, Bourne, 1850
- 19 Penobscot Ave, Bourne, 1890
- 7 Pequot Ave, Bourne, 1890
- 24 Perry Ln, Bourne, 1920
- Bourne Town Hall, 24 Perry Ln, Bourne, 1914
- Camp Edwards - Building #4016 - Goat Shed, Pew Rd, Bourne, 1978
- Camp Edwards - Building #4030 - Administration, Pew Rd, Bourne, 1941
- Camp Edwards - Building #4032 - Storage Building, Pew Rd, Bourne, 1988
- Camp Edwards - Building #4017 - Headquarters Bldg., Pew Rd, Bourne, 1978
- Burgess, Charles H. Barn, 21 Pleasant St, Bourne, 1850
- Burgess, Charles H. House, 21 Pleasant St, Bourne, 1850
- Horton, H. House, 34 Pleasant St, Bourne, 1870
- Keith, Hiram T. Barn, 51 Pleasant St, Bourne, 1880
- Keith, Hiram T. House, 51 Pleasant St, Bourne, 1865
- Packard, Capt. Roland T. House, 65 Pleasant St, Bourne, 1750
- Keith, Isaac N. Garage, 66 Pleasant St, Bourne, 1880
- Keith, Isaac N. House, 66 Pleasant St, Bourne, 1880
- Cataumet Railroad Depot, 2 Post Office Sq, Bourne, 1925
- Cleveland Lodge, 186 Presidents Rd, Bourne, 1886
- Gammons, Ferdinand House, 40 Red Brook Harbor Rd, Bourne, 1900
- Aldrich, A. L. House, 48 Red Brook Harbor Rd, Bourne, 1890
- 60 Red Brook Harbor Rd, Bourne, 1920
- Robinson, Capt. George W. House, 66 Red Brook Harbor Rd, Bourne, 1870
- Benson, F. W. House 67 Red Brook Harbor Rd, Bourne, 1880
- Parker - Robinson Boatyard Main Workshop, 68 Red Brook Harbor Rd, Bourne, 1920

- Parker - Robinson Boatyard Main Building, 68 Red Brook Harbor Rd, Bourne, 1912
- Parker - Robinson Boatyard Workshop, 68 Red Brook Harbor Rd, Bourne, 1920
- Robinson House, 75 Red Brook Harbor Rd, Bourne, 1880
- 111 Red Brook Harbor Rd, Bourne, 1910
- Center Windmill 9 Red Brook Pond Dr, Bourne, 1730
- Rothery, John J. E. House, 9 Red Brook Pond Dr, Bourne, 1900
- Assembly Hall - Clark, Harold S. Hall, 30 Robinson Rd, Bourne, 1907
- Wolcott, Rev. William E. House, 39 Robinson Rd, Bourne, 1905
- Hardy, Alpheus H. House, 90 Rocky Point Rd, Bourne, 1880
- Bournedale Lodge 854, Rt 6, Bourne
- Bournedale Lodge 854, Rt 6, Bourne
- Ellis, Nathan Bourne - Blackwell, Benjamin House, 854 Rt 6, Bourne, 1836
- Bourne Methodist Church Parsonage, Sandwich Rd, Bourne, 1834
- Saint Theresa's Roman Catholic Church, Sandwich Rd, Bourne, 1926
- Perry, Elisha Jr. House, 1 Sandwich Rd, Bourne, 1825
- Perry, Benjamin - Ellis, Gideon House, 9 Sandwich Rd, Bourne, 1690
- Bourne Grammar School, 19 Sandwich Rd, Bourne, 1925
- Briggs, George I. House, 22 Sandwich Rd, Bourne, 1802
- Booth, Alonzo E. Blacksmith Shop, 22 Sandwich Rd, Bourne, 1888
- Monument Academy - Bourne School Administration, 36 Sandwich Rd, Bourne, 1840
- Bourne United Methodist Church, 37 Sandwich Rd, Bourne, 1831
- Perry, Thomas House, 38 Sandwich Rd, Bourne, 1820
- Eldridge, Albert E. Barn, 43 Sandwich Rd, Bourne
- Eldridge, Albert E. House, 43 Sandwich Rd, Bourne, 1889
- Eldridge, Franklin C. House, 46 Sandwich Rd, Bourne, 1892
- Blackington Store - Monument Post Office, 49 Sandwich Rd, Bourne, 1860
- Daggett, Moses House, 56 Sandwich Rd, Bourne, 1888
- Swift, Capt. Ellis M. House, 59 Sandwich Rd, Bourne, 1820
- Parker, Arabella Ellis House, 60 Sandwich Rd, Bourne, 1892
- Parker, Arabella - Ellis, George House, 66 Sandwich Rd, Bourne, 1840
- Ellis, Dea. Gershom - Blackwell, Henry S. House, 201 Sandwich Rd, Bourne, 1835
- Keith Car Company Apartments, 860 Sandwich Rd, Bourne, 1900
- Keith Car Company Apartments, 860 Sandwich Rd, Bourne, 1900
- Keith Car Company Apartments, 860 Sandwich Rd, Bourne, 1900
- Keith Car Company Apartments, 860 Sandwich Rd, Bourne, 1900
- Sempioni Hall, 886 Sandwich Rd, Bourne, 1920
- 887 Sandwich Rd, Bourne
- 887 Sandwich Rd, Bourne, 1874
- Gurney, Samuel H. House and Variety Store, 896 Sandwich Rd, Bourne, 1890
- Railroad Station Master's House, 901 Sandwich Rd, Bourne, 1880
- Keith Car Works Company Worker Housing, 903 Sandwich Rd, Bourne, 1935

- Crowell, Hiram E. House, 940 Sandwich Rd, Bourne, 1850
- Harlow, S. - Pope, Benjamin Harlow House, 941 Sandwich Rd, Bourne, 1835
- 946 Sandwich Rd, Bourne, 1865
- 946 Sandwich Rd, Bourne, 1865
- Keith, Isaac N. Company Worker Housing, 947 Sandwich Rd, Bourne, 1870
- Keith, Isaac N. Company Worker Housing Barn, 947 Sandwich Rd, Bourne, 1870
- Gibbs, F. House - Keith Car Works Worker Housing, 980 Sandwich Rd, Bourne, 1850
- Benson, D. - Wedlock, John Barn, 990 Sandwich Rd, Bourne, 1850
- Benson, D. - Wedlock, John House, 990 Sandwich Rd, Bourne, 1850
- Crowell - Burgess, Hanna Rebecca House, 1005 Sandwich Rd, Bourne, 1720
- Crowell - Burgess, Hanna Rebecca Barn, 1005 Sandwich Rd, Bourne, 1850
- Keith Car Works Company Worker Housing, 1061 Sandwich Rd, Bourne, 1900
- Keith Car Works Company Worker Housing, 1063 Sandwich Rd, Bourne, 1900
- Keith Car Works Company Worker Housing, 1067 Sandwich Rd, Bourne, 1900
- Ellis, C. Grant House, 1071 Sandwich Rd, Bourne, 1900
- Rogers House, 1085 Sandwich Rd, Bourne, 1920
- Freeman Barn, 1101 Sandwich Rd, Bourne
- Freeman House, 1101 Sandwich Rd, Bourne, 1718
- Sagamore Inn, 1131 Sandwich Rd, Bourne, 1930
- Keith Freight Car Manufacturing Co. Worker Housing, 11 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 17 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 21 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 23 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 25 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 27 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 31 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 33 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 35 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 39 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 40 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 42 Savery Ave, Bourne, 1908



- Keith Freight Car Manufacturing Co. Worker Housing, 46 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 50 Savery Ave, Bourne, 1908
- Keith Freight Car Manufacturing Co. Worker Housing, 52 Savery Ave, Bourne, 1908
- Ellis, C. Grant House, 10 Shawmut Rd, Bourne, 1905
- Fisherman's Shack - Smith, Elma M. House, 14 Shawmut Rd, Bourne, 1890
- Perry, Rev. Herman House, 7 Shore Rd, Bourne, 1820
- Bauldry, Capt. George F. House, 160 Shore Rd, Bourne, 1870
- Eldridge, Albert R. House, 172 Shore Rd, Bourne, 1909
- Monument Beach Train Station, 440 Shore Rd, Bourne, 1906
- Monks, Dr. George H. House - Briarwood, 586 Shore Rd, Bourne, 1880
- Briarwood Conference Center - Welcoming Building, 586 Shore Rd, Bourne, 1935
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Monks, Dr. George H. Carriage House, 586 Shore Rd, Bourne, 1880
- Briarwood Conference Center Boat House, 586 Shore Rd, Bourne, 1920
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Bath House, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Maintenance Shed, 586 Shore Rd, Bourne, 1965
- Monks, Dr. George H. Lodge, 586 Shore Rd, Bourne, 1920
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Cabin, 586 Shore Rd, Bourne, 1950
- Briarwood Conference Center Tool Shed, 586 Shore Rd, Bourne, 1965
- Saint John's the Evangelist Roman Catholic Church, 841 Shore Rd, Bourne, 1931
- Wood, Maj. Gen. Leonard House, 866 Shore Rd, Bourne, 1876
- Wood, Dr. Charles Barn, 866 Shore Rd, Bourne, 1876
- Pettee, Benjamin House, 5 Squeteague Harbor Rd, Bourne, 1875
- Ferguson, James G. House, 15 Squeteague Harbor Rd, Bourne, 1875
- Gilbrath, Capt. Benjamin H. House, 16 Squeteague Harbor Rd, Bourne, 1880
- Ferguson, Bennett S. House, 31 Squeteague Harbor Rd, Bourne, 1880
- Perkins House, 32 Squeteague Harbor Rd, Bourne, 1875
- 34 Squeteague Harbor Rd, Bourne, 1920
- Kuhnhardt, L. Henry House, 36 Squeteague Harbor Rd, Bourne, 1875
- Ripley, Thomas W. Barn, 37 Squeteague Harbor Rd, Bourne
- Ripley, Thomas W. House, 37 Squeteague Harbor Rd, Bourne, 1880
- Hill, William P. House, 50 Squeteague Harbor Rd, Bourne, 1875
- Donovan, James Malden House, 226 Standish Rd, Bourne, 1905
- Donovan, James Malden Garage, 226 Standish Rd, Bourne, 1905
- North Sagamore Schoolhouse, 42 Washburn Rd, Bourne, 1860

- Camp Edwards - Building #4020 - Administration, Wheelock Rd, Bourne, 1959
- Camp Edwards - Building #4020A - Storage Shed, Wheelock Rd, Bourne, 1986
- Camp Edwards - Building #4021 - GAT Generator, Wheelock Rd, Bourne, 1959
- Swift Memorial Methodist Episcopal Church, 8 Williston Rd, Bourne, 1910
- Sagamore Grammar School, 30 Williston Rd, Bourne, 1909
- U. S. Post Office - Sagamore Beach Branch, 434 Williston Rd, Bourne, 1905
- Wing's Neck Light Oil House, Wing's Neck Rd, Bourne, 1849
- Wing's Neck Light Keeper's Dwelling, Wing's Neck Rd, Bourne, 1889
- Wing's Neck Light Boathouse, Wing's Neck Rd, Bourne
- Wing's Neck Light Second Keeper's House, Wing's Neck Rd, Bourne, 1875
- Lindberg, Charles House, 42 Wyman Ave, Bourne, 1920

### **BOURNE HISTORIC BURIAL GROUND INVENTORY**

- South Monument Cemetery, County Rd, Bourne, 1834
- Cataumet Cemetery, County Rd, Bourne, 1768
- Pocasset Cemetery, County Rd, Bourne, 1812
- Old Bourne Cemetery, County Rd, Bourne, 1749
- South Monument Cemetery, County Rd, Bourne, 1834
- Head of the Bay Cemetery, Head of the Bay Rd, Bourne, 1885
- Bourne Family Cemetery, Main St, Bourne, 1862
- Sagamore Cemetery, Sandwich Rd, Bourne, 1803
- Sandy Point Road Indian Cemetery, Sandy Point Rd, Bourne, 1849
- Oakland Grove Cemetery, Shore Rd, Bourne, 1900
- Monument Neck Cemetery, Shore Rd, Bourne, 1823

### **BOURNE HISTORIC OBJECT INVENTORY**

- First Indian Meeting House Marker, Herring Pond Rd, Bourne, 1924
- Bourne Soldiers and Sailors Civil War Monument, Perry Ln, Bourne, 1914
- Bourne - Sandwich Boundary Marker, Phillips Rd, Bourne, 1884
- Bourne-Providencetown-Plymouth Highway Marker, Sandwich Rd, Bourne, 1850
- Bourne-Providencetown-Plymouth Highway Marker, Sandwich Rd, Bourne, 1850
- Bourne-Sandwich Town Line Marker, Sandwich Rd, Bourne, 1850
- Camp Edwards Range Control Flagpole, Wheelock Rd, Bourne, 1959

### **BOURNE HISTORIC STRUCTURE INVENTORY**

- Academy Drive Bridge, Academy Dr, Bourne
- Falmouth Branch Railroad Bridge (Milepost #1.18), Back River, Bourne, 1909
- New York Central No. 16 Railroad Steam Tugboat, Buzzard's Bay, Bourne, 1924
- Buzzard's Bay Vertical Lift Railroad Bridge, Cape Cod Canal, Bourne, 1935
- Cape Cod Maintenance Facility - Pump House, Cape Cod Canal, Bourne, 1945
- Falmouth Branch Railroad Bridge (Milepost #4.58), County Rd, Bourne, 1908

- Falmouth Branch Railroad Bridge (Milepost #2.29), Emmons Rd, Bourne, 1902
- Bournedale Herring Run, Old Herring Pond Rd, Bourne, 1909
- Perry Avenue Bridge over Conrail, Perry Ave, Bourne, 1914
- Camp Edwards - Building #4031 - Igloo Structure, Pew Rd, Bourne, 1959
- Camp Edwards - Building #4010, 4013-4015, Pew Rd, Bourne, 1968
- Camp Edwards - Building #4011-4012, Pew Rd, Bourne, 1958
- Falmouth Branch Railroad Bridge (Milepost #3.30), Pocasset River, Bourne, 1924
- Falmouth Branch Railroad Bridge (Milepost #2.86), Rams Island Rd, Bourne, 1903
- Bourne Bridge Rt 28, Bourne, 1934
- Sagamore Bridge Rt 6, Bourne, 1935
- Sawyer Road Bridge over Cohasset Narrows, Sawyer Rd, Bourne, 1920
- Falmouth Branch Railroad Bridge (Milepost #5.51), Scraggy Neck Rd, Bourne, 1896
- Shore Road Bridge over Back River, Shore Rd, Bourne, 1931
- Red Brook Grist Windmill, 1 Shore Rd, Bourne, 1797
- Briarwood Conference Center Root Cellar, 586 Shore Rd, Bourne, 1950
- Camp Edwards Range Control Former Radar Tower, Wheelock Rd, Bourne, 1959
- Camp Edwards Range Control Radio Tower, Wheelock Rd, Bourne, 1959
- Falmouth Branch Railroad Bridge (Milepost #4.08), Wing Farm Way, Bourne, 1900
- Wing's Neck Light, Wing's Neck Rd, Bourne, 1889

**Appendix 3**  
**Public Participation Documentation**

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March 12, 2007 Public Forum

## BEALS AND THOMAS, INC.

Reservoir Corporate Center  
144 Turnpike Road (Route 9)  
Southborough, Massachusetts 01772-2104

Tel. 508-366-0560  
Fax: 508-366-4391  
mail@btiweb.com  
<http://www.btiweb.com>

*For Immediate Press Release*

**Date: January 29, 2007**

### **Bourne Open Space and Recreation Plan Update RESIDENTS INVITED TO PARTICIPATE IN THE PUBLIC FORUM**

Chester Park. Four Ponds. Gray Gables Beach. The Leary Property. Monks Park. Monument Beach. Pocasset Ballfield and Playground. Pocasset River Area of Environmental Concern (ACEC). The Railroad Bridge. Each of these parks, playgrounds and sensitive natural areas (these are only a few, there are many) are located in your community. Which one sparks your interest?

On Monday evening, March 12, a public workshop will be held at the Bourne High School Library from 7pm to 9pm to solicit input for Bourne's Open Space and Recreation Plan (OSRP) Update and your help is needed.

Bourne last produced an Open Space plan for the town in 1997 and now, in 2007, the Open Space Committee and Town Staff is working with Beals and Thomas, Inc. to prepare an updated Open Space and Recreation Plan. Beals and Thomas, Inc. is an environmental consulting firm that was hired by the Town in the fall of 2006 to update the OSRP in compliance with the Massachusetts Executive Office of Environmental Affairs, Division of Conservation Services regulations.

The Open Space and Recreation Plan will include a description of the town's natural resources, demographics and an inventory of recreation and open space facilities and properties in Bourne. **The most important element in an Open Space and Recreation Plan Update process is community input.** We would like to hear from Bourne residents about:

- What places are special in town? Why?
- What are your concerns?
- Is there too much open space? Not enough?

Come to the public workshop on March 12, 2007 that is being sponsored by the Open Space and Recreation Plan Committee. Residents are encouraged to attend and participate in this interactive workshop, which will be held from 7:00 – 9:00 pm at the Bourne High School Library.

**Note:** The snow date for this event is March 19, 2007.

Reservoir Corporate Center  
144 Turnpike Road (Route 9)  
Southborough, Massachusetts 01772-2104  
mail@btiweb.com

Tel: 508-366-0560  
Fax: 508-366-4391  
www.btiweb.com

MEETING DATE: March 12, 2007

REFERENCE: Bourne Open Space and Recreation Plan – PUBLIC FORUM  
Bourne, Massachusetts  
BTI Project No. 2004.00

PRESENT: SHM, MCM, REH, Residents of Bourne

PREPARED BY: MCM

COPIES TO: File

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**PURPOSE:**

The purpose of these meeting notes is to summarize the Public Forum held at the Bourne High School Library on March 12, 2007. The event was held as part of the public participation component of the 2007 Open Space and Recreation Plan update. Approximately 20 people attended the event from 7pm to 9pm.

The event was facilitated by Mary C. McCrann and Stacy H. Miniham and Regan E. Harrold also attended and helped facilitate the evening. When residents walked into the Bourne High School Library, they saw a large map of Bourne and were asked to put a star on what their favorite place in Bourne is. An introduction was provided by Ms. Charlotte Stiefel, the Open Space Committee Chair. Ms. McCrann made a 20 minute presentation that discussed the purpose of the plan, what open space and recreation means, demographics, goals and objectives from the 1997 plan and questions that would be asked during the evening. After the presentation, a great discussion ensued, details of which are below.

When the open discussion was completed, participants were asked to stand up and review the notes taken by Ms. Miniham. They each received three dots and were asked to place their dots on what they thought were the most important topics that were discussed at the public forum.

**DISCUSSION ITEMS:**

1. What is your favorite place in Bourne?
  - Monument Beach
    - Family has lived in Monument Beach for generations, over 300 years, lot of family/personal history there, a beautiful place
    - Only place this side of the Cape Cod Canal that has parking so that you can enjoy the ocean/amenities. The launching location, beach house and other facilities need improvements (upgrade the facilities)



- Sagamore Beach
  - A great place to visit the Cape Cod Canal, the beaches there are beautiful
  - Clark Field (this really needs improvement!!! Lacrosse, football, soccer all use this field, needs attention/better irrigation, more fields)
- Monks Park
  - Well known as an area for artists who like to draw/paint
  - Great for kayaking
  - It needs better protection/policing, it is known and used as a hang-out for kids and often times they cause trouble
- Carter Beale/Megansett Indian Trail
  - Gorgeous area, there are many rare species here
- Back River
  - Birds/wildlife, quiet and peaceful, great for kayaking
- Mashnee Island Dike
  - Great view of the Canal, Monument Beach, Phinney's Harbor all at the same time. An overall beautiful area.
  - Unfortunately, no parking
- Great Herring Pond
  - Boat ramp at the end of the Megansett Trail
- Fishing off of the Massachusetts Maritime Academy and fishing along the Cape Cod Canal
- Various playgrounds in each village are important, each village has its own amenity and they are convenient and unique
- Fish Runs – Red Brook Harbor run is closed, but it could be developed for recreational purposes in other ways, parking is an issue
- Other favorite places noted as residents entered were
  - Main Street Buzzards Bay and the park across the street
  - Pocasset Forest
  - Four Ponds
  - Cape Cod Canal
  - Scraggy Neck
  - Private Home
  - Playground at Monument Beach

2. What are some of Bourne's most scenic landscapes/viewsheds?

- Monks Park
- Looking down the Cape Cod Canal from the Upper Cape Technical School dining room (you can see both bridges and both windmills)
- Many beautiful views of sunrises and sunsets in the community, looking West on Main Street, the Monument Beach Pier

- Seal Lane at low tide (seals on the rocks)
  - From the Mashnee Island Dike and from Monument Beach, watching the Onset July 4<sup>th</sup> Celebration fireworks
  - Buttermilk Bay, Little Buttermilk Bay and the marshes and inlets that weave in and out
  - A large ship making its way through the Cape Cod Canal
  - Back River Estuary
  - The Tall Ships
  - Squeteague Harbor
  - Amarita Island
  - 6am jets from Otis Air Force Base
  - Four Ponds Conservation Area in the fall
  - Great Herring Pond from Herring Pond Road
  - Taking a boat ride to Cleveland Light
  - The Cranberry Bogs
3. What gives Bourne its character?
- Main Street Buzzards Bay, historically this was a very lively area, there were parades and lots of activity. It really needs to be revitalized!
  - Town is surrounded by water
  - Every village has a different character to it, it is nice to be able to drive around and see the differences. Housing style, tree lined streets, beaches...
4. What are some critical conservation issues that Bourne faces?
- Wastewater treatment – Town is at a critical point and faces nitrogen loading issues as well as Title V issues.
  - Where would a wastewater treatment plan go if one was to be developed?
  - Wastewater is crucial to the economy – shellfish bed closures happen all the time and are most often due to nitrogen loading and pollution
5. What are the critical recreation issues?
- Keith Field was just re-done, need more high quality fields like this
  - There are not enough fields (lacrosse, football, softball, soccer) to accommodate the youth sports programs. Space to think about for a new field might be behind the Middle School.
  - There is not enough money or manpower to maintain what Bourne already has in terms of fields and playgrounds, there is no Parks department and volunteers are heavily relied upon.
  - How is the community affected by lack of fields and over scheduling and lack of ability to provide maintenance? Lacrosse was completely cancelled last year because Clark Field was damaged. Over 200 kids had signed up.

- There is no irrigation in Clark Field – when it gets damaged, it is hard to restore. There are not enough other fields that sports can be rescheduled to if this gets damaged. Really would like to have enough fields so that use can be restored and damage repaired. Would like to have one field out of the rotation at a time.
  - Lighting is an issue for night games and practices, there are some opportunities to hold these at night, but not many
  - The number of baseball fields in the Town is enough... there is really more of a need for multi-use fields.
  - Future maintenance of the fields could be done in part through volunteers (it has been done this way since the Parks Department was dissolved)
6. How do you currently get information about open space and recreation resources and events in Bourne?
- Town Meeting
  - Community TV
  - The local newspaper, Bourne Enterprise
  - Word of mouth
  - Town of Bourne website
  - Hearing about different controversies in Town (there is not much dissemination on a regular basis)
7. How did you hear about the Open Space and Recreation Plan public forum?
- Newspaper advertisement
  - Civic organization was informed
  - Announcement at the Board of Selectmen's meeting
  - Flyer posting at Town Hall
8. Why do you live in Bourne?
- Rural character
  - Not too far from Boston
  - Hospitals and medical facilities are in close proximity
  - Great access to water related activities (shellfishing, boating, swimming, kayaking, canoeing, beach-going)
  - Small, rural, great place to raise a family, it is conveniently and centrally located to a lot of other places
  - Good location and lots of character
  - A coastal community that also has unique topography
  - Traffic on summer weekends (just kidding)
  - Born and raised in Bourne, a true native, absolutely love this town

General comment

- We are all from Bourne, even though we each live in our own respective village, we are absolutely one community. The glue of Bourne is its uniqueness and that we all seamlessly come together from separate villages into one, strong, unique community.

9. What open space/recreational amenities would you like to have?

- At the railroad track along Monument Beach, instead of only using the railway to haul trash, develop it into a recreational amenity... or add a recreational amenity like a bike path/walking trail along the railway corridor

10. What does open space mean to you?

- Lower density
- Trees
- Land that can't be developed
- No buildings
- Natural settings
- Preservation of wildlands
- Wildlife
- Mosquitoes
- Protected habitat
- Responsible trail maintenance (site specific)
- Protection of sensitive areas

**General Comments**

- Really needs to be an economic component to the plan, especially in the downtown area/Main Street Buzzards Bay. Need to create a destination point (restructure the park for year round use for people of all ages).
- Seems like visitors are discouraged from coming to Bourne... you can't get a beach sticker unless you live in Bourne or own property, otherwise, you can't have access to beaches, and even then, parking is an issue. How can we change this?
- There should be more coordination with the Military Reservation to use the recreational fields there. Used to be able to use the fields pre-September 11<sup>th</sup>. After September 11<sup>th</sup>, no longer are allowed to use them.
- Improve existing fields in Town and investigate additional areas where new ones could be created (FIELDS organization)
- Greenbelt Pathway.
- Buzzards Bay Village Association is creating a new park located at St. Margaret's and Cohasset Avenue.
- Better access and parking to open space areas like that at Monument Beach is desperately needed.

- Develop the Red Brook Harbor herring run corridor for recreational purposes
- People don't know where open space and recreational amenities in Town are located. Where are the public access ways? A map at convenient locations would be helpful.
- Railroad bridge to Charlie's Point.
- Possibly pave the railroad tracks as a bikeway.
- Promote retail.
- Marine life center, it's near the bridge and the railroad station.
- Aptuxcet Trading Post.
- Create loop trail that connects canal pathway to Main Street Buzzards Bay.

#### **ACTION ITEMS:**

Based upon the above discussion, participants were asked to place their "dots" on what they felt was the most important topic discussed during the evening. The topics that received the most dots were:

1. Critical wastewater treatment issue/nitrogen loading/Title V issues (7)
2. Monument Beach (6)
3. Not enough multi-use field space/issue with field maintenance (5)
4. Better access and parking to open space and recreation areas (4)
5. Not enough manpower or money to maintain what Bourne already has for recreational amenities, due in large part because there is no Parks Department (3)
6. Create a destination point along Main Street, Buzzards Bay and restructure the park there for year round use and users of all ages (3)
7. Protection of sensitive areas (3)
8. Lack of parking at Mashnee Island Dike area (2)
9. Lack of information regarding where open space and recreation resources are located (2)
10. Preservation of wildlands (2)
11. Wildlife (1)
12. Natural settings (1)
13. Land that can't be developed (1)
14. Sagamore Beach (beautiful beaches and the view of the canal) (1)
15. Greenbelt Pathway (1)
16. Lighting for night games and practices (1)
17. Monks Park (1)

#### **POTENTIAL RECOMMENDATIONS:**

- Ask Bourne Enterprise to do a weekly/monthly series on Bourne open space and recreational resources. Make a list of places that residents should be informed about and work with a reporter to profile a different park, playground, recreation area, beach or open space area every week. Include photos, location, how to get there and who to contact for more information.



- Use the above mentioned list and prepare Bourne open space and recreation amenity profile sheets and place them all on the Town's website so people can access the information. Also put them all together in a document format and place at Town Hall and the public library.
- Improve/fund needed maintenance activities for Clark Field.
- Improve/fund needed maintenance at Monument Beach and Chester Park
- If adding parking is not a realistic option for many of the open space and recreational amenities that were mentioned (like Mashnee Island Dike for example), investigate the possibility of running a free van or shuttle service around Town that would bring visitors to these areas. Potential for a communal bicycle system?
- Investigate the possibility of expanding the beach sticker program so that visitors to Bourne (and not only residents) have the opportunity to enjoy the Town's beaches and waterfront access points and activities.
- Make contact with the MA Military Reservation and revisit the idea of being able to use fields located on the facility (used to be able to prior to 9/11)
- Create a destination point/year round park on Main Street, Buzzards Bay to entice visitors and residents to stop and enjoy the area.
- Find out how to address the Bourne population ages 11-19... feel like there are opportunities for younger children and adults, but there is a need to better serve the teenage population.
- Continue to protect sensitive natural resources and habitats, add signage and maintain trails appropriately to minimize impacts
- Continue to address the critical wastewater treatment/nitrogen loading issue in any way and in as many ways as possible

These minutes are accepted as accurate and complete unless corrections and/or additions are received within one week of issue.

MCM/shm/200400MS001

**Appendix 4**  
**ADA Study**

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## Handicapped Accessibility Inventory – Town of Bourne OSRP

Location	Parking Spaces	Play Area/Ramps	Public Phones	Water Fountains	Toilet Facility	Picnic Area	Accessible Trails	Swimming Pool	Target Action	Target Date
<b>Conservation Areas</b>										
Four Ponds										
Pocasset River Marsh	yes						yes		yes	
Leary Property	yes						yes		yes	
Brady Property										
Standish Road Property										
Pocasset Heights Property										
Bassett's Island										
Clifton L. Broyer Conservation Area										
Sagamore Highlands	yes						yes		yes	
Burtonwood Property										
Carter Beal Property	yes						yes		yes	
Town Forest	yes						yes		yes	
<b>Beaches/Water Access/Ponds</b>										
Hen Cove/Sand Spit										
Queen Sewell Cove										
Cohasset Narrows	yes	yes				yes	yes		yes	
Taylor's Point	yes						yes		yes	
Squeateague Harbor										
Sagamore Beach "The Strand"	yes						yes		yes	
Monument Beach										
Gray Gables Beach	yes					yes	yes		yes	
Hen Cove										
Barlow's Landing Beach	yes					yes	yes		yes	
Monks Memorial Marine Park	yes						yes		yes	
Pocasset River Marine Park	yes								yes	

## Handicapped Accessibility Inventory – Town of Bourne OSRP (Continued)

Location	Parking Spaces	Play Area/Ramps	Public Phones	Water Fountains	Toilet Facility	Picnic Area	Accessible Trails	Swimming Pool	Target Action	Target Date
<b>Parks/Playgrounds/Fields</b>										
Keith Field	yes	yes		yes					yes	
North Sagamore Playground	yes	yes		yes	yes		yes		yes	
Eldridge Memorial Park	yes	yes				yes	yes		yes	
Chester Park	yes	yes					yes		yes	
Whitmore Playground	yes	yes					yes		yes	
Buzzards Bay Park	yes					yes			yes	
Slone Property									yes	
Buzzards Bay Beach	yes	yes				yes	yes		yes	
Bourne Memorial Community Building Fields and Playgrounds	yes	yes				yes	yes		yes	
Bourne Town Hall Pond and Tennis Facilities	yes					yes	yes		yes	
Bourne Scenic Park	yes		yes			yes	yes		yes	
John Gallo Ice Arena	yes								yes	

### Notes Regarding the Inventory:

- Yes = Target Action is required
- The Town of Bourne will encourage other jurisdictional public, private and nonprofit recreational facility owners to undertake these actions to achieve ADA compliance and handicapped accessibility.
- While the Town of Bourne will strive to undertake these target actions, or cause them to be undertaken by other facility owners, the ability to effectuate these changes will largely be dependent on the availability of grant or other resources beyond the Towns conventional means.

## Target Actions

In September 2007, the town owned conservation areas, parks, playgrounds, fields, beaches and water access areas were inventoried by a qualified professional at Beals and Thomas, Inc. in terms of handicapped accessibility. Recommendations about what steps should be taken regarding ADA compliance are noted in this section and have been included in the Five Year Action Plan (Section 9.0). Inventory forms were prepared for the following sites and have been summarized below and in the table in this section.

### Key: Conservation Areas

### Parks/Playgrounds/Fields

### Beaches/Water Access/Ponds

The areas described below are used most frequently and trails maintained by the Conservation Commission and volunteers on a regular basis.

#### Four Ponds (Map 39 Parcel 11) LOCATION: Barlow's Landing Road - Pocasset

Is also known as the Green Property, located in Pocasset within the Bourne Water Resource district-A North, adjacent to the town forest, containing 133.00 acres. This area is critical to water supply and is designated by the Commonwealth as an Area of Critical Environmental Concern. This area features salt water and fresh water marshes, wildlife habitat, extensive salt marsh and estuarine system, shellfish and finfish. The springs within this area maintain open water for waterfowl during the winter freeze. Several state listed rare species live in this area.

This conservation area has no developed facilities and contains four ponds, Shop Pond, The Basin, Freeman Pond, and Upper Pond, which form the headwaters of the Pocasset River. Also available to users of this area is non-motorized biking *boating?*, fishing, hiking, hunting, picnicking and nature observation.

Four Ponds is managed by the Conservation Commission and is maintained by the Department of public works and volunteers from the Lions Club.

Physical Obstacles: include steep narrow trails, which are not conducive to people with disabilities. In addition, the parking lot has no restricted parking space.

**2007 Update:** Parking lot still has no restricted parking.

#### Pocasset River Marsh (Map 38 Parcels 12,12.2, 12.3,15) LOCATION: off Shore and County Roads - Pocasset

Contains 28.1 acres and is designated by the Commonwealth as an Area of Critical Environmental Concern and is located within the Bourne Water Resource District A-North. This area features a salt water and fresh water marsh and is an important flood control area. Springs within this area maintain open water for waterfowl during the winter freeze. This area provides many with passive recreation of fishing and hunting.

Physical Obstacles: Public access very limited.



**2007 Update:** There are no dedicated handicapped parking spaces or handicapped accessible trails. Adding a handicapped van space and sign would be appropriate.

***Leary Property*** (Map 27 & 31 Parcels 45 & 1) ***LOCATION: 216 County Road - Monument Beach***

Off County and Old Dam Roads in the village of Monument Beach. This natural environment area contain 23.84 acres and feature a salt water marsh in Back River and a nature study area with trails to the salt water marsh. The trails in this passive recreation area are wider than normal and can accommodate the physically disabled. Additional features are sightseeing and nature observation. This area is used extensively by many groups such as 4-H, girl scouts, boy scouts and many others.

**2007 Update:** There are no dedicated handicapped parking spaces or handicapped accessible trails. Adding a handicapped van space and sign would be appropriate, in addition to making the path to the bench/trail accessible.

***Brady Property*** (Map 27 Parcel 40) ***LOCATION: County Road - Monument Beach***

Located on County Road containing 9.44 acres, and is adjacent to the Leary and Perry properties. The area was purchased with the agreement to remain in its natural state. This area provides the users with sightseeing, nature study and a salt-water marsh.

Physical Obstacles: This property is not accessible to the disabled and no trail system has yet been developed for the general public.

**2007 Update:** No change.

***Standish Road Property*** (Map 7.1 Parcel 6), ***70 Standish Road Sagamore Beach***

Located in North Sagamore totaling 1.68 acres. This conservation area features a fresh water pond, fresh water marsh with wildlife habitat. There are no developed facilities on this site however the site is available for observation of its natural features.

**2007 Update:** No change.

***Pocasset Heights Property*** (Map 43.3 Parcel 17,17.1), ***200 Circuit Avenue - Pocasset***

Located off Circuit Avenue, containing 17.0 acres, consisting of a salt-water marsh, wildlife habitat and a parking area. This area has no developed facilities although provides public access to shellfishing and fishing in Hen's Cove and nature observation.

**2007 Update:** No change.

***Bassett's Island*** (Map 46 Parcel 3), ***Cataumet***

Located in Cataumet within the Pocasset Harbor contains 16.0 acres of beautiful natural barrier beach, sand dunes and shellfish area. This basically isolated island recreational uses, such as boating, fishing, swimming, nature observation, picnicking and shellfishing. The location precludes many from using this area, due to the limited access.

**2007 Update:** No change.

***Clifton L. Broyer Conservation Area (Map 51.2 Parcel 15) LOCATION: off Redbrook***

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***Road – Cataumet***

Located in Cataumet between Depot Road and the Penn Central Rail Road. This 12.85-acre parcel features an upland forest, park, nature observation, foot trails for walking and horseback riding. This area lies within the Bourne Water Resource District-A-North and is tied in with Bourne Conservation Trust property.

**2007 Update:** No change.

***Sagamore Highlands (Maps 2.1 & 2.3 Parcels 1, 1.1 & 1, 1.1, 1.2, 1.3, 1.4) LOCATION: Indian Trail - Sagamore Beach***

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Located in North Sagamore adjacent to the “Strand”. These parcels are comprised of 5.64 acres, having upland and steep cliffs overlooking Cape Cod Bay. Also available are trails, nature observation and parking.

**2007 Update:** There are no dedicated handicapped parking spaces or handicapped accessible trails. Adding a handicapped van space and sign would be appropriate, in addition to making a path accessible.

***Hen Cove/Sand Spit (Map 47.1 Parcels 19) LOCATION: Circuit Avenue - Pocasset***

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Located in Pocasset/Patuisset, contains 2.20 acres, consisting of a sandy beach, shellfish area, boat moorings, and fishing.

**2007 Update:** A handicapped van sign and space is needed.

***Burtonwood Property (Map 30.2 Parcel 68) LOCATION: Central Blvd. - Monument Beach***

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A 1.11 acre parcel located in the village of Monument Beach, with a salt water marsh and upland abutting Eel Pond. This area features walking, nature observation and wildlife habitat, and is located in the Back River, Area of Critical Environmental Concern.

**2007 Update:** No change.

***Carter Beal Property (Map 10 Parcel 15) LOCATION: Bournedale Road - Bournedale***

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Located in Bournedale on 31.0 acres of prime conservation land. This area is located within the Commonwealths designated Herring River Area of Critical Concern. This property also features walking and nature observation, a park with a herring run and waterways.

**2007 Update:** There are no dedicated handicapped parking spaces or handicapped accessible trails. Adding a handicapped van space and sign would be appropriate, in addition to making a handicapped accessible path or ramp to the footbridge and/or bench.

***Keith Field*** (Map 11.4 Parcel 10 & 11) 2.98 acres, ***LOCATION: 861 Sandwich Road - Sagamore***

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With baseball fields, tennis courts, spectator seating and food concession.

**2007 Update:** There are no dedicated handicapped parking spaces or accessible play areas/ramps or water fountains. Designating a handicapped van space and aisle with striping and signage, adding a firm surface to the field, tennis courts and bleachers and accessibility to the bathroom stalls, sinks and water fountain would be appropriate.

***North Sagamore Playground*** (Map 4.3 Parcel 131) 16.15 acres, ***Clark Road - Sagamore Beach***

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With athletic fields, baseball fields, basketball courts, playground/tot lot and tennis courts.

**2007 Update:** Stripe the handicapped parking spaces and make accessible play areas/ramps or water fountains. Designating a handicapped van space and aisle with striping and signage, installing a concrete path at sloped access ways to prevent erosion and providing a firm surface to the play area is needed.

***Eldridge Memorial Park/Patrick's Playground*** (Map 19.4 Parcels 200 & 248) 8.06 acres, ***Cranberry Road - Buzzards Bay***

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With a baseball field, playground, basketball courts, picnic tables and tennis courts.

**2007 Update:** Parking spaces, play areas and ramps, picnic areas and trails all need attention. A handicapped van space and sign is needed, all routes to the playground equipment could be improved and accessible picnic tables are needed.

***Chester Park*** (Map 30.4 Parcel 25) 1.21 acres, ***Monument Ave - Monument Beach***

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With a boat ramp, athletic field, playground, tennis courts and basketball courts. This parcel also provides access to Phinney's Harbor. Chester Park is currently undergoing improvements.

**2007 Update:** Parking spaces, play areas and ramps and trails all need attention. A handicapped van space and sign is needed near the play area and an accessible route to the play area and beach is also needed.

***Whitmore Playground*** (Map 43.2 Parcel 7) 3.85 acres, ***315 Barlow's Landing Road - Pocasset***

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Including a baseball field, playground, tennis courts, basketball courts, spectator seating, food concession, and parking.

**2007 Update:** Parking spaces, play areas and ramps and trails all need attention. Signage is needed for a handicapped van as is one standard handicapped space and sign.

**Buzzards Bay Park** (Map 23 Parcel 4 & 5) 7.10 acres, ***Main Street - Buzzards Bay***

With a picnic area, benches, gazebo, parking and also provides access to the Cape Cod Canal. This area is also used for many organized events such as weddings and the Scallop Festival.

**2007 Update:** A handicapped van parking sign at the existing space is needed near the Canal entrance. A ramp should be installed at the gazebo and an accessible picnic table should be added as well as a paved route.

**Slone Property** -Post Office Square (Map 51.2 Parcel 9.1) containing 0.363 acres, ***Scraggy Neck Road – Cataumet (aka Washington Park?)***

Small park and playground.

**2007 Update:** An accessible route from the parking area to the playground equipment is needed.

**Queen Sewell Cove** (Map 19.2 Parcel 135), ***end of Cranberry Road - Buzzards Bay***

This area contains approximately 1.2 acres and a recreational, fishing, picnicking, comfort station, shellfish area, boat ramps, slips and mooring.

**2007 Update:** No change.

**Cohasset Narrows and Buzzards Bay Beach** (Map 19.3 & 23.1 Parcel 75 &152), ***Gardenier Ave - Buzzards Bay***

Contains approximately 1.02 acres with a recreational beach, boat ramp, slips, moorings, and basketball courts.

**2007 Update:** Parking spaces, play areas, picnic areas and accessible trails all need to be addressed. A handicapped van space and regular space need to be relocated to the lawn side of the parking area and to provide an accessible route onto the beach. An accessible route needs to be provided to the picnic table/swing area.

**Taylor's Point** (Map 23.3 Parcel 99) ***Tower Lane - Taylor's Point - Buzzards Bay***

7.78 acres with a beach, picnicking, salt water marsh, boating, fishing and shellfish area.

**2007 Update:** Parking spaces and accessible trails need to be addressed. A handicapped van space and sign near the path to the beach is needed and a firm access route to the beach area is needed.

**Squeateague Harbor** (Map 51.3 Parcel 62), ***Squeateague Harbor Road - Cataumet***

Contains approximately 2.5 acres with a recreational beach boat ramp, fishing, picnicking and shellfish area.

**2007 Update:** No change.

**Sagamore Beach "The Strand"** (Map 4 Parcel 14) 16.24 acres, *off Phillips Road - North Sagamore*

Recreational beach on Cape Cod Bay with limited parking. Includes fishing, swimming, and picnicking.

**2007 Update:** Parking spaces and accessible trails need to be addressed. An accessible access ramp/boardwalk from the parking lot onto the beach area should be installed.

**Monument Beach** (Map 34 Parcel 53), **LOCATION:** *Emmons Road - Monument Beach*

Containing 6.70 acres including a recreational beach, marina, snack bar, restrooms, boat ramp, shellfish area, moorings and parking, abutting Phinney's Harbor.

**2007 Update:** The picnic table and accessible routes need to be addressed. Accessibility to the beach area should be improved and an accessible mirror in the restroom is needed. A handicapped accessible picnic table and pad is needed.

**Gray Gables Beach** (Map 26.1 Parcel 185) **LOCATION:** *Gilder Road - Gray Gables*

Contains 4.33 acres with a recreational beach, shellfish area, boat ramp, moorings, fishing and parking, abutting Cape Cod Canal.

**2007 Update:** Parking, the picnic area and accessibility routes need to be addressed. Add a handicapped sign on the existing post and provide a curb cut route to the beach. Add a handicapped accessible picnic table and pad.

**Hen Cove** (Map 43.3 Parcel 265) *off Circuit Ave - Pocasset*

2.8 acres with a recreational beach, shellfish area and parking.

**2007 Update:** No change.

**Barlow's Landing Beach** (Map 43.1 Parcel 53), *end of Barlow's Landing Road - Pocasset*

1.13 acres containing a recreational beach, boat ramp, fishing, shellfish area and parking, abutting Pocasset Harbor.

**2007 Update:** Parking, the picnic area and accessibility routes need to be addressed. Add a handicapped van aisle and sign and add a handicapped accessible picnic table and pad.

**Monks Memorial Marine Park** (Map 38 Parcels 1 & 30), *off Shore Road - Pocasset*

Contains approximately 13.79 acres and is partially located within the Bourne Water Resource District-A North. This park consists of upland forest, a beach, boat ramp, boat slips, moorings and shellfish area abutting Little Bay.



**2007 Update:** Parking and accessible routes need to be addressed. A handicapped van space and sign should be added and accessibility to trails should be improved.

**Pocasset River Marine Park** (Map 38.3 Parcels 370), ***80 Shore Road - Pocasset***

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Approximately 0.44 acres consisting of a Marina.

**2007 Update:** Handicapped parking should be improved by adding a van space and sign and providing access to the bathroom area.

**Bourne Memorial Community Building** (Map 20.3 Parcel 98) ***239 Main Street - Buzzards Bay***

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Contains 5.85 acres consisting of baseball and softball fields, football/soccer fields, tennis courts, outdoor basketball courts, playground, and tot lot. Within the community building is a gymnasium, pool tables, ping-pong tables, stage, and other organized activities. This building is also the home for the Council on Aging offering a variety of senior-oriented programs and activities. In addition the buildings is used for a number of Town board and committee meetings. Managed by the Trustees of the Memorial Community Building.

**2007 Update:** Parking spaces, play areas, picnic tables and accessible paths need to be addressed. The play surface at the playground needs to be repaired, one handicapped space and sign needs to be installed near the play area and an accessible route to the play area needs to be added. Access needs to be provided to picnic tables.

**Bourne Town Hall** (Map 24.1 Parcel 10) is ***LOCATION: 24 Perry Avenue - Buzzards Bay***

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Set on 4.00 acres located at 24 Perry Avenue in Buzzards Bay. Town Hall is also located adjacent to **Bourne Pond** with facilities consisting of a tennis court, picnic tables and benches.

**2007 Update:** Parking, the picnic area and accessible trails need to be addressed. A handicapped van space and sign is needed at the tennis area and a standard space is needed at the picnic area. An accessible route to the picnic area is needed as is a picnic table and appropriate surface.

**Town Forest** (Map 35 Parcel 9) ***LOCATION: 559 County Road - Pocasset***

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Located in the villages of Pocasset and Monument Beach, this forest consists of upland and wildlife habitat with well field and nature trails.

**2007 Update:** Parking should be addressed by adding a handicapped van space and sign.

**Bourne Scenic Park** (Map 20 Parcel 13) ***LOCATION: 370 Scenic Highway - Buzzards Bay***

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Contains approximately 78 acres including 69 acres leased from the Corps of Engineers. The park consists of campsites, restrooms, dumping station, picnic area, playgrounds, BEALS AND THOMAS, INC.

salt-water swimming pool, recreation hall, office building, store and parking. Bourne Recreation Authority manages its area.

**2007 Update:** Parking, phones, the picnic area and accessible trails all need to be addressed. A handicapped ramp that meets requirements is needed at the gatehouse, the handicapped aisle at the gatehouse needs to be striped and the sign adjusted. An accessible route to the play areas is needed and to the restroom at the pavilion. An accessible shower stall at the bathhouse is needed and an accessible picnic table at each pavilion is needed.

**John Gallo Ice Arena** (Map 16 Parcel 14), ***Sandwich Road - Bourne***

Located approximately 34 acres leased from the Corps of Engineers. This site consists of an indoor public ice rink, parking, restrooms and trash receptacles.

**2007 Update:** Parking, public phones a picnic area and accessible trails all need to be addressed. Three parking spaces are needed near the building (1 of which is for a van) proximate to the front entrance walk.

## **Town of Bourne ADA Policies, Procedures and Practices**

### **Town of Bourne ADA Grievance Procedure**

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

The complaint should be in writing and contain information about the alleged discrimination such as name, address, phone number of complainant and location, date and description of the problem. Alternative means of filing complaints, such as personal interviews or a tape recording of the complaints, will be made available for persons with disabilities upon request.

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

Dody Adkins-Perry, ADA Coordinator  
Planning/Engineering Technician  
Town of Bourne  
24 Perry Avenue  
Buzzards Bay, MA 02532

Phone: 508-759-0615, ext. 345  
Email: [DAdkins-Perry@townofbourne.com](mailto:DAdkins-Perry@townofbourne.com)  
[www.townofbourne.com](http://www.townofbourne.com)

Within 15 calendar days after receipt of the complaint, the ADA Coordinator will meet with the complainant to discuss the complaint and possible resolutions. Within 15 calendar days after the meeting, the ADA coordinator will respond in writing and where appropriate, in a format accessible to the complainant, such as large print, Braille, or audio tape, the response will explain the position of the Town of Bourne and offer options for substantive resolution of the complaint.

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

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

All written complaints received by the ADA Coordinator, appeals to the Board of Selectmen or its designee, and responses from the ADA Coordinator and Board of Selectmen or its designee will be kept by the Town of Bourne for at least three years.

### **Non-Discriminatory Operations – Equal Opportunity Policy**

Town of Bourne's Affirmative Action Plan, Chapter 2, Article 2.1, Section 2.1.23 states:

- a. It shall be the policy and practice of all Town departments and agencies to provide equal employment opportunity in hiring, training, promoting, terminating, and compensating employees without regard to race, color, sex, creed, national origin, age or handicap.
- b. In order to implement this policy, the Selectman shall adopt and may, from time to time, amend an Affirmative Action Plan which shall have full force and effect of an executive order and shall be complied with by all Town departments.

Excerpt from the Town of Bourne Public Employees' Local Union contract: Article IV, Section 2, The Town is an equal employment opportunity employer. The Union recognizes the Town's Affirmative Action Plan and agrees to abide by its provisions, as from time to time amended and supplemented, except where provisions of the Plan conflict with any provision of the Agreement.

### ***Public Notification Requirements***

The Town of Bourne has provided notification through the means of posting the Disabilities Act and Grievance Procedures in Town Hall and including them in the Affirmative Action Policy Statement. A notification clause has also been included on the employment application stating: We are an equal opportunity employer, dedicated to a policy of non-discrimination in employment on any basis including race, creed, color, age, sex, religion or national origin.

### **Employment Policies and Procedures**

The Town of Bourne does not have an official personnel department. Employment and personnel issues are handled through the office of the Board of Selectmen. After researching the information for Part III, Employment Practices, I have found the Town of Bourne is in compliance with ADA and Section 504 standards.

#### ***1. Recruitment***

A. The manner in which the Town uses to advertise jobs is in compliance with ADA and Section 504 standards. See Attachment D (Town of Bourne Application for Employment), this document states employment practices for the Town. Included in the supporting documents is Attachment E, a job advertisement posted in the JOBMART publication for the Town of Bourne, Town Planner.

B. Interviews conducted address the applicants qualifications for the job. Questions of disability are not discussed, consideration for employment is solely related to occupational qualifications.

## ***2. Personnel Actions***

Recruitment, selection, promotion, hiring upgrading, benefits, grievance, sick leave, etc. are addressed through contracts agreed to by members of the MA Laborers' District Council of the Laborers' International Union of North America, AFL-CIO (Attachment F), the Bourne Employees Association (Attachment G) and the Town of Bourne-Board of Selectmen. See attachments for excerpts on these matters.

## ***3. Leave Administration***

The Town of Bourne does not discriminate regarding leave administration. Leave is addressed with employee contracts and is also addressed in the Town of Bourne "Family Medical Leave Act" (Attachment H).

## ***4. Training***

All employees are covered under union contracts equally. At this time the union contract does not address training specifically, although under Article IV Nondiscrimination does state the union shall comply with the Towns nondiscrimination policy.

## ***5. Tests***

The State Department of Personnel Administration tests are used for Civil Service positions. Tests are measured for essential job requirements only.

## ***6. Medical Examinations/Questionnaires***

Within the Town of Bourne's employment application (Attachment B) a medical examination and medical clearance will be required for establishing capabilities of performing the job offered with or without reasonable accommodations.

## ***7. Social/Recreational Programs***

The Town of Bourne does not discriminate against people with disabilities all social and recreational programs are open to all individuals.

## ***8. Fringe Benefits***

Fringe benefits are the same for every employee that is governed under the same contract.

## ***9. Collective Bargaining Agreements***

The Town does not discriminate in this process all employees may participate regardless of disabilities.

## ***10. Wage and Salary Administration***

Employees with disabilities are not offered different rates of compensation based solely on their disability.

**Appendix 5**  
**Supportive Documentation**

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## Areas of Critical Environmental Concern

### Pocasset River ACEC<sup>1</sup>

The Secretary of Environmental Affairs' designation document states that the Pocasset River ACEC is significant to flood control, the prevention of storm damage, and the protection of land containing shellfish and fisheries. Furthermore, the following factors were found pertinent to the designation of this area as an ACEC:

- ***“Threat to the Public Health, Inappropriate Use:*** *Inappropriate development of the Pocasset River area may adversely affect the high water quality of this system, particularly in the freshwater ponds and springs. Construction in or near the ponds could increase suspended solid loadings to the detriment of aquatic plants and animals. Storm run-off from paved surfaces near the river could also degrade water quality. The loss or alteration of wetlands could remove a potentially important pollutant filtering mechanism for this entire watershed.*
- ***Quality of the Natural Characteristics:*** *The Pocasset River is characterized by a high level of water quality. In the area proposed for ACEC designation, the estuary has been classified as SA waters by the Massachusetts Division of Water Pollution Control. The freshwater portion of the river is classified as B waters. No known discharges from pipes occur within this proposed ACEC.*
- ***Productivity:*** *The Pocasset River estuary is a rich, productive coastal resource feature. This type of environment produces large amounts of organic material and helps promote the rapid cycling and availability of nutrients to organisms higher in the food chain. While the Pocasset River is a relatively small coastal stream, it offers a significant diversity of habitats for wildlife ranging from intertidal flats and marshes to small woodland ponds and forests.*
- ***Uniqueness of Area:*** *Regionally, the Pocasset River is of special interest because it offers actual and potentially excellent oyster habitat within its estuary. The upstream areas are also significant because the springs which feed the river system seldom freeze. This, in combination with its relative seclusion, offer an important source of freshwater during the winter to indigenous wildlife and migratory waterfowl. The proposed ACEC boundary for the Pocasset River also provides for the first time in*

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<sup>1</sup> Designation of the Pocasset River as an Area of Critical Environmental Concern, from [http://www.mass.gov/dcr/stewardship/acec/acecs/designations/pr\\_des.pdf](http://www.mass.gov/dcr/stewardship/acec/acecs/designations/pr_des.pdf)

Massachusetts the opportunity to designate almost an entire river and its adjacent wetlands as an ACEC. This boundary recognizes the river as an ecological system or unit. This is especially important where the volume and quality of freshwater inflow into the estuary appears to be critical in maintaining the existing faunal assemblage.

- **Irreversibility of Impact:** Significant alterations in water quantity or quality would be likely to seriously adversely affect shellfish populations in the estuary. Removing or altering the wetlands of the Pocasset River would contribute to the degradation of water quality as well as eliminate important wildlife habitat.
- **Economic Benefit:** In Bourne, shellfishing is a significant commercial and recreational enterprise. The Pocasset River contributes to the maintenance of this economic activity.
- **Supporting Factors:** The Town of Bourne considers the Pocasset River as an important natural resource. The area is identified in the Town Master Plan as an environmentally sensitive area, a key open space area and as land appropriate for conservation and/or parks. Also, adjacent to this area is the Town Forest, and important groundwater source of potable water for Bourne.”

#### **Bourne Back River ACEC<sup>2</sup>**

The Bourne Back River ACEC designation document indicates that the coastal wetlands within the ACEC are significant to the protection of groundwater and public water supplies, the prevention of pollution, flood control, the prevention of storm damage, the protection of land containing shellfish, fisheries, and wildlife habitat. The Secretary of Environmental Affairs, within the designation document, further indicates that the following factors, per 310 CMR 12.09, are relevant to the designated ACEC:

- **“Quality of the Natural Characteristics:** The Bourne Back River system possesses outstanding natural resource attributes. Although there has been significant development in the region, Bourne Back River has not yet experienced significant degradation from this activity, though the warning signs are evident. Most of the marshes, tidal flats and freshwater wetlands, with the exception of those in

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<sup>2</sup> Designation of Portions of the Town of Bourne as the Bourne Back River and Headwater Wetlands Area of Critical Environmental Concern with Supporting Findings, from [http://www.mass.gov/dcr/stewardship/acec/acecs/designations/bbr\\_des.pdf](http://www.mass.gov/dcr/stewardship/acec/acecs/designations/bbr_des.pdf)

agricultural use, are unaltered and undeveloped, allowing them to function at their maximum capacity as habitat areas, nursery and spawning areas, and, in the case of barrier beaches, for the purposes of storm damage prevention. The area contains at least three state-listed rare and endangered species, including osprey [no longer listed], spotted turtle [no longer listed], and diamondback terrapin.

- **Productivity:** The high productivity of estuarine/saltmarsh ecosystems has been well documented in the scientific literature. The plant growth within the marsh is exported by the tides and ultimately incorporated into the marine food web. The protected, shallow waters of the estuary act to a nursery to shellfish and finfish and the relatively high water quality of the tributaries and headwaters provide spawning sites for anadromous fishes. The diverse benthic population supported by the marshes, estuary and tidal flats is also extremely important as a food source for migratory and resident shorebirds and waterfowl. The system, including the headwater wetland areas, supports a wide variety of shellfish, finfish, amphibians, reptiles, birds, and mammals, within an extraordinary spectrum of habitat types.
- **Irreversibility of Impact:** Changes in the salinity regime of estuaries may eliminate or substantially alter the broad mixing zone important as a nursery for juvenile fishes and shellfish. Both coastal development, which changes the runoff characteristics of the adjacent upland, and dredging of channels within the marsh, which may lead to overdrainage of the watersheds, saltwater intrusion into the groundwater, and disrupt nutrient inputs, can act to irreversibly alter estuarine ecosystems such as Bourne Back River.

As an area of moderately-intense residential development, with one major residential development within the watershed in the planning stages, groundwater quality may be threatened by the cumulative effects of this activity.

- **Threats to Public Health through Inappropriate Use:** As noted in the nomination, portions of the designated area are used for public shellfish harvesting. Inappropriate discharges, either direct or indirect, into this system could have public health repercussions through contamination of these shellfish. Salt marshes are valuable for their ability to remove contaminants from adjacent waters. Disruptions of this function of the marsh could also have detrimental effects on the quality of the harvested shellfish. The high quality of the waters within the designated ACEC also

*makes the areas safe for water contact activities.*

- ***Imminence of Threat to Resources:*** *Cape Cod, in the past decades, has been under ever increasing development pressure, with this trend likely to continue into the next decade. These development activities pose potential threats to the areas included in the designated area. The incremental effect of construction along the edges of marshes and waterways has been shown to be problematic. Run-off from roadways and landscaped areas can bring increased levels of nutrients to the aquatic system resulting in eutrophication, possible algal blooms, and the resultant lowering of oxygen levels in the water to the detriment of marine organisms. Run-off can also carry pathogens (often indicated by elevated counts of coliform bacteria), oil and gasoline residues, and other contaminants. Even properly designed, installed, and maintained septic systems can allow leaching of nutrients into marshes and waterways in levels which cannot be easily assimilated, while failing systems can discharge raw sewage directly into surface waters. Despite laws and regulations to the contrary, construction along marshes and waterways can also bring incremental filling over time. It is hoped that this designation will serve to focus attention on the value and sensitivity of the area and will serve as a guide for future development proposals.*
- ***Economic Benefits:*** *This area has intrinsic values related to the region's economic stability. Cape Cod's, and Bourne's, economy is based on fishing, tourism, and retirement industries. The fisheries are supported through the healthy and productive marsh and estuarine systems and serve a regional recreational, and commercial fin and shellfish industry. People come to Cape Cod communities, either to visit or to live, for its unspoiled beauty, recreational opportunities, and quality of life. Tourism is supported through the waterfront vistas, the historical significance, and the recreational facilities of the public beaches. The retirement community is attracted to the region because of the serenity of the landscape and the relatively untouched nature of the environment. Any alteration of the area that results in a decrease in its productivity, attractiveness and use carries a potential for adverse economic impact.*
- ***Supporting Factors:*** *There has been virtually unanimous agreement on the appropriateness of the designation among local residents, environmental groups, and Boards and Commissions from the affected towns. There has also been support from State Legislators. The Town has taken steps to protect their natural resources and*

*have indicated that the ACEC designation will be an important part of planning and protection policies. It is therefore my strong feeling that Bourne Back River is very appropriate for designation as an Area of Critical Environmental Concern.”*

### **Herring River Watershed ACEC<sup>3</sup>**

Within the Herring River Watershed ACEC designation document, the Secretary of Environmental Affairs notes that the coastal wetlands of the ACEC are significant to the protection of groundwater and public water supplies, the prevention of pollution, flood control, the prevention of storm damage, fisheries, and wildlife habitat. The designation document goes on to state that nine of eleven resource categories (as listed in 310 CMR 12.06) used in determining whether an area should be designated an ACEC are present within the Herring River Watershed ACEC. Additionally, the following factors were found to be germane to this ACEC:

- ***“Threat to the Public Health through Inappropriate Use:*** *Given the intensity of development within the watershed, concerns have been expressed by the representatives of the Towns about protecting groundwater resources of the area. The Department of Environmental Protection’s Division of Water Supply identified the locations of three public supply wells within the boundary; most of the residents within the boundary have private wells. The DEP has also identified the area as being located within the Plymouth/Carver Sole Source Aquifer (SSA). The ACEC designation will complement the SSA designation and help to insure that this important source of drinking water is appropriately protected.*
- ***Quality of the Natural Characteristics:*** *The Division of Fisheries and Wildlife has identified great Herring pond as a regionally-important freshwater fishery resource. Also, the herring run is one of the most important in the State. The Ponds are generally clean and free of significant pollution sources, considering the intensity of development that surround them. The area contains approximately 250 acres of protected open space.*
- ***Uniqueness of the Area:*** *Two factors were considered important under this criterion. The first was the presence of three, possibly four, state-listed species protected under*

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<sup>3</sup> Designation of Portions of the Towns of Bourne and Plymouth as the Herring River Watershed Area of Critical Environmental Concern with Supporting Findings, from [http://www.mass.gov/dcr/stewardship/acec/acecs/designations/hr\\_des.pdf](http://www.mass.gov/dcr/stewardship/acec/acecs/designations/hr_des.pdf).

*the Commonwealth's Endangered Species Act, including the Box Turtle (Terrapens carolina) and the Spotted Turtle (Clemmys guttata) [no longer protected].*

*The second factor is the identified historical and cultural resources in the area. The Massachusetts Historical Commission has identified the area as containing what is believed to be the core habitation area for the "Herring Pond Indians," a Wampanoag settlement similar to, but slightly smaller than, the Gay Head and Mashpee communities. The settlement contains a meeting house site, and cemetery. The MHC also identified the presence of important historical resources from the colonial period, particularly in the Bournedale area.*

- ***Supporting Factors:*** *The elected and appointed boards and commissions of the Towns of Bourne and Plymouth have clearly stated their unqualified support of the nomination. State Senator Kirby, and Representatives Forman and Cahir have written to endorse the designation. A number of environmental organizations, including the Plymouth County Wildlands Trust, the Compact of Cape Cod Conservation Trusts, and the Buzzards Bay Action Committee, have also expressed their strong support. The Towns have taken steps to protect these regional resources, and have indicated that the ACEC designation will be an important tool in providing additional protection to this area."*



**BioMap Core Habitats- Excerpts from BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts. Core Habitats of Bourne.<sup>1</sup>**

**BM 1190** lies within the central portion of Bourne's land north of the Canal.

*This Core Habitat, centered on Myles Standish State Forest, contains the largest contiguous area of the globally significant Pitch Pine – Scrub Oak natural community remaining in the Northeast. This and other natural communities within the Core Habitat support a diversity of rare plants and animals, including no fewer than 33 rare invertebrate species of moths, butterflies, dragonflies, damselflies, and tiger beetles, as well as several globally rare plants adapted to Coastal Plain pondshores. The Core Habitat supports rare birds, salamanders, and turtles, including the state's largest known population of the Northern Red-bellied Cooter turtle. The size and quality of this Core Habitat make it the best hope for the long-term survival of rare pine barrens species in New England. Although anchored by the large Myles Standish State Forest, the majority of this Core Habitat remains unprotected.*

**BM 1237** is located in the northeastern portion of Bourne, north of the Canal, and extends into Sandwich.

*This Core Habitat encompasses salt marsh, freshwater wetlands, and adjacent uplands landward of Scusset and Sagamore beaches. The area supports a population of the globally rare Bushy Rockrose and provides habitat for Four-toed Salamanders, a variety of birds, and two rare species of moths...*

*This Core Habitat is located in close proximity to similar habitats at the Massachusetts Military Reservation, which allows for dispersal of rare moths and other flying invertebrates between these two locations...*

*Land Protection of the remaining unprotected areas should aim to protect the largest possible contiguous block of salt marsh, wetlands, and adjacent uplands.*

**BM 1250** includes the majority of the portions of Town east of Route 28, and encompasses the Massachusetts Military Reservation.

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<sup>1</sup> BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts. Core Habitats of Bourne. Produced by Natural Heritage and Endangered Species Program Massachusetts Division of Fisheries and Wildlife Executive Office of Environmental Affairs Commonwealth of Massachusetts, 2004.

*This large Core Habitat encompasses two globally important types of natural communities, the Pitch Pine – Scrub Oak community and the Coastal Plain Pond community. These and other habitats support two dozen rare species of moths, butterflies, dragonflies, and damselflies, including some of the largest and most viable populations in the state for several of these insect species. The Core Habitat also contains a diversity of rare plant species, many of which are associated with Coastal Plain Pondshores. Further protecting this Core Habitat's large Pin – Oak woodlands and barrens may provide the best opportunity in the state to conserve viable populations of Eastern Box Turtles. This is also one of the most important areas in New England for the conservation of landbirds characteristic of these habitats. Except for a portion within the Crane Wildlife Management Area in Falmouth, much of this important Core Habitat is not explicitly protected for biodiversity conservation...*

*This is also one of the most important areas in New England for the conservation of landbirds characteristic of these habitats...This was one of the most important breeding sites for Upland Sandpipers and Grasshopper Sparrows in southern New England, but grassland habitat has declined substantially during the past 20 years due to vegetative succession resulting from lack of mowing or burning. Both of these species of grassland birds would benefit from management to increase the acreage of contiguous grassland on the cantonment area of the Massachusetts Military Reservation and to minimize mowing on the Otis Air National Guard airfield during the May 1 to July 31 nesting season.*

**BM 1294** is situated on an isthmus, NAME, which extends into BAY.

*Mashnee Dike supports breeding Piping Plovers. Potential threats to nesting coastal waterbirds include habitat alteration and loss, human disturbance, and predation. Annual protection from these threats is needed.*

**BM 1314** lies in the approximate center of that section of Bourne west of Route 28.

*The shoreline of Upper Pond, Freeman Pond, Shop Pond, and other shallow wetlands with Water-willow within this Core Habitat are habitat for the Water-willow Stem Borer moth, a Threatened species that is found nowhere in the world outside of Massachusetts. This Core Habitat is located less than 10 km from other habitats for the Water-willow Stem Borer...This proximity allows for occasional movement of individual moths between these areas, which is important to maintain a viable population of this species. Apparently most of this Core Habitat is on the protected land of the Four Ponds Conservation Area.*

***BM 1315*** is a small area of land adjacent to BAY in the approximate center of Bourne's western edge.

***BM 1331*** is located southeast of C1315, proximate to BLANK.

***BM 1353*** lies south of C1331 and west of Route 28.

***BM 1364*** lies south of C1353 and west of Route 28.

***BM 1371-***

Table # below provides a list of natural communities and species found within the Core Habitats referenced above.

**Table #.** Soils within the Town of Bourne. The information provided is based upon a review of MassGIS and the “Soil Survey of Barnstable County, Massachusetts” (Fletcher, 1993). The table is reproduced in part from <http://nesoil.com/barnstable/index.htm>. N/A denotes soil abbreviations noted on MassGIS where additional information was not readily available.

<b>Soil Abbreviation</b>	<b>Soil Name</b>	<b>Hydric Soil</b>	<b>Farmland Class</b>
AmA	Amestown sandy loam, 0 to 5% slopes	No	Prime
BaB	Barnstable sandy loam, 3 to 8% slopes	No	Prime
BaC	Barnstable sandy loam, 8 to 15% slopes	No	---
BdB	N/A		---
BdC	Barnstable-Plymouth complex, rolling, bouldery	No	---
BdD	N/A		---
BeC	Barnstable-Plymouth complex, rolling, very bouldery	No	---
Bh	Beaches		---
BiB	Belgrade silt loam, 3 to 8% slopes	No	Prime
BmA	Berryland mucky loamy coarse sand, 0 to 2% slopes	Yes	---
CcA	Carver loamy coarse sand, 0 to 3% slopes	No	---
CcB	Carver loamy coarse sand, 3 to 8% slopes	No	---
CdC	Carver coarse sand, 8 to 15% slopes	No	---
CdD	Carver coarse sand, 15 to 35% slopes	No	---
DeA	Deerfield loamy fine sand, 0 to 5% slopes	No	---
Dm	Dumps, landfill	No	---
EaA	Eastchop loamy fine sand, 0 to 3% slopes	No	Prime
EaB	Eastchop loamy fine sand, 3 to 8% slopes	No	Prime
EaC	Eastchop loamy fine sand, 8 to 15% slopes	No	---
EnA	Enfield silt loam, 0 to 3% slopes	No	---
EnB	Enfield silt loam, 3 to 8% slopes	No	---
EnC	Enfield silt loam, 8 to 15% slopes	No	---
FmA	FM is Freetown mucky peat, 0 to 1% slopes, ponded	Yes	---
FsA	Fs is Freetown and Swansea mucks, 0 to 1% slopes	Yes	---
FtA	Ft is Freetown coarse sand, 0 to 1% slopes	Yes	---

HeA	Hinckley sandy loam, 0 to 3% slopes	No	---
HeB	Hinckley sandy loam, 3 to 8% slopes	No	---
HkC	Hinckley gravelly sandy loam, 8 to 15% slopes	No	---
HkD	Hinckley gravelly sandy loam, 15 to 35% slopes	No	---
HnA	Hinesburg sandy loam, 0 to 3% slopes	No	Prime
HxC	Hooksan-Dune land complex, hilly	No	---
ImA	Ipswich, Pawcatuck, and Matunuck peats, 0 to 1% slopes	Yes	---
MaA	Maybid silt loam, 0 to 3% slopes	Yes	---
MeA	Merrimac sandy loam, 0 to 3% slopes	No	Prime
MeB	Merrimac sandy loam, 3 to 8% slopes	No	Prime
MeC	Merrimac sandy loam, 8 to 15% slopes	No	---
MgC	Mg is Merrimac-Udipsammments-Urban land complex	No	---
NaB	Nantucket sandy loam, 3 to 8% slopes	No	Prime
PeA	Pipestone loamy coarse sand, 0 to 3% slopes	Yes	---
Pg	Pits, sand and gravel	No	---
PmA	Plymouth loamy coarse sand, 0 to 3% slopes	No	---
PmB	Plymouth loamy coarse sand, 3 to 8% slopes	No	---
PmC	Plymouth loamy coarse sand, 8 to 15% slopes	No	---
PmD	Plymouth loamy coarse sand, 15 to 35% slopes	No	---
PsB	Plymouth loamy coarse sand, 3 to 8% slopes, very stony	No	---
PsC	Plymouth loamy coarse sand, 8 to 15% slopes, very stony	No	---
PsD	Plymouth loamy coarse sand, 15 to 35% slopes, very stony	No	---
PvC	Plymouth-Barnstable complex, rolling, very bouldery	No	---
PvD	Plymouth-Barnstable complex, hilly, very bouldery	No	---
PxD	Plymouth-Barnstable complex, hilly, extremely bouldery	No	---
SdA	Sudbury fine sandy loam, 0 to 3% slopes	No	Prime
SeA	N/A		---
Ud	Udipsammments, smoothed	No	---
Ur	Urban land	No	---

W	Water	Yes	---
Ws	N/A		---



## Reportable Release Lookup

The search returned 220 results. Search Keywords >> Town: "BOURNE" | Sorted by: "Town, Address, RTN" | Data last updated: 02/01/2007

RTN	City/Town	Release Address	Site Name/Location Aid	Reporting Category	Notification Date	Compliance Status	Date	Phase	RAO Class	Chemical Type
4-0000037	BOURNE		MASSACHUSETTS MILITARY RESERVATION MMR	NONE	1/10/1986	TIER 1A	10/1/1993			Oil and Hazardous Material
4-0012979	BOURNE		OTIS CEMETERY	TWO HR	4/22/1997	RAO	6/27/1997		A1	Oil
4-0013496	BOURNE		BLDGS 197,196,192,162	TWO HR	11/19/1997	RAO	1/9/1998		A1	Oil
4-0016438	BOURNE		GUN POSITION 17	120 DY	5/29/1998	RTN CLOSED	9/23/1999			Hazardous Material
4-0016818	BOURNE	ACADEMY DR	MA MARITIME ACADEMY	TWO HR	1/8/2002	ADEQUATE REG	1/8/2002			
4-0011310	BOURNE	101 ACADEMY DR	MMA - POWER PLANT	TWO HR	4/19/1995	RAO	8/4/1995		A2	Oil
4-0014086	BOURNE	101 ACADEMY DR	MMA	TWO HR	8/4/1998	RAO	9/22/1998		A1	
4-0017718	BOURNE	101 ACADEMY DR	NO LOCATION AID	120 DY	3/24/2003	RAO	3/22/2004	PHASE II	B1	
4-0017766	BOURNE	101 ACADEMY DR	SHIP'S BERTH	120 DY	3/24/2003	URAM	4/8/2003			Oil
4-0000030	BOURNE	ADJACENT TO TAXIWAY E	MMRFS 1 AVGAS TEST SITE	NONE	1/15/1987	ADEQUATE REG	10/2/1993			Oil
4-0019000	BOURNE	51 AND 53 MEETING HSE LN	BOURNE FIRE STA	120 DY	3/25/2005	RAO	6/13/2005		A2	Oil and Hazardous Material
4-0018050	BOURNE	2 AND 6 CANAL VIEW RD	FORMER CANAL VIEW AUTO	120 DY	10/2/2003	RAO	10/5/2004		A2	Oil and Hazardous Material
4-0001256	BOURNE	ARTILLERY FIRING PTS	MMRCS 18 PROPELLENT BURNING	NONE	1/15/1993	ADEQUATE REG	10/2/1993			
4-0017830	BOURNE	ATTPUTEXET RD	POLE 9172/1	TWO HR	6/2/2003	RAO	6/26/2003		A2	Oil
4-0017141	BOURNE	AVERY RD	FMR A RANGE	120 DY	8/24/2001	RTN CLOSED	10/23/2001	PHASE II		Hazardous Material

4-0000032	BOURNE	BARLOW LANDING RD	COMPONENTS MFG SERVICE	NONE	1/15/1987	LSPNFA	3/3/1997	PHASE III
4-0001197	BOURNE	373 BARLOW SOUTH LANDING RD	CARONS TEXACO STATION	TWO HR	1/15/1993	REMOPS	12/17/2004	PHASE V
4-0011910	BOURNE	373 BARLOW'S LANDING RD	NO LOCATION AID	72 HR	1/25/1996	REMOPS	6/8/2006	PHASE V
4-0015558	BOURNE	19 BENEDICT RD	NO LOCATION AID	72 HR	6/30/2000	RAO	4/17/2001	A2
4-0001262	BOURNE	BLDG 167 AOC FSI	MMRFS 25 S BLDG 167	NONE	1/15/1993	DEPNFA	7/23/1993	Oil
4-0011560	BOURNE	BLDG 196	OTIS ANG BASE	TWO HR	7/31/1995	RAO	8/21/1995	Oil
4-0001248	BOURNE	BLDG 754 SOUTH INNER RD	MMRCS 6 FS 22ANG MOTOR POOL	NONE	1/15/1993	ADEQUATE REG	10/2/1993	Oil
4-0010834	BOURNE	BOURNE ROTARY	GULF GAS STATION	120 DY	10/11/1994	RAO	11/24/2006	PHASE IV A2
4-0010835	BOURNE	BOURNE ROTARY	TEXACO STATION	120 DY	10/11/1994	RITN CLOSED	6/21/1999	Oil and Hazardous Material
4-0010698	BOURNE	2 BOURNE ROTARY	IHOP RESTAURANT	120 DY	8/22/1994	DPS	6/17/1998	PHASE I
4-0014330	BOURNE	5 BOURNE ROTARY	BOURNE ROTARY TEXACO	120 DY	11/9/1998	REMOPS	10/4/2006	PHASE V
4-0000408	BOURNE	195 BOURNE DALE RD	SE WILDLIFE DISTRICT	NONE	7/21/1987	DEPNFA	7/23/1993	Oil and Hazardous Material
4-0013114	BOURNE	123 BRIDGE ST	NO LOCATION AID	TWO HR	6/20/1997	RAO	8/13/1997	A1
4-0018417	BOURNE	15 BROOKSIDE RD	TEE #7	TWO HR	5/7/2004	RAO	7/6/2004	A1
4-0001251	BOURNE	BUILDING 3444	MMRFS 26 CG BLDG 3444	NONE	1/15/1993	ADEQUATE REG	10/2/1993	Oil
4-0017589	BOURNE	BURGOYNE RD	U RANGE	120 DY	4/11/2002	RITN CLOSED	6/10/2002	Hazardous Material
4-0017590	BOURNE	BURGOYNE RD	D RANGE	120 DY	6/10/2002	RITN CLOSED	6/10/2002	PHASE II
4-0017786	BOURNE	BUZZARDS BAY OIL SPILL	B NO 120	TWO HR	4/27/2003	TIER 1A	5/4/2004	PHASE IV
4-0013756	BOURNE	1 CANAL RD	SORENTI BROS	120 DY	3/23/1998	REMOPS	11/10/2005	PHASE V
4-0015592	BOURNE	1 CANAL RD	SORENTI TEXACO	TWO HR	7/7/2000	RITN CLOSED	9/8/2000	Hazardous Material
4-0019318	BOURNE	1 CANAL RD	SORENTI BROS SHELL STA	72 HR	9/1/2005	RITN CLOSED	8/31/2006	Oil
4-0000653	BOURNE	CANTONMENT AREA	MMRFS 13 FUEL LINE LEAK	NONE	1/15/1989	ADEQUATE REG	10/2/1993	Oil

4-0017593	BOURNE	CHURCH LN	SCENIC HWY	TWO HR	1/24/2003	RAO	4/10/2003	A2	
4-0017961	BOURNE	5 CHURCH ST	CANALSIDE MOTEL AT SAGAMORE ROTARY	120 DY	7/21/2003	RAO	10/23/2003	A1	Hazardous Material
4-0017900	BOURNE	455 CIRCUIT AVE	NO LOCATION AID	72 HR	7/15/2003	RAO	7/20/2004	A2	Oil
4-0017895	BOURNE	CLEVELANDS LEDGE	BUZZARDS BAY	TWO HR	7/11/2003	ADEQUATE REG	7/11/2003		
4-0015535	BOURNE	COAST GUARD AIR STA	USCG AIR STATION CAPE COD	TWO HR	6/13/2000	RAO	6/13/2001	A2	Oil
4-0000649	BOURNE	CONNERY AVE	MMRCS 9 USAF MOTOR POOL	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0015550	BOURNE	CONNERY AVE	INBOUND FROM OTIS ROTARY	TWO HR	6/19/2000	RAO	9/7/2000	A2	Oil
4-0001253	BOURNE	CONNERY AVE GUENTHER AVE	MMRFS 27	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0012263	BOURNE	COUNTY RD	BARNSTABLE CITY HOSPITAL	TWO HR	6/14/1996	RAO	8/13/1996	A1	Oil
4-0017333	BOURNE	COUNTY RD	MARION LN	120 DY	9/5/2002	ADEQUATE REG	2/5/2003		Hazardous Material
4-0015913	BOURNE	997 COUNTY RD	COLONIAL GAS CO.	72 HR	12/11/2000	RAO	4/18/2001	A2	Oil
4-0016441	BOURNE	CP EDWARDS	OLD GUN POSITION 3	120 DY	6/1/2000	RIN CLOSED	6/9/2000		Hazardous Material
4-0013683	BOURNE	CP EDWARDS TRAINING RANGE	IMPACT AREA J-1 RANGE TANK ALLEY	TWO HR	2/10/1998	RAO	9/1/1998	A1	
4-0000871	BOURNE	CPE COD AIR FORCE STA	PAVE PAWS RADAR INSTALLATION	NONE	2/23/1990	RAO	6/7/1994	A2	Oil
4-0018673	BOURNE	CPE COD BAY	5 MILES NORTH OF CANAL	TWO HR	9/15/2004	ADEQUATE REG	9/15/2004		Oil
4-0016377	BOURNE	CPE COD CANAL	CAPE COD CANAL	TWO HR	7/13/2001	ADEQUATE REG	7/13/2001		Oil
4-0019929	BOURNE	CPE COD CANAL	MARITIME ACADEMY	TWO HR	6/5/2006	ADEQUATE REG	6/5/2006		Oil
4-0001196	BOURNE	3037 CRANBERRY HWY	BOULOS TEXACO STATION	NONE	7/15/1992	RAO	1/30/2003	PHASE V A2	Oil
4-0011681	BOURNE	5300 CURTIS BLVD	CAMPBELL SCHOOL - MMR	120 DY	8/29/1995	RAO	3/30/1999	PHASE II A1	Hazardous Material
4-0015159	BOURNE	5300 CURTIS BLVD	CAMPBELL SCHOOL	TWO HR	12/6/1999	RAO	4/4/2000	A1	Oil
4-0001249	BOURNE	EAST TRUCK RD MOTOR POOL	MMRCS 2 MOTOR POOL	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0017956	BOURNE	EDWARDS MMR	FUEL PIT @ TURPENTINE RD	TWO HR	8/11/2003	RAO	10/11/2005	PHASE II A2	Oil

4-0015122	BOURNE	FLATROCK HL	CAPE COD AIR STATION USAF	120 DY	11/8/1999	RAO	11/7/2000	B1	Hazardous Material
4-0017811	BOURNE	S FORETOP RD	NO LOCATION AID	TWO HR	5/7/2003	RTN CLOSED	6/25/2003		Hazardous Material
4-0000657	BOURNE	FRANK PERKINS RD	MMRFS 17 WWII MOTOR POOL	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0017684	BOURNE	FRANK PERKINS RD	OLD D RANGE	120 DY	10/11/2001	RTN CLOSED	10/23/2001		Hazardous Material
4-0000652	BOURNE	GAFFNEY RD	MMRFS 18 FUEL TRANSPORT PT	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0010727	BOURNE	GEN MACARTHUR BLVD	BOURNE ROTARY	TWO HR	9/1/1994	RAO	11/1/1994	A1	Oil
4-0012155	BOURNE	GEN MACARTHUR BLVD	FACILITY NO 134	120 DY	3/15/1996	RAO	3/14/1997	B1	Hazardous Material
4-0014181	BOURNE	GEN MACARTHUR BLVD	BOURNE LANDFILL	120 DY	9/17/1998	RAO	12/16/1999	A2	
4-0017562	BOURNE	GIBBS RD	SE RANGE	120 DY	8/27/2002	RTN CLOSED	9/15/2002	PHASE II	Hazardous Material
4-0017563	BOURNE	GIBBS RD	T RANGE	120 DY	8/28/2002	RTN CLOSED	9/15/2002	PHASE II	Hazardous Material
4-0017292	BOURNE	GOAT PASTURE RD	DEMO-2	120 DY	9/27/2000	RTN CLOSED	11/16/2000	PHASE II	Hazardous Material
4-0000662	BOURNE	GRANVILLE AVE	MMRSD 3 FTA 3 CY 4 TRAINING	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0010139	BOURNE	GREENWAY RD	MMR UNIT TRAINING EQUIPMENT	TWO HR	12/9/1993	RAO	4/7/1994	A1	Oil
4-0010767	BOURNE	GREENWAY RD	CAMP EDWARDS BUILDING 4600	TWO HR	9/15/1994	RAO	11/15/1994	A1	Oil
4-0011171	BOURNE	GREENWAY RD	UTES MMR	TWO HR	3/2/1995	RAO	5/1/1995	A1	Oil
4-0017559	BOURNE	GREENWAY RD	MIRANGE	120 DY	8/27/2002	RTN CLOSED	9/15/2002	PHASE II	Hazardous Material
4-0000663	BOURNE	GREENWAY RD JEFFERSON RD	MMRCS 1 CG TRANSMITTER	NONE	1/15/1989	ADEQUATE REG	10/2/1993		
4-0000635	BOURNE	GREENWAY RD SANDWICH GATE	MMRCS 10 FS 24 UTES BOMARC	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000038	BOURNE	GUENTHER RD KITTREDGE RD	MMRFS 2 RAIL YARD	NONE	1/15/1987	ADEQUATE REG	10/2/1993		Oil

4-0000039	BOURNE	HERBERT RD	MMRLF 1S LANDFILL	NONE	1/15/1987	ADEQUATE REG	10/2/1993		
4-0010216	BOURNE	HERBERT RD	RUNWAYBLDG 3170	TWO HR	1/19/1994	RAO	3/9/1994	A1	Oil and Hazardous Material
4-0016434	BOURNE	HERBERT RD	F RANGE FMR	120 DY	3/26/2000	RTN CLOSED	6/9/2000		Hazardous Material
4-0017549	BOURNE	HERBERT RD	BA-1 GRENADE COURTS	120 DY	7/31/2002	TIER 1D	8/7/2003		Hazardous Material
4-0017588	BOURNE	HERBERT RD	BA-1 TRAINING AREA	120 DY	1/21/2002	RTN CLOSED	6/10/2002		Hazardous Material
4-0000267	BOURNE	156 HERRING POND RD	MA GAS & ELECTRIC	NONE	1/13/1987	DEPNFA	7/23/1993		
4-0016701	BOURNE	42 HOLT RD	NO LOCATION AID	TWO HR	10/24/2001	RAO	12/31/2001	A2	
4-0016435	BOURNE	HOWE RD	GUN POSITION 10	120 DY	2/17/2000	RTN CLOSED	6/9/2000		Hazardous Material
4-0016436	BOURNE	HOWE RD	GUN POSITION 11	120 DY	1/13/2000	RTN CLOSED	6/9/2000		Hazardous Material
4-0001258	BOURNE	JOHNS POND	MMRLF 4 JOHN S POND	NONE	1/15/1993	ADEQUATE REG	10/2/1993		
4-0016439	BOURNE	KENDRICK RD	OLD GUN POSITION 19	120 DY	6/9/2000	RTN CLOSED	6/9/2000		Hazardous Material
4-0001254	BOURNE	LANDFILL AREA	MMRLF 1 CG RUBBLE DEBRIS	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0000654	BOURNE	LEE RD	MMRCS 13BX SERVICE STATION	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0016994	BOURNE	5202 LEE RD	COAST GUARD EXCHANGE	72 HR	4/22/2002	RAO	7/17/2002	A2	Oil
4-0017539	BOURNE	41 LINCOLN AVE	NO LOCATION AID	72 HR	2/25/2003	TIER 1D	3/3/2004		Oil
4-0018179	BOURNE	5400 LINDBERG AVE	69MW1708 AT EDWARD C STONE SCHOOL	120 DY	12/17/2003	RAO	6/30/2006	PHASE III B1	Hazardous Material
4-0010448	BOURNE	10 LONGHILL RD	CATAUMET GARAGE INC	120 DY	4/28/1994	RAO	1/26/2005	B1	Hazardous Material
4-0000031	BOURNE	MA MILITARY RESERVATION	MMRLF 1 GW BASE LANDFILL	NONE	1/15/1987	ADEQUATE REG	10/2/1993		
4-0000033	BOURNE	MA MILITARY RESERVATION	MMRFTA 1 FIRE TRAINING AREA	NONE	1/15/1987	DEFNDS	7/23/1993		Oil

4-0000638	BOURNE	MA MILITARY RESERVATION	MMRFS 20 TANK 22	NONE	1/15/1989	DEPNDS	7/23/1993		Oil
4-0000644	BOURNE	MA MILITARY RESERVATION	MMRCS 4 CG FS 1 CG HANGER 128	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000645	BOURNE	MA MILITARY RESERVATION	MMRCS 2 CG HANGER 3170	NONE	1/15/1989	ADEQUATE REG	10/2/1993		
4-0000646	BOURNE	MA MILITARY RESERVATION	MMRCS 14 BLPT BLDG 156	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000647	BOURNE	MA MILITARY RESERVATION	MMRFS 4 TANKS 100 & 101	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000650	BOURNE	MA MILITARY RESERVATION	MMRCS 5 MAINTENANCE SHOP	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000651	BOURNE	MA MILITARY RESERVATION	MMRFS 9 PRODUCT TANK #108	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000655	BOURNE	MA MILITARY RESERVATION	MMRCS 6 USCG MAINTENANCE	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000656	BOURNE	MA MILITARY RESERVATION	MMRFS 7 TANK 115	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000658	BOURNE	MA MILITARY RESERVATION	MMRCS 11 PESTICIDE SHOP	NONE	1/15/1989	ADEQUATE REG	10/2/1993		
4-0000659	BOURNE	MA MILITARY RESERVATION	MMRFS 14 RANGE E 3	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0000664	BOURNE	MA MILITARY RESERVATION	MMRCS 8 FS 21 MOTOR POOL	NONE	1/15/1989	DEPNDS	7/23/1993		
4-0001261	BOURNE	MA MILITARY RESERVATION	MMRSGOU	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0001263	BOURNE	MA MILITARY RESERVATION	MMRCS 19 IMPACT AREA	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Hazardous Material
4-0018507	BOURNE	MACARTHUR BLVD	BOURNE LANDFILL	TWO HR	6/30/2004	RAO	8/27/2004	B1	
4-0014822	BOURNE	5 MACARTHUR BLVD	TEXACO FMR	72 HR	7/1/1999	RTN CLOSED	6/22/2000		Oil
4-0019419	BOURNE	606 MACARTHUR BLVD	TOWERS SERVICE CTR	TWO HR	10/21/2005	RAO	3/16/2006	A1	
4-0000980	BOURNE	360A MACARTHUR BLVD	TEXACO SERVICE STATION	NONE	1/15/1991	LSPNFA	8/2/1996		Oil
4-0012875	BOURNE	11 MAIN ST	FOOD N FUEL	72 HR	2/28/1997	RAO	6/20/1997	A1	Oil
4-0000380	BOURNE	105 MAIN ST	BUZZARDS BAY CINEMA	NONE	6/29/1987	RAO	11/1/1999	PHASE II A2	
4-0001348	BOURNE	120 MAIN ST	PROPERTY	NONE	10/1/1993	TIER 2	2/21/2003	PHASE III	Oil
4-0010373	BOURNE	120 MAIN ST	GROSSMANS FMR	72 HR	4/1/1994	TIER 2	2/21/2003	PHASE IV	Oil
4-0010719	BOURNE	121 MAIN ST	CAPE COD BANK AND TRUST	72 HR	8/29/1994	RAO	8/30/2001	PHASE V A2	Oil



4-0010342	BOURNE	175 MAIN ST	BOURNE POLICE HQ	72 HR	3/15/1994	RAO	1/7/1997	PHASE II	A2	Oil
4-0013325	BOURNE	227 MAIN ST	NEXT TO BETTY ANNS	TWO HR	9/2/1997	RAO	8/28/2002		B1	Oil
4-0016075	BOURNE	229 MAIN ST	NO LOCATION AID	120 DY	2/21/2001	TIER 2	1/23/2002	PHASE IV		Oil
4-0016216	BOURNE	229 MAIN ST	PHILS AUTO FMR	72 HR	4/23/2001	RTN CLOSED	1/23/2002			Oil
4-0016962	BOURNE	229-239 MAIN ST	BOURNE COMMUNITY BLDG	72 HR	3/22/2002	RTN CLOSED	4/5/2002			Oil
4-0001334	BOURNE	246 MAIN ST	BUZZARDS BAY BP STATION	NONE	10/1/1993	TIER 2	5/12/1999	PHASE V		
4-0018009	BOURNE	246 MAIN ST	BUZZARD BAY MOBIL	72 HR	9/5/2003	RTN CLOSED	9/10/2004			Hazardous Material
4-0012010	BOURNE	261 MAIN ST	XTRA MART	72 HR	3/13/1996	RAO	3/18/2002	PHASE V	A2	Oil
4-0001180	BOURNE	298 MAIN ST	SUNOCO SERVICE STATION	NONE	10/15/1992	RAO	11/29/2002	PHASE III	A2	Oil
4-0018871	BOURNE	101 MAPLE ST	NO LOCATION AID	TWO HR	1/13/2005	RAO	3/16/2005		A2	Oil
4-0017205	BOURNE	MASSACHUSETTS MILITARY RESERVA	OFF ROW CURTIS BLVD	TWO HR	7/17/2002	RAO	10/23/2002		A2	
4-0012144	BOURNE	MEETING HOUSE RD	FACILITY NO 88	120 DY	3/15/1996	DPS	3/17/1997			Hazardous Material
4-0014317	BOURNE	MEETING HOUSE RD	LOT 3	72 HR	11/9/1998	REMOPS	3/12/2003	PHASE V		Oil
4-0014339	BOURNE	MEETING HOUSE RD	FACILITY NO 88	72 HR	11/16/1998	RAO	11/18/1999		A2	Oil
4-0012710	BOURNE	MEETINGHOUSE RD	FACILITY NO 88	72 HR	11/4/1996	DPS	3/17/1997			Hazardous Material
4-0013977	BOURNE	5 MIDWAY RD	NO LOCATION AID	TWO HR	6/28/1998	RAO	8/11/1998		A1	Oil
4-0016442	BOURNE	MITTEN RD	GUN POSITION 8	120 DY	2/17/2000	RTN CLOSED	6/9/2000			Hazardous Material
4-0015032	BOURNE	MITTON RD	IMPACT AREA 17 GP7	120 DY	9/23/1999	TIER 2	9/25/2000	PHASE II		Hazardous Material
4-0010607	BOURNE	MMR	FLIGHT LINE RAMP	TWO HR	8/1/1994	RAO	10/28/1994		A1	Oil
4-0013130	BOURNE	MMR	LAYDOWN AREA	TWO HR	6/25/1997	RAO	10/30/1997		A1	
4-0018093	BOURNE	MMR-FLIGHT LINE	E6 ON RAMP	TWO HR	10/23/2003	RAO	12/22/2003		A1	Oil
4-0017550	BOURNE	MONUMENT BEACH RD	FORMER B RANGE	120 DY	7/29/2002	TIER 1D	8/5/2003	PHASE II		Hazardous Material
4-0000640	BOURNE	NEAR BRIARWOOD SUBDIVISION	MMRFS 3 JOHN POND RD	NONE	1/15/1989	ADEQUATE REG	10/2/1993			Oil
4-0000035	BOURNE	NORTH INNER RD LINGLEY AVE	MMRSD 5 FS 5 NON DESTRTEST	NONE	1/15/1987	ADEQUATE REG	10/2/1993			Oil
4-0000660	BOURNE	NORTH OF SNAKE RD	MMR FS-12/SANDWICH	NONE	1/15/1989	ADEQUATE	10/2/1993			Oil and

4-0001250	BOURNE	NORTH TRUCK RD MOTOR POOL	MMRCS 1 MOTOR POOL	NONE	1/15/1993	ADEQUATE REG	10/2/1993	REG			Hazardous Material
4-0015786	BOURNE	OFF CLARISSA JOSEPH RD	FLYNN PIG FARM	TWO HR	9/28/2000	RAO	7/1/2002		B1		Oil
4-0018581	BOURNE	OFF CUTTYHUNK ISL	SOW & PIGS GATSBY	TWO HR	7/31/2004	ADEQUATE REG	7/31/2004				Oil
4-0015153	BOURNE	OFF HOG IS	EAST CANAL APPROACH	TWO HR	11/28/1999	ADEQUATE REG	11/28/1999				Oil
4-0017587	BOURNE	OFF MONUMENT BEACH RD	OLD C RANGE	120 DY	9/13/2001	RTN CLOSED	10/23/2001	PHASE II			Hazardous Material
4-0000643	BOURNE	OFF REILLY RD	MMRCS 15 ENGINE RUN UP	NONE	1/15/1989	ADEQUATE REG	10/2/1993				Oil
4-0000896	BOURNE	OLD FREIGHT HOUSE RD	THE COAL MAN OF CC FMR	NONE	11/7/1991	TIER 1D	8/11/1997				Oil
4-0011879	BOURNE	35 OLD PLYMOUTH RD	NO LOCATION AID	TWO HR	1/4/1996	RAO	1/11/2000		A2		Oil
4-0010314	BOURNE	OTIS AIR FORCE BASE	NEAR BLDG 196	TWO HR	3/7/1994	RAO	5/3/1994		A1		Oil
4-0010676	BOURNE	OTIS ANG BASE	E-ROW OF AIRCRAFT PKG RAMP	TWO HR	8/16/1994	RAO	10/13/1994		A1		Oil
4-0012864	BOURNE	OTIS ANG BASE	FIRE TRAINING ARE 1 I	TWO HR	2/26/1997	RAO	4/14/1997		A2		Oil
4-0010292	BOURNE	11 PERRY AVE	NO LOCATION AID	TWO HR	2/22/1994	RAO	6/5/1995		A2		Oil
4-0010351	BOURNE	11 PERRY AVE	NYNEX-GARAGE	72 HR	3/28/1994	RAO	3/31/1995		A2		Oil
4-0017047	BOURNE	PEW RD	ASP	120 DY	10/23/2001	RTN CLOSED	10/23/2001				Hazardous Material
4-0015808	BOURNE	PHINNYS CV	NO LOCATION AID	TWO HR	9/26/2000	ADEQUATE REG	9/26/2000				Oil
4-0016445	BOURNE	POCASSET FORESTDALE RD	MORTAR POSITION 1	120 DY	4/18/2000	RTN CLOSED	6/9/2000				Hazardous Material
4-0015031	BOURNE	POCASSET FORESTDALE RD	IMPACT AREA DEMO 1	120 DY	9/23/1999	TIER 1A	9/23/1999	PHASE II			Hazardous Material
4-0016437	BOURNE	POCASSET FORESTDALE RD	OLD GUN POSITION 15	120 DY	2/4/2000	RTN CLOSED	6/9/2000				Hazardous Material
4-0017585	BOURNE	POCASSET SANDWICH RD	MP-4	120 DY	6/9/2000	RTN CLOSED	6/9/2000				Hazardous Material
4-0016309	BOURNE	POL AST AREA	NO LOCATION AID	TWO HR	6/15/2001	RAO	6/14/2002		A2		Hazardous Material

4-0010133	BOURNE	68 RED BROOK HARBOR RD	PARKER BOAT YARD	TWO HR	12/7/1993	RAO	12/8/1994	A2	Oil
4-0000642	BOURNE	REILLY RD	MMRSD 4 AIRCRAFT DRAIN	NONE	1/15/1989	ADEQUATE REG	10/2/1993		
4-0013367	BOURNE	RTE 28	OTIS ROTARY	TWO HR	9/19/1997	RAO	12/15/1997	A2	Oil
4-0014212	BOURNE	50 RTE 28A	LONG HILL RD	120 DY	9/25/1998	DPS	9/25/1998		Hazardous Material
4-0019016	BOURNE	1412 RTE 28A	FORMER S & P SERVICES INC	120 DY	4/5/2005	TIER 2	4/12/2006	PHASE II	Hazardous Material
4-0017026	BOURNE	RTE 6	SCENIC HWY REST AREA	TWO HR	4/25/2002	RAO	7/16/2002	A2	Oil
4-0000335	BOURNE	RTE 6 ROTARY	BOURNE EXXON STATION 3	NONE	1/15/1987	STMRET	10/27/2005	PHASE V	
4-0000547	BOURNE	RTE 6A PO BOX 311	CANAL BP SERVICE STATION	NONE	9/19/1988	RAO	11/13/2003	PHASE V	A2
4-0010201	BOURNE	SAGAMORE ROTARY	FACILITY NO 88	TWO HR	1/12/1994	RAO	8/11/1995	A1	Oil
4-0012235	BOURNE	SAGAMORE ROTARY	NO LOCATION AID	TWO HR	6/12/1996	RAO	6/17/1997	A1	Oil
4-0015612	BOURNE	SAGAMORE ROTARY	SORENTI BROS	72 HR	7/19/2000	REMOPS	12/9/2004	PHASE V	Oil
4-0001260	BOURNE	SANDWICH GATE GREENWAY RD	MMRCS 10 GW	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0019966	BOURNE	SANDWICH RD	CANAL RD	TWO HR	8/1/2006	RAO	9/28/2006	A2	Oil
4-0011936	BOURNE	1 SANDWICH RD	NO LOCATION AID	TWO HR	2/6/1996	RAO	1/6/1997	A2	Oil
4-0017814	BOURNE	231 SANDWICH RD	JOHN BALLO ICE RINK	120 DY	5/12/2003	TIER 1D	5/19/2004		Hazardous Material
4-0015053	BOURNE	988 SANDWICH RD	COOK RESIDENCE	TWO HR	10/6/1999	RAO	1/20/2000	A1	Oil
4-0000576	BOURNE	1030 SANDWICH RD	TEXACO SERVICE STATION	NONE	10/15/1988	REMOPS	11/12/2004	PHASE V	Oil
4-0001214	BOURNE	1050 SANDWICH RD	KNOWLTONS SALVAGE YARD	NONE	7/10/1992	TIER 1B	5/4/2005	PHASE II	
4-0017548	BOURNE	263 SCAGGY NECK RD	NO LOCATION AID	120 DY	12/24/2002	RAO	12/24/2002	A2	Oil
4-0012165	BOURNE	SCENIC HWY	NO LOCATION AID	TWO HR	5/10/1996	TIER 1D	5/19/1997		Oil
4-0019599	BOURNE	SCENIC HWY/CHURCH LN	ROADWAY	TWO HR	2/3/2006	RAO	4/3/2006	A1	Oil
4-0000694	BOURNE	SEWAGE PLANT ASHUMET PLUME	MMRFTA 1 GW CS16 17	NONE	4/15/1989	TIER 1A	10/1/1993		Oil
4-0013290	BOURNE	SHELDON ROAD AND CONNORY AVE	CAMP EDWARDS BLDG 1807 FMR	120 DY	8/18/1997	RAO	2/1/1999	A1	Oil
4-0000036	BOURNE	SHIPYARD LA	KINGMAN MARINE INC	NONE	3/6/1986	RAO	10/4/1996		Oil
4-0014393	BOURNE	1 SHIPYARD LN	KINGMAN MARINE	120 DY	12/14/1998	RAO	12/7/1999	A2	Oil
4-0015038	BOURNE	1 SHIPYARD LN	KINGMAN MARINE	72 HR	9/29/1999	RAO	12/7/1999	A2	Oil

4-0016126	BOURNE	1 SHIPYARD LN	KINGMAN YACHT CENTER	72 HR	3/19/2001	RAO	7/13/2001	A2	Oil
4-0013399	BOURNE	SHORE RD	NO LOCATION AID	TWO HR	9/29/1997	RAO	8/9/2000	A1	Oil
4-0017942	BOURNE	829 SHORE RD	NO LOCATION AID	TWO HR	8/4/2003	RAO	5/27/2004	A2	Oil
4-0000987	BOURNE	304 SHORE RD MONUMENT BCH	CAPE MARINE INC	NONE	2/24/1992	DEPNFA	7/23/1993		Oil
4-0000637	BOURNE	SNAKE POND RD	MMRCS 13 CONTRACTORS YARD	NONE	1/15/1989	RAO	7/22/2002	A2	
4-0000636	BOURNE	SOUTH OUTER RD	MMRSD 2 FS 6 FS 8PFA	NONE	1/15/1989	ADEQUATE REG	10/2/1993		Oil
4-0001259	BOURNE	SOUTH OUTER RD	MMRPFA FS 10 FS 11	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0012276	BOURNE	SOUTH OUTER RD	FUEL FARM	TWO HR	6/18/1996	RAO	11/12/1998	PHASE II A2	Oil
4-0014189	BOURNE	SOUTH OUTER RD	FUEL FARM	TWO HR	9/22/1998	RAO	7/26/2001	PHASE II A2	Oil
4-0000661	BOURNE	SOUTH OUTER RD ASHUMET POND	MMRSD 1 DRAINAGE DITCH	NONE	1/15/1989	DEPNDS	7/23/1993		Oil
4-0000034	BOURNE	SOUTH OUTER RD LINGLEY AVE	MMRFTA 2 LF 2FIRE TRAINING	NONE	1/15/1987	ADEQUATE REG	10/2/1993		Oil
4-0010743	BOURNE	159 SOUTH RD	WINGS NECK POCASSET	72 HR	9/7/1994	RAO	2/2/1995	A1	Oil
4-0000639	BOURNE	SOUTH TRUCK RD	MMRCS 3 FS 23	NONE	1/15/1989	DEPNFA	7/23/1993		
4-0019699	BOURNE	SOUTH TRUCK RD BLDG 330	BLDG 330	TWO HR	4/26/2006	RAO	6/26/2006	A1	Oil
4-0001302	BOURNE	127 STATE RD RTE 31	EAGLE MARINE	NONE	5/25/1993	DEPNFA	7/23/1993		
4-0017376	BOURNE	TRANSECT 2 AND 3	HUTA	120 DY	1/30/2002	RTN CLOSED	6/10/2002		Hazardous Material
4-0015411	BOURNE	TROW BRIDGE RD	PEEBLES SCHOOL	TWO HR	4/7/2000	RAO	6/5/2000	A1	Oil
4-0001255	BOURNE	TURPENTINE RD	MMRFS 2 CG ASPHALT PLANT	NONE	1/15/1993	ADEQUATE REG	10/2/1993		Oil
4-0015034	BOURNE	TURPENTINE RD	IMPACT AREA 2	120 DY	9/23/1999	RAO	9/26/2000	B1	Hazardous Material
4-0017584	BOURNE	TURPENTINE RD TANK ALLEY RD	HUTA -1	120 DY	11/1/2000	RTN CLOSED	11/16/2000		Hazardous Material
4-0014625	BOURNE	USCG AIR STATION CPE COD	USCG GAS STATION	TWO HR	3/26/1999	RAO	7/23/1999	A1	Oil
4-0014773	BOURNE	USCG AIR STATION CPE COD	RESIDENTIAL AREA	TWO HR	6/3/1999	RAO	8/10/1999	A1	
4-0006004	BOURNE	9 WALLACE POINT RD	PROPERTY	NONE	10/1/1993	RAO	10/24/1994	A2	
4-0012112	BOURNE	65 WALLACE POINT RD	SACHS RESIDENTIAL	72 HR	4/23/1996	RAO	6/14/1996	A1	Oil

