Beach Management Plan
for
Town of Sandwich Beaches

Prepared For:
Town of Sandwich
16 Jan Sebastian Drive
Sandwich, MA 02563

Prepared By:
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East Falmouth, MA 02536

July 2013

Adopted by the Sandwich Board of Selectmen on August 8, 2013
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EXECUTIVE SUMMARY

The Town of Sandwich contains 4 distinct public salt water beaches along its 8-mile Cape Cod Bay coastline, and 3 public freshwater beaches at inland kettle hole ponds within the Town’s boundaries. This plan describes the existing natural and anthropogenic features present at each public beach:

- Town Neck Beach
- Oak Crest Cove
- Springhill Conservation Lands
- Ryder-Wakeby Park
- East Sandwich Beach
- Snake Pond
- Scorton Neck Conservation Lands

The Town of Sandwich recognizes its public beaches are valuable ecological, recreational and economic resources. This Beach Management Plan has been prepared to address the Town’s beach management goals:

- Develop an inventory of natural and anthropogenic resources, and existing conditions at each public beach site that will serve as a reference document for beach managers.
- Develop a management program to preserve and enhance the natural and recreational functions of Sandwich public beaches.
- Identify planning, maintenance and monitoring activities that will facilitate improved management of the beaches.
- Clearly define and prioritize management recommendations.

The purpose of this Beach Management Plan is to outline and highlight current conditions and practices, as well as identify recommendations and additional management activities that the Town of Sandwich can incorporate into its existing beach management framework. Combined, the recommendations and activities outlined in this plan allow for public recreational opportunities in a safe and enjoyable environment, while bolstering protection of the existing dune and beach system, wildlife habitat, and other important ecological features, which are integral parts of these coastal resources. Although some of activities documented within the plan are already being performed by the town, implementation of many of the new recommendations will be subject to the Town’s ability to obtain additional funding and/or staff resources. Insufficient funding and resources are major reasons why particular recommendations have not already been adopted. If implemented, however, these recommended activities could greatly improve the management of the Town’s beach resources.

Several Town departments share beach management responsibilities. As part of this management plan, the roles and responsibilities of the various departments have been identified. These distinctions were made in an effort to provide coordination between departments, but it is the prerogative of the Town to reassign and redistribute responsibilities for various tasks as it sees fit, and as personnel availability allows. In fact, although the management recommendations represent a thorough and comprehensive list
of activities, the dynamic nature of the public beach sites necessitates a need for flexibility in future application. As such, the Beach Management Plan, and its associated recommendations and assigned responsibilities, should be considered a “living document” that should be reviewed and updated periodically to adjust to the changing conditions and needs of the beaches and their management.
1.0 INTRODUCTION

The Town of Sandwich is located in the northwestern corner of Cape Cod, encompassing the eastern end of Cape Cod Canal, and is bordered by the towns of Bourne, Falmouth, Mashpee and Barnstable (Figure 1). Its northern border consists of over 8 miles of coastline along Cape Cod Bay. This coastal environment is one of the Town’s most valuable natural resources and is comprised of a number of important resource areas, including but not limited to, coastal beaches, coastal dunes, barrier beaches, salt marsh areas, and federal and state-listed shorebird habitat. In addition, the Town of Sandwich contains numerous freshwater ponds, which contribute to the natural resources, as well as the recreational value of the Town’s lands.

Figure 1. Geographic location of the Town of Sandwich.

The geologic evolution of Cape Cod, including the Sandwich shoreline, can be directly linked to the advance and retreat of continental glaciers, and the change in relative sea level that followed the final retreat of the ice sheet. Uchupi et al. (1996) provide a summary of this complex, post-glacial evolution of Cape Cod that started with a rapid fall in relative sea level, followed by a subsequent rise in relative sea level. During the most recent glacial stage that occurred between 75,000 and 21,000 years ago, more snow fell over the northern latitudes than melted each year. As the snow accumulated and compacted, it formed large ice sheets or glaciers. The Laurentide Ice Sheet (named after the Laurentian region of Canada where it first formed) spread into the United States. Its southeast advance extended from New York City east to Long Island and Nantucket
covering all of New England (Figure 2). This maximum southern extent of the ice sheet occurred approximately 21,000 years ago.

Figure 2. The southern most extent of the continental ice sheet during the most recent ice age. Directions of ice flow are indicated by arrows (Strahler 1966).

During its advance, the glacier carved the land underneath, tearing off large pieces of bedrock from the terrain, sculpting ridges and valleys, and grinding larger rocks into sand and silt sized particles. The ice sheet held this maximum position for more than 1,000 years, until a rapid warming of the world’s climate caused glacial melting. Evaporation rates exceeded snowfall rates, and the ice began to melt. As the ice receded, the sand, gravel, clay and boulders that the glacier had accumulated were deposited in the form of moraines and outwash plains to form Martha’s Vineyard and Nantucket, as well as many adjacent shoals.

This rapid retreat originally pulled the ice sheet back to a second stationary position around 15,300 years ago, which lasted for several thousands of years. During this long period, gravel, sand, clay, and boulders were deposited as moraines along the edges of the glacier, or as till sheets from the continual inflow and melting of ice (Strahler 1966). The Buzzards Bay and Sandwich moraines mark the positions of the glacial lobes during this second stationary period. The Sandwich moraine extends from the Cape Cod Canal region in an easterly direction towards Eastham.
As the glaciers continued to recede northward, the melt waters accumulated to form large glacial lakes, rimmed in part by the higher terminal moraines. One of the largest of these glacial lakes formed in Cape Cod Bay and has been named Glacial Lake Cape Cod. Drainage of Glacial Lake Cape Cod occurred across the Sandwich moraine in the vicinity of the Cape Cod Canal, in the lowland that eventually became Buzzards Bay. This initial drainage outlet eroded a low divide forming a natural location for the construction of the Cape Cod Canal.

At the same time, the earth’s crust began to rebound (rise) at a rapid rate, resulting in the emergence of the shoreline and lowering of relative sea-level. Between 12,000 years ago and present, the rate of isostatic rebound decreased, while eustatic sea level (worldwide) continued to rise. This resulted in a rise of relative sea level and a transgression of the shoreline, submerging Buzzards Bay and Cape Cod Bay. This rapid rise in sea level continued until approximately 3,500 years ago, at which point sea level rise slowed significantly.

As with any coastal area, the shoreline of Sandwich is a dynamic setting that constantly changes in response to coastal processes such as waves, winds, storms, currents, and sea level rise. The interaction of these processes with the geological framework of the coastline acts to shape the present day shoreline. These dynamic coastal systems serve a number of important natural functions. For example, coastal beaches, dunes, and banks provide storm damage protection and flood control for inland areas by dissipating incoming wave energy and supplying sediment to adjacent resources. Beaches and dunes also provide important wildlife habitat for certain species of shorebirds. In addition to these natural functions, Sandwich’s dynamic coastal systems also provide tremendous recreational and economic benefits for beachgoers, fishermen, and local merchants. In fact, the natural beauty of Sandwich’s coastal areas is highly valued by the local residents and forms the basis for the major tourism industry in the town. Continued use of the Sandwich shoreline as both a natural protective barrier and a recreational resource is extremely important. The complex array of variables needed to meet these competing uses requires implementation of coordinated coastal zone management practices and cooperation between the various Town departments and stakeholders.

Woods Hole Group has been working closely with the Town of Sandwich over the last 15 years to study the coastal processes, shoreline change, and alternatives for inlet stabilization for one of its public beach areas: Town Neck Beach (along with Springhill Conservation Lands). Previous studies related to the stabilization of Sandwich Harbor Inlet highlighted the need for a comprehensive beach management plan. Although the Town has instituted monitoring projects for rare and endangered species, controlled beach access for vehicles and dogs, and addressed some of its beach and dune erosion problems through beach nourishment, there is a need to better develop and organize beach management strategies. To this end, the Town of Sandwich has undertaken the development of this comprehensive beach management plan for all of the Town of Sandwich’s public beaches.

Clearly defining the Town’s goals and objectives for this Beach Management Plan is a crucial step in directing the writing and recommendations. The goals of the Beach
Management Plan are to preserve and enhance the natural and recreational functions of the Sandwich public beaches, and to guide future management decisions. To achieve these goals, the following objectives were identified for the Beach Management Plan:

- Develop an inventory of natural and anthropogenic resources, and existing conditions at each public beach site that will serve as a reference document for beach managers.
- Develop a management program to preserve and enhance the natural and recreational functions of Sandwich public beaches.
- Identify planning, maintenance and monitoring activities that will facilitate improved management of the beaches.
- Clearly define and prioritize management recommendations.
2.0 EXISTING CONDITIONS

The Town of Sandwich manages four public salt water beaches along the Cape Cod Bay shoreline. From west to east these include Town Neck Beach, Springhill Conservation Lands, East Sandwich Beach, and Scorton Neck Conservation Lands (Figure 3). Additionally, the Town manages three freshwater beaches at Oak Crest Cove, Snake Pond, and Ryder - Wakeby Park.

Figure 3. Map of public beach sites through the Town of Sandwich

To provide a basis for the long-term management of Sandwich’s public beaches, an inventory of historical and existing conditions was performed. Information from aerial photographs, as well as from dredge and beach nourishment records at the salt water beaches was reviewed to document geomorphologic and anthropogenic changes to the beaches. Current conditions were also documented through site visits, resource area delineations, and review of current aerial imagery and digital photography. This background information is critical for the development of effective recommendations to guide future management of Sandwich’s natural public beach resources.

Inventory results are provided separately for each beach site. A description of the natural features and coastal processes, as well as the anthropogenic features and public beach services are provided for each location. The physical components of the sites such as the size, type and extent of resource areas, protected species, vegetation, and elevation are also discussed. Rates of historical shoreline change and sediment transport patterns for the salt water beaches are provided as well. Anthropogenic features such as coastal
engineering structures, fencing, parking areas, restrooms, and buildings are also identified and displayed in a site map for each beach. Finally, a summary of the recreational and visitor services provided by the Town of Sandwich at each of the public beaches is discussed.

Existing conditions plans for the public beaches are provided in Appendix A. These plans were generated using Geographic Information System (GIS) data layers provided by the Town of Sandwich, as well as data layers created for the following attributes: restrooms, parking attendant locations, life guard stands, picnic areas, concession stands, boat launches, playgrounds, boardwalks, fencing, coastal structures, and wetland resource areas. These newly created data layers were mapped using a combination of visual inspection and digital orthophotography (2005 and 2009 available from MassGIS). Mapping information for Estimated and Priority Habitat was obtained directly from the Massachusetts Division of Fisheries and Wildlife Natural Heritage & Endangered Species Program (NHESP 2008).

Information on storm surge elevations and flood zone designations for each beach was obtained from the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS; FEMA, 1991; revised in 1992) for the Town of Sandwich, and the Flood Insurance Rate Maps (FIRMs). These documents provide estimates of flood conditions during storms of varying recurrence intervals (10-, 50-, and 100-yr events). Data describing the geomorphic evolution of the salt water beaches and long-term shoreline change was obtained from historical aerial photographs, as well as the Massachusetts Shoreline Change Project (Theiler et al. 2001).

2.1 TOWN NECK BEACH

Town Neck Beach is located just east of the Cape Cod Canal and can be accessed from three locations: Town Neck Road, Wood Avenue Extension, and Boardwalk Road. Sandwich Harbor, which opens to Cape Cod Bay at the east end of Town Neck Beach, serves to connect an extensive salt marsh system with the bay. The upper reaches of this salt marsh system directly abut many areas of historic downtown Sandwich. Town Neck Beach extends from Sandwich Harbor northwest to the Hemisphere’s parking area at the corner of Town Neck Road and Freeman Avenue (Figure 4). The middle portion of Town Neck Beach fronts the residential development known as Town Neck Hill. The beach between the Hemisphere’s parking area off Freeman Avenue and the Cape Cod Canal, however, is not part of the public beach; it is owned by a nearby power utility company.

2.1.1 Natural Features and Coastal Processes

The Town Neck Beach parcel is contiguous with other Town-owned property, totaling an area of 136 acres west of Sandwich Harbor. Combined, these parcels contain approximately 1 mile of ocean shoreline. The majority of the unimproved section of these parcels is classified as Coastal Beach, Coastal Dune, and Salt Marsh (Appendix A – Maps 1 & 2). Other resources include Barrier Beach and Banks of or Land Under the Ocean, Ponds, Rivers, Lakes or Creeks that Underlie an Anadromous/Catadromous Fish Run (‘‘Fish Run’’).
Vegetation on the Coastal Dunes consists primarily of American Beachgrass (*Ammophila breviligulata*) and Spotted knapweed (*Centaurea stoebe*). Originally from Europe, *C. stoebe* is listed as an invasive plant in Massachusetts, as well as much of New England. Currently much of the dune seaward of the Wood Avenue Extension parking lot is dominated by *C. stoebe*. In the salt marsh portion of the property, vegetation is dominated by Smooth cordgrass (*Spartina alterniflora*) and Salt hay grass (*Spartina patens*).

The Natural Heritage & Endangered Species Program (NHESP), part of the Massachusetts Division of Fisheries and Wildlife, is responsible for the conservation and protection of hundreds of species that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts. At Town Neck Beach there are three species of bird protected by the NHESP: The Common Tern (*Sterna hirundo*) and the Least Tern (*Sternula antillarum*), which are considered of Special Concern in Massachusetts, and the Piping Plover (*Charadrius melodus*), which is considered Threatened federally, as well as in the state of Massachusetts. To better protect and manage these species, the NHESP has developed and outlined areas of Priority Habitats, which are based on the known geographical extent of habitat for all state-listed rare species, both plants and animals. Priority Habitat mapped for the Town Neck Beach area is displayed in Figure 5.
Estimated Habitats, another designation of NHESP that represent a sub-set of the Priority Habitats excluding areas specific only to plants, are also present at Town Neck Beach, and are exactly the same as the Priority Habitat areas.

Figure 5. Natural Heritage and Endangered Species Program Priority Habitat areas for Town Neck Beach. Priority Habitat areas are overlaid on the map in green. The Town owned parcel representing Town Neck Beach is outlined in black.

Information on historical shoreline change for Town Neck Beach was obtained from the Massachusetts Shoreline Change Project (MSCP; Theiler et al. 2001). The MSCP compiled relative positions of four or five historical shorelines between 1844 and 1994 for all seaward facing coastal areas within Massachusetts. Shoreline positions in the Town of Sandwich are provided for the following years: 1860, 1934, 1952, 1978, and 1994. Original sources for the historical shorelines were NOAA/NOS topographic maps, hydrographic maps, FEMA topographic maps, orthophotos, and aerial photographs.

For the purposes of this report the MSCP data were updated using 2001 and 2009 shorelines digitized from color ortho-photo imagery available through MassGIS. These new shorelines were used to update the shoreline change statistics using the 1860, 1934, 1952, 1978 and 1994 shorelines (Figure 7). Shoreline positions for each year are illustrated along with the transect locations where the shoreline change statistics were
calculated. Both transect numbers and the rates of change (feet/year) from 1860 to 2009 are shown in Figure 7. Table 1 provides a summary of the long-term rates of change from 1860 to 2009, as well as more contemporary rates between 1952 and 2009.

The long-term shoreline change analysis shows rates of erosion ranging from -0.89 to -2.0 ft/yr between the Hemisphere’s parking area and the Wood Avenue Extension parking lot (Table 1, Figure 7). The shoreline has actually accreted, however, at a rate of 0.13 to 1.67 ft/yr immediately east of the Cape Cod Canal. Construction of jetties at the east end of the Cape Cod Canal in 1906 is the primary reason for this long-term erosion (Giese 1980). The two Canal jetties cause an interruption in the natural longshore sediment transport from northwest to southeast, thereby depriving Town Neck Beach of a critical sand supply. Shoreline evolution at the eastern end of Town Neck Beach has also been affected by the jetties constructed at the entrance to Sandwich Harbor Inlet. During the “No Name” storm of October 1991, the Sandwich Harbor Inlet breached a new channel outside of the existing jetties (Figure 6). The channel subsequently migrated to the southeast towards the homes adjacent to the Springhill Conservation Lands. Due to the shift in the inlet location, this area shows dramatic changes in shoreline position between 1860 and 2009 (Figure 7). When the more contemporary timeframe (1952-2009) is considered, the whole coastline appears to have experienced even more rapid rates of erosion (-0.2 to -7.86 ft/yr) (Table 1).

Figure 6. Existing conditions at the entrance to Sandwich Harbor Inlet (March 2012 Aerial Image).

Sediments found on this beach are the result of two processes: eroding glacial sediments and active processes along the beach, such as waves, tides and winds, and the beach is
currently dominated by coarse grained sands and cobble. The two Cape Cod Canal jetties cause an interruption in the natural longshore sediment transport from northwest to southeast. This has resulted in shoreline accretion on the updrift (northwest, Scusett Beach) side of the Canal, and erosion on the downdrift (southeast, Town Beach) side. The material accreting on the northwest side of the Canal represents a significant portion of the sediment that would naturally have been distributed along the Sandwich shoreline. Hundreds of thousands of cubic yards of sand destined for Sandwich Town Beaches have been trapped at the northern jetty, or within the Cape Cod Canal, exacerbating natural erosional pressures arising from relative sea-level rise on Cape Cod. Historic studies have shown that approximately 67,000 cubic yards per year have been interrupted by the Canal between Mean High Water and an 18 foot depth (Giese, 1980). This lack of sediment supply has resulted in significant erosion to Town Neck Beach and its dune resources, as well as instability and migration of the Sandwich Harbor Inlet, resulting in degraded coastal protection from storm events and increased flooding potential.

Sediment testing was conducted by Woods Hole Group as part of the 2004 Draft Environmental Impact Report/Development of Regional Impact report for the Beach Management, Inlet Stabilization, and Maintenance Dredging of Sandwich Harbor. These samples showed a mean grain size between 0.7 and 1.75 mm along Town Neck Beach, and 0.6 and 8 mm near Sandwich Harbor Inlet. In general, sand dominated the samples, with the remainder composed of cobbles and gravel. No silt or clay was measured in the samples. Cape Cod Canal samples were also measured to determine the grain size of the potential borrow material for potential future beach nourishment projects. All core analyses showed well-sorted medium-grained sand, with no fine-grained material and little gravel. The grain size distributions from the Cape Cod Canal closely approximate that of the non-gravel components of the Sandwich beach sands, and are therefore compatible for use on this stretch of beach.

The average elevation of the Wood Avenue Extension parking lot at Town Neck Beach is approximately 7 ft NGVD. The average elevation of the Hemisphere’s parking area and the Boardwalk area parking lot at the end of Boardwalk Road are 12 ft NGVD and 7ft NGVD respectively. For the 100-yr storm event, FEMA Flood Insurance Rate Maps (FIRMs) indicate that the entire Coastal Beach, Coastal Dune and parking lot areas of Town Neck Beach fall within a mapped velocity-zone (VE zone) with a Base Flood Elevation (BFE) of 14 ft NGVD (Figure 8). In addition, the entire salt marsh area behind the beach falls within an AE zone of with a BFE of 11-12 ft.
Table 1. Results of Town Neck Beach shoreline change analysis

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Figure 7. Historical shoreline positions for Town Neck Beach.
Figure 8.  FEMA FIRM showing flood zone designations for Town Neck Beach and Springhill Beach.
2.1.2 Anthropogenic Features

The Cape Cod Canal jetty at the northwestern end of Town Neck Beach was constructed in 1909; flow through the Canal began in 1914. The jetties at Sandwich Harbor were built in the 1930s, however, the “No Name” Storm of 1991 caused the inlet to breach the jetties, and the creek now flows to the east of the jetties (Figure 6). The groin field along the Town Neck Beach shoreline was constructed in the 1950s. This groin field consists of nine shore perpendicular stone groins, which were meant to stabilize the beach and mitigate the loss of sediment caused by the Canal jetties.

Multiple dune restoration activities have been carried out along Town Neck Beach to combat persistent erosion. In 1990, Commonwealth Electric dredged approximately 30,000 cubic yards of sand from the Cape Cod Canal, and the material was used to build up and restore the coastal dunes just seaward of the Wood Avenue Extension parking lot. Again in 2001, permits were obtained for the beneficial reuse of 30,000-35,000 cubic yards of sand dredged from the Canal for targeted beach nourishment and dune restoration on 12 acres of Town Neck Beach above mean high water (MHW). Although this project was approved, the opportunity to beneficially dispose of the dredged material on Sandwich beaches was not realized in 2001. Instead, the dredged material was disposed of at an approved offshore disposal location in Cape Cod Bay. In April 2004 Mirant Canal, LLC dredged locations in the Canal that had unexpectedly shoaled, and 40,000-50,000 cubic yards of clean, beach-compatible sand was deposited on Town Neck Beach to restore eroding dunes in front of the Wood Avenue Extension parking area.

There are three parking areas at Town Neck Beach: at the end of Boardwalk Road, at the end of Wood Avenue Extension, and the Hemisphere’s parking area at the corner of Town Neck Road and Freeman Avenue. The Boardwalk Road and Wood Avenue Extension parking areas have approximate capacities of 40 and 200 cars respectively. Both of these lots have an attendant posted at the front kiosk from 9:00 am to 3:45pm to collect day fees ($10/car) or check for yearly passes ($30 for residents and $90 for non-residents). However, the parking area at the corner of Town Neck Road and Freeman Avenue, with a capacity of 65 spaces (including 4 handicapped spaces), is not monitored and no fees are collected. Additionally, the Town of Sandwich has an informal arrangement with the neighboring restaurant, Hemisphere’s; the restaurant customers are allowed to utilize the 8 parking spots abutting the restaurant building to allow adequate spacing near the restaurant.

In terms of amenities provided at Town Neck Beach, there are no lifeguards posted along any part of Town Neck Beach. There are, however, a number of vendors and private companies selling goods and services. In the Wood Avenue Extension parking lot there are vendors, licensed by the town, selling food, drinks, and souvenirs during the summer months. In the Boardwalk Road parking lot, EcoTours has a license agreement to provide kayak rentals and tours through the tidal creeks. Restrooms at Town Neck Beach currently consist of a two portable toilets in the Wood Avenue Extension parking area.

Town Neck Beach has a series of elevated walkways from the Wood Avenue Extension parking area across the Coastal Dunes (Figure 9), as well as the larger Sandwich
Boardwalk over the salt marsh, connecting the Wood Avenue Extension and Boardwalk Road parking areas. These structures are often impacted by shifting sands and dune and beach erosion. In some cases, the boardwalks to the Coastal Beach from the parking lot are covered with sand, and the staircases to the beach present a constant maintenance battle due to the continued heavy beach erosion. Over the years, the staircases have been rebuilt and/or pulled back a number of times following damage from erosion or major storms. The storms over the fall and winter of 2012/2013 did considerable damage to these structures. The walkway on the western end of the Wood Avenue Extension parking area was completely ripped out, the stairways from all three elevated walkways were destroyed and much of the Sandwich Boardwalk sustained enough structural damage that access is no longer safe. At the time of this publication, no repairs have been made.

In addition to providing an alternative access point to Town Neck Beach, as well as a prime vantage point of the salt marsh, the Sandwich Boardwalk between the Wood Avenue Extension and Boardwalk Road parking areas serves as an added recreational resource at this site. It has become a popular local tradition to utilize the Sandwich Boardwalk where it crosses the tidal creek as a diving platform at high tide (Figure 10). To facilitate this, two ladders have been added to the boardwalk, to allow people to climb back up after jumping in the water. Although this feature provides an exciting recreational opportunity, it also creates a number of challenges. Besides the issue of liability if someone were to injure themselves, the congestion created in the walkway impedes the passage of other beach visitors and increases the impact people have on the marsh. Although walking across the marsh is prohibited, at high tide swimmers and people utilizing floatation devices are often found walking in these areas, which negatively impacts the marsh. Bacteria testing is performed at Town Neck Beach between the months of June and August; however sampling is not conducted at the upstream portion of the creek near the boardwalk where swimming is a popular activity. Finally, due to heavy use and a foundation that is set in soft sediments, the Sandwich Boardwalk is sinking and in many places it is submerged during high tides or storm activity.

The Boardwalk Road parking lot also offers visitors the amenity of a small, unimproved boat launch. Because the large tidal range in the area makes the boat launch inaccessible to most vessels at low tide, it is considered a “3/4 tide” boat launch.

Town Neck Beach has a number of signs providing educational material and useful warnings to visitors (Figure 11). A number of the educational signs were developed by the Town of Sandwich Department of Natural Resources, often drawing on information from other relevant sources. The piping plover information (Figure 11, upper right) was used with permission of The Trustees of Reservations, the “Beachgoers” sign (Figure 11, upper left) was adapted from a similar sign at Martha’s Vineyard Land Bank beaches, and the deer tick signs (Figure 11, lower left) were provided by Barnstable County. Finally, in some cases, local partnerships resulted in the creation of additional educational signage. For example, the kiosk (Figure 11, lower right) was developed by a local Boy Scout troop.
Figure 9.  Example of the elevated walkways and stairways at Town Neck Beach.

Figure 10.  Various recreational opportunities available at Town Neck Beach.
2.2 SPRINGHILL CONSERVATION LANDS

The Springhill Conservation Lands are located east of Sandwich Harbor Inlet along Sandwich’s northern coast. The beach is accessed via a public easement located at the western end of Salt Marsh Road. Sandwich Harbor, which opens to Cape Cod Bay at the west end of Springhill Conservation Lands, serves to connect an extensive salt marsh system with Cape Cod Bay. The upper reaches of the salt marsh system directly abut many areas of historic downtown Sandwich. The Springhill Conservation Lands extend from Sandwich Harbor Inlet southeast to the start of private residences located at the westerly end of Salt Marsh Road.

2.2.1 Natural Features and Coastal Processes

The Springhill Conservation Lands parcels form an area of approximately 114 acres, including beaches, dunes, tidal creeks and salt marsh areas behind the beach. Combined, these parcels contain approximately 2,000 feet of ocean shoreline. The entire Springhill
Conservation Lands area is unimproved, and the majority of the parcels are classified as Coastal Beach, Coastal Dune, and Salt Marsh (Appendix A – Map 3). Other resource areas present include Barrier Beach and Banks of or Land Under the Ocean, Ponds, Rivers, Lakes or Creeks that Underlie an Anadromous/Catadromous Fish Run (“Fish Run”), and a small area behind the dunes consisting of Land Under Salt Ponds.

Vegetation on the Coastal Dunes consists primarily of American Beachgrass (*Ammophila breviligulata*). Unlike Town Neck Beach, the invasive Spotted knapweed (*Centaurea stoebe*), is much less prevalent here. In the salt marsh portion of the property, vegetation is dominated by Smooth cordgrass (*Spartina alterniflora*) and Salt hay grass (*Spartina patens*).

There are three species of bird protected by the NHESP at Springhill Conservation Lands: the Common Tern (*Sterna hirundo*) and the Least Tern (*Sternula antillarum*), which are considered of Special Concern in Massachusetts, and the Piping Plover (*Charadrius melodus*), which is considered Threatened federally, as well as in the state of Massachusetts. Priority Habitat for these species at Springhill Conservation Lands is displayed in Figure 12. Estimated Habitats are exactly the same as the Priority Habitat areas at this location.

Information on historical shoreline change in for Springhill Conservation Lands was obtained from the Massachusetts Shoreline Change Project (MSCP), which was updated in 2002 (Theiler, *et al.* 2001). New 2001 and 2009 shorelines were digitized from color orthophoto imagery available through MassGIS to supplement the MSCP data. Figure 13 shows the historical shoreline positions for Springhill Conservation Lands. Shoreline positions for each year are illustrated along with the transect locations where shoreline change statistics were calculated.

Historical shoreline positions at Springhill Conservation Lands from 1860 to 2009 are shown in. Table 2 provides a summary of the long-term rates of change from 1860 to 2009, as well as more contemporary rates between 1952 and 2009. The data show a trend of long-term erosion with rates ranging from -1.57 to -3.61 ft/yr. The highest rates of erosion occur at the western end of the beach in the vicinity of the inlet to Sandwich Harbor, and the lowest rates of erosion occur at the eastern end of the beach. During the more recent time period since 1952 the highest rates of erosion have been in the area of the inlet, on the order of -5.0 to -6.0 ft/yr. Further to the east the rates of shoreline loss have decreased to less than -1.0 ft/yr. Construction of the Cape Cod Canal jetties in 1906 is the primary reason for this long-term erosion (Giese, 1980); however, shifts in the inlet location at the mouth to Sandwich Harbor have also contributed to dramatic changes in shoreline position.

Beach sediments on the Springhill Conservation Lands are primarily sand mixed with some gravel and cobble. In general, beaches to the east of Sandwich Harbor Inlet contain more sand and less gravel/cobble than the Town Neck beaches west of the Harbor.
The average elevation at the western end of Salt Marsh Road at the Springhill Conservation Lands is approximately 7 ft NGVD. For the 100-yr storm event, the FEMA FIRMs indicate that the beach and dune areas fall within a mapped velocity-zone (VE zone) with BFEs ranging from 14 ft on the Cape Cod Bay side to 12 ft NGVD on the back side of the barrier beach (Figure 8). In addition, the salt marsh areas on the landward side of the Springhill Conservation Lands fall within an AE zone with a BFE of 11-12 ft NGVD.
### Table 2. Results of Springhill Conservation Lands shoreline change analysis

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#### 2.2.2 Anthropogenic Features

The Springhill Conservation Lands are entirely undeveloped. The only anthropogenic features are the ORV trail that extends from the end of Salt Marsh Road and a few paths that have been established by foot traffic through the dunes.
Figure 13. Historical shoreline change for the Springhill Conservation Lands.
2.3 EAST SANDWICH BEACH

East Sandwich Beach is located near the center of Sandwich’s northern coast, and consists of two discrete beach segments which can both be accessed from North Shore Boulevard. The first segment is located at the western end of North Shore Boulevard, while the second segment is farther east, near the junction with Ploughed Neck Road. The two segments are separated by 38 private parcels.

2.3.1 Natural Features and Coastal Processes

The Town owned parcels containing the east and west segments of East Sandwich Beach total 0.5 and 1.4 acres in size respectively, including the beach, dunes, and parking areas. Combined, these parcels encompass approximately 500 ft of ocean shoreline (100 ft at the eastern beach and 400 ft at the western beach). The majority of the unimproved section of these parcels is classified as Coastal Beach and Coastal Dune (Appendix A – Map 4).

Vegetation on the Coastal Dunes consists primarily of American Beachgrass (*Ammophila breviligulata*), Beach pea (*Lathyrus japonicus*), Northern bayberry (*Myrica pensylvanica*), Beach plum (*Prunus maritima*), Eastern Red Cedar (*Juniperus virginiana*), and Beach wormwood (*Artemisia stelleriana*). Although not as prevalent as at Town Neck Beach, Spotted knapweed (*Centaurea stoebe*) is present.

Three species of bird protected by the NHESP are mapped at the East Sandwich Beaches: the Common Tern (*Sterna hirundo*) and the Least Tern (*Sternula antillarum*), which are considered of Special Concern in Massachusetts, and the Piping Plover (*Charadrius melodus*), which is considered Threatened federally, as well as in the state of Massachusetts. Priority and Estimated Habitat areas for these species at East Sandwich Beach are displayed in Figure 14.

Information on historical shoreline change for East Sandwich Beach was obtained from the Massachusetts Shoreline Change Project (MSCP) (Theiler *et al.* 2001). Additionally, new 2001 and 2009 shorelines were digitized from color orthophoto imagery available from MassGIS to supplement the MSCP data.

Unlike Town Neck Beach and Springhill Conservation Lands, East Sandwich Beach does not regularly exhibit dramatic erosion. In fact, the historical shoreline change analysis using data from 1860 to 2009 shows a nearly stable shoreline at the western portion of beach (0 to 0.12 ft/yr) and slight accretion at the eastern beach (0.25 to 0.33 ft/yr) (Figure 15). Over the more recent time period from 1952 to 2009 the western portion of beach has started to erode at rates between -0.46 and -0.68 ft/yr. At the same time the eastern beach shows significant accretion on the order of 1.37 to 1.61 ft/yr. However, although this area has shown an overall trend of stability and minor accretion, it is prone to erosion during major storms; the area adjacent to the mouth of Scorton Creek (less than half a mile east of the eastern Town owned parcel in Figure 15) experienced significant erosion during Hurricane Sandy and the winter storms of 2013.
Figure 14. Natural Heritage and Endangered Species Program Priority Habitat areas for East Sandwich Beach. Priority Habitat areas are overlaid on the map in green. The Town owned parcels representing East Sandwich Beach are outlined in black.

Sediments at the East Sandwich Beach are primarily sand mixed with some gravel and cobble. In general, beaches to the east of Sandwich Harbor Inlet contain more sand and less gravel/cobble than the Town Neck beaches west of the Harbor.
Table 3. Results of East Sandwich Beach shoreline change analysis

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Figure 15. Historical shoreline change for East Sandwich Beach
Figure 16. FEMA FIRM showing flow zone designations for East Sandwich Beach
The average elevation of the parking area at the western end of East Sandwich Beach is approximately 10 ft NGVD (Figure 16). The average elevations of the parking areas at the corner of Ploughed Neck Road and the entrance to the eastern section of East Sandwich Beach are approximately 7 ft and 10 ft NGVD respectively. For the 100-yr storm event, the FEMA FIRMs indicate that the entire Coastal Beach, Coastal Dune and parking lot areas of the East Sandwich Beach property fall within a mapped VE zone with BFEs between 12 and 15 ft NGVD. In addition, North Shore Boulevard and the parking areas south of the road are located in an AE Zone with a BFE of 11 ft NGVD.

2.3.2 Anthropogenic Features

Although many of the groins in this area do not fall on the Town of Sandwich public beach parcels directly, they do impact sediment transport and the overall beach processes. The groin field along this stretch of beach was constructed in the 1950s. It consists of twelve shore perpendicular stone groins, which were meant to stabilize the beach and minimize longshore losses of sand.

There are four parking areas at East Sandwich Beach: 1) the corner of Ploughed Neck Road and North Shore Boulevard, 2) along North Shore Boulevard immediately to the east of Ploughed Neck Road, 3) the small lot approximately 400 feet east of Ploughed Neck Road, which provides access to the eastern segment of the public beach, and 4) the western end of North Shore Boulevard, which provides access to the western segment of the public beach. Both the western North Shore Boulevard lot and Ploughed Neck Road corner parking area, with capacities of 40 and 16 respectively, have an attendant posted at a front kiosk from 9:00 am to 3:45 pm to collect day fees ($10/car) or check for yearly passes ($30 for residents and $90 for non-residents). The other two parking areas along North Shore Boulevard, with a combined capacity of 12 spaces, do not have an attendant posted, but are monitored for beach stickers and day use passes. There are no lifeguards posted at East Sandwich Beach.

The access paths across the Coastal Dune at both segments of East Sandwich Beach have boardwalks placed at grade on the sand. Although these were constructed as elevated walkways, in both locations the sand has built up so much that the walkways are now entirely buried.

Unlike Town Neck Beach, East Sandwich Beach has no educational signage, and there are only a few signs explaining beach rules to visitors (i.e. “Don’t walk on the dunes”, “No Dogs Allowed”, etc.).

2.4 SCORTON NECK CONSERVATION LANDS

The Scorton Neck Conservation Lands are located at the eastern end of the Town of Sandwich coastline, abutting the Town of Barnstable’s Sandy Neck Beach. An initial purchase of approximately 27 acres was made in 1972 with assistance from the Commonwealth of Massachusetts Self Help program. An additional 18 acres were added in 2004 with financial assistance from Land and Water Conservation Funds. Access to this land is available primarily through a 20’ right of way that the Town of Barnstable granted the Town of Sandwich from Sandy Neck Road to the parcels. Parking was
established adjacent to the Town of Barnstable gatehouse as part of the Self Help grant. The Scorton Neck Conservation Lands are entirely unimproved, do not contain any anthropogenic features, and are managed almost entirely for shorebird protection.

Because the Scorton Neck Conservation Lands are not managed for beach visitors in the same way other Sandwich public beaches are, this Beach Management Plan will only briefly describe the natural features present at this location. Scorton Neck Conservation Lands are not one of the main focuses of this Beach Management Plan.

2.4.1 Natural Features and Coastal Processes

The two Town owned parcels comprising the Scorton Neck Conservation Lands total just over 45 acres in size, including the beach, dunes, and forested areas. Combined, these parcels encompass approximately 1,500 ft of ocean shoreline. The majority of the parcels are classified as Coastal Beach and Coastal Dune.

At the Scorton Neck Conservation Lands, there are three species of bird protected by the NHESP: the Common Tern (Sterna hirundo) and the Least Tern (Sternula antillarum), which are considered of Special Concern in Massachusetts, and the Piping Plover (Charadrius melodus), which is considered Threatened federally, as well as in the state of Massachusetts. Priority and Estimated Habitat areas for the Scorton Neck Conservation Lands area are displayed in Figure 17.

Information on historical shoreline change for Scorton Neck Conservation Lands was obtained from the Massachusetts Shoreline Change Project (MSCP) (Theiler et al. 2001). Additionally, new 2001 and 2009 shorelines were digitized from color orthophoto imagery available through MassGIS to supplement the MSCP data. Unlike other Sandwich beaches, the coastline at the Scorton Neck Conservation Lands has not experienced dramatic erosion. Long-term historical shoreline change data from 1860 to 2009 show a trend of erosion at the western end of the beach and accretion at the eastern end of the beach (Table 4, Figure 18). Both rates of erosion and accretion over this time period were relatively low, ranging from -0.66 to +0.36 ft/yr. When the contemporary time period between 1952 and 2009 is considered, the western end of the beach shows a higher rate of erosion (-0.85 to -1.27 ft/yr). During this same time period, the beach near the center of Scorton Neck Conservation Lands accreted between 0.20 and 0.88 ft/yr, while the eastern end of the beach eroded as much as -2.06 ft/yr.

The average elevation of the dune crest at Scorton Neck Conservation Lands is 17 ft NGVD. For the 100-yr storm event, the FEMA FIRMs indicate that the entire Coastal Beach, and the front area of Coastal Dune fall within a mapped VE zone with a BFE of 13-16 ft NGVD (Figure 19). In addition, some of the back dune areas are located in an AE Zone with a BFE 11 ft NGVD.
Figure 17. Natural Heritage and Endangered Species Program Priority Habitat areas for Scorton Neck Conservation Lands. Priority Habitat areas are overlaid on the map in green. The Town owned parcels representing Scorton Neck Conservation Lands are outlined in black.
Table 4. Results of Scorton Neck Conservation Lands shoreline change analysis

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Figure 18. Historical shoreline positions for Scorton Neck Conservation Lands.
Figure 19. FEMA FIRM showing flood zone designations for Scorton Neck Conservation Area
2.5 OAK CREST COVE

Oak Crest Cove is located at the northern most point on Peters Pond and can be accessed from Quaker Meeting House Road. Peters Pond is a 127 acre natural kettle hole pond. Along with a public beach, Oak Crest Cove is also the location of the Sandwich Recreation Department, and the Town’s Facilities Department.

2.5.1 Natural Features

The Oak Crest Cove parcel is contiguous with two other Town owned parcels comprising the Boyden Farm Conservation Lands, which together total an area of almost 140 acres. The majority of the unimproved section of these parcels is forested with a mix of oak and pine forests. Combined, these parcels contain approximately 2,000 linear feet of pond frontage, 550 feet of which is comprised of sandy beach. Other resource areas present include a small freshwater wetland between the main parking lot and the beach area (Appendix A – Map 5).

Peters Pond has an average depth of 25 feet, and a maximum depth of 54 feet. Water clarity is excellent, extending to a depth of 22 feet, and the pond is classified as a Class A Waters; Class A waters are designated as the source of public water supplies and, where compatible with this use, should also be suitable for supporting aquatic life, recreational uses such as swimming and boating, and fish consumption. The 2.9 miles of pond shoreline are developed with seasonal campgrounds, residential homes, a gravel pit, and the Town owned public beach, abutting Boyden Farm Conservation Lands.

The pond was stocked with brook trout, brown trout, rainbow trout, Chinook salmon, Sebago salmon, white perch and yellow perch between 1933 and 1948. A 1948 survey also found white suckers. The pond was heavily managed by Massachusetts Division of Fish and Wildlife in the 1950s for trout, and smallmouth bass in the 1960s. The most recent fish survey, conducted in 1990, recorded nine species: largemouth bass, smallmouth bass, brown trout, rainbow trout, pumpkinseed sunfish, banded killifish, golden shiner, bluegill and American eel. The Department of Fish and Wildlife stocks both brook trout and brood salmon.

According to the NHESP there is no listed Priority Habitat for the area immediately around the parking lot or beach area at Oak Crest Cove. However, there is an area of Priority and Estimated Habitat on the northeastern section of the Town owned parcels displayed in Figure 20.

The average elevation of the large parking lot north of Oak Crest Cove is approximately 95 ft NGVD. FEMA FIRMs indicate that the entire pond, beach, parking lot, and surrounding areas of Peters Pond fall within a mapped Zone X, which indicates this area is outside the 500-year flood plain (Figure 21).

2.5.2 Anthropogenic Features

There are two main parking areas at Oak Crest Cove, both accessed from Quaker Meeting House Road. The larger parking lot, with a capacity of approximately 100 cars, has an attendant posted at the front booth from 9:00 am to 5:00 pm to collect day fees
($10/car) or check for yearly passes ($30 for residents and $90 for non-residents); this front booth, constructed in 2004, is staffed by Workampers working under the Department of Natural Resources. The additional smaller upper parking lot immediately adjacent to the Recreation Department building is used by visitors for other Recreation Department activities and/or business. No fee is collected for use of this lot.

Figure 20. Natural Heritage and Endangered Species Program Priority Habitat areas for Oak Crest Cove. Priority Habitat areas are overlaid on the map in green. The Town owned parcels representing Oak Crest Cove are outlined in black.
Figure 21. FEMA FIRM showing flood zone designations for Oak Crest Cove at Peters Pond.

The beach at Oak Crest Cove has been nourished a few times, with the most recent addition of sand occurring in 2007. That year, approximately 400 cubic yards of sand was added to the beach. In addition, the beach is cleaned and raked annually.

During the summer months (late June through Labor Day) lifeguards are posted on the beach at Oak Crest Cove from 10:00 am to 4:30 pm. Restrooms at Oak Crest Cove currently consist of a portable toilet trailer just north of the beach. The beach area also contains a pavilion with picnic tables, as well as a swing set (Figure 22). These facilities are maintained daily by the Department of Natural Resources Workampers who live on the property during the summer. The pond itself is patrolled by the Department of Natural Resources for boating safety and compliance with local and state bylaws.

The Sandwich Recreation Department also runs a number of their department programs at this site. Tennis and swimming lessons for various ages, as well as fitness and yoga classes are run in the summer. In addition, the Recreation Department runs the Sandwich Teen Leadership & Adventure Program (STLAP) at Peters Pond. STLAP is an outdoor based program for teens of all backgrounds, and coordinates activities focusing on leadership skills, team building, problem solving and communication skills. The biggest Recreation Department program at Oak Crest Cove is the summer camp Fun, Fun Program. It's extremely successful, and in 2013 completely sold up for the entire upcoming summer within 2 hours of registration being open.
2.6 SNAKE POND

Snake Pond Beach, another freshwater beach, is located on the southern shore of Snake Pond. The beach is accessed from a parking area located on Snake Pond Road. The shoreline of Snake Pond is moderately developed with private houses on the northern and southeastern ends, as well as a summer camp (Camp Good News) on the eastern shore. The town beach at the southern end of the pond is heavily used by swimmers during the summer months.

2.6.1 Natural Features

Snake Pond Beach is located on a pair of contiguous Town owned parcels along the southern shore of Snake Pond, totaling an area 12.6 acres. The majority of the unimproved section of these parcels is beach and forest, with an assemblage of oaks and pines. Combined, these parcels have 2,375 linear feet of pond frontage, 900 feet of which is comprised of sandy beach (Figure 23, Appendix A – Map 6).

Figure 22. Anthropogenic features at Oak Crest Cove. Clockwise from top-left: Parking lot, portable toilet, picnic pavilion and swing set.
Figure 23. View of Snake Pond beach.

Snake Pond is an 83 acre natural kettle hole pond with an average depth of 18 ft and a maximum depth of 33 ft. Because the pond is fed by groundwater, the pond level fluctuates with the level of the groundwater; during years with low groundwater levels, large portions of the pond’s shoreline become exposed. The pond is not stratified during the summer months and remains oxygenated to within a few feet of the bottom. The water clarity is excellent, often with visibility extending to a depth of 22 feet. These conditions promote aquatic vegetation growth, although with the exception of the near-shore areas, most of it is submergent. The bottom sediment is predominantly sand and gravel.

Fishing is a popular activity on the pond, with the primary game fish being smallmouth bass. The most recent fish survey was performed in 1996 during which nine fish species were observed or captured: pumpkinseeds, white perch, smallmouth bass, bluegill, white sucker, yellow perch, largemouth bass, brown bullhead, and banded killifish. Chain pickerel were also noted in previous surveys, but were not observed in 1996.

From the late 1970s through the late 1990s, Snake Pond was treated with lime every 2-3 years. This was adopted as a measure by nearby power plants to mitigate for acid rain, but was ended in the 1990s by the EPA.

NHESP Priority and Estimated Habitats in the area of Snake Pond Beach are displayed in Figure 24. A formal request to NHESP is required to determine the species of concern in these Priority and Estimated Habitat areas.
The average elevations of the parking lot and beach by Snake Pond are approximately 80 ft and 70 ft NGVD, respectively. FEMA FIRMs indicate that the entire pond, beach, parking lot, and surrounding areas of Snake Pond fall within a mapped Zone X, which indicates this area is outside the 500-year flood plain (Figure 25).

Figure 24. Natural Heritage and Endangered Species Program Priority Habitat areas for Snake Pond. Priority Habitat areas are overlaid on the map in green. The Town owned parcels representing Snake Pond are outlined in black.
2.6.2 Anthropogenic Features

The Snake Pond swimming beach has an unpaved parking lot, with a capacity of approximately 40 vehicles. There is an attendant posted in the lot from 9:00 am to 3:45 pm to collect day fees ($10/car) or check for yearly passes ($30 for residents and $90 for non-residents). Adjacent to the parking lot, there is a building that houses restrooms, as well as a concession stand; both are open from late June through Labor Day.

The beach at Snake Pond has been re-nourished a number of times. The first nourishment project occurred in 1999 when approximately 600 cubic yards of sand was added to the beach. The most recent re-nourishment activity occurred in June 1999, with an addition of 5,700 cubic yards of sand.

Lifeguards are on duty from late June through Labor Day from 10:00 am to 4:30 pm (weather permitting). Trash bins are available at this location, but there are no designated receptacles for recycling. In addition to the swimming beach, just west of the main parking area is an additional small parking lot, which provides access for an unimproved boat launch suitable for light trailered craft, car-top boats and canoes (note: there is a 15 horsepower limit in Snake Pond established under Town of Sandwich bylaws). The parking lot is small and can accommodate about 5 vehicles.
2.7 RYDER – WAKEBY PARK IN THEIR RYDER CONSERVATION LANDS

Mashpee-Wakeby Ponds are two connected natural kettle hole ponds generally considered to be one large body of water covering 729 acres. The northern basin is referred to as Wakeby Pond, while the southern basin is called Mashpee Pond. The Town beach located at Ryder - Wakeby Park is accessible from South Sandwich Road.

2.7.1 Natural Features

The beach at Ryder - Wakeby Park is located on a pair of contiguous Town owned parcels, totaling 242 acres. These parcels make up the Ryder Conservation Lands and are located along the eastern shore of Wakeby Pond. The majority of the unimproved section of these parcels is forest and forested wetlands. Combined, these parcels contain approximately 3,000 linear feet of pond frontage, 240 feet of which is made up of sandy beach (Figure 26; Appendix A – Map 7).

Both Wakeby and Mashpee Ponds are fed by groundwater and drain to the Mashpee River. The average depth is 28 feet, with a maximum depth of 87 feet. With limited water clarity (visibility is often only 8 feet), aquatic vegetation is minimal to moderate. The bottom is primarily rubble and gravel, with some sandy areas. Combined, the ponds have a shoreline of 5.9 miles, which is heavily developed with houses, town beaches and summer camps. A large undeveloped peninsula (Lowell Holly reservation, managed by

Figure 26. View of Ryder-Wakeby Park Beach

Both Wakeby and Mashpee Ponds are fed by groundwater and drain to the Mashpee River. The average depth is 28 feet, with a maximum depth of 87 feet. With limited water clarity (visibility is often only 8 feet), aquatic vegetation is minimal to moderate. The bottom is primarily rubble and gravel, with some sandy areas. Combined, the ponds have a shoreline of 5.9 miles, which is heavily developed with houses, town beaches and summer camps. A large undeveloped peninsula (Lowell Holly reservation, managed by
the Trustees of Reservations) separates the two ponds, and three undeveloped islands are located in Wakeby Pond.

Mashpee-Wakeby Ponds were stocked before 1948 with Chinook salmon, smallmouth bass, brook trout, bullheads, catfish, crappie, bluegills, white perch and yellow perch. A 1948 fisheries survey also found white suckers, pumpkinseed sunfish, brown bullhead, chain pickerel, golden shiners and banded killifish. The most recent fisheries survey, in 1990, recorded 15 species: largemouth bass, smallmouth bass, white sucker, white perch, pumpkinseed sunfish, white catfish, yellow perch, rainbow trout, alewife, blueback herring, brown bullhead, banded killifish, tessellated darter, chain pickerel and golden shiner. The pond has been annually stocked in the spring and fall with brook, brown and rainbow trout since 1956 by the Massachusetts Division of Fish & Wildlife. As such, Mashpee-Wakeby provides an outstanding fishing resource.

NHESP Priority and Estimated Habitats in the area of Snake Pond Beach are displayed in Figure 27. A formal request to NHESP is required to determine the species of concern in these Priority and Estimated Habitat areas.

The average elevations of the parking lot and beach at Ryder-Wakeby Park are approximately 60 and 55 ft NGVD, respectively. FEMA FIRMs indicate that the entire pond, beach, parking lot, and surrounding areas of Ryder-Wakeby Park fall within a mapped Zone X, which indicates this area is outside the 500-year flood plain (Figure 28).
2.7.2 Anthropogenic Features

Ryder-Wakeby Park has an unpaved parking lot, with a capacity of 30 to 40 vehicles. There is an attendant posted at the entrance to the lot daily to collect day fees ($10/car) or check for yearly passes ($30 for residents, $90 for non-residents (all beaches), $60 non-residents (Ryder only)). The attendant position is staffed by 3 Workamper couples assigned to operate Ryder under the supervision of the Department of Natural Resources. Ryder-Wakeby Park also has a restroom facility on site. These facilities are open and maintained from approximately June 15 through the Sunday after Labor Day. The beach at Ryder-Wakeby Park was nourished twice in the 1990s, and again in 2007, with approximately 300 cubic yards of completely screened sand added to the beach.

Ryder-Wakeby Park also has lifeguards on duty from late June through Labor Day from 10:00 am to 4:30 pm (weather permitting). Trash bins are available at this location, but there are no designated receptacles for recycling. The beach area also contains a number of picnic tables and a playground.

The Sandwich Recreation Department also runs a number of its recreational programs at Ryder-Wakeby Park. These programs include sailing and stand up paddle board lessons during the summer months. These activities are supported by the presence of a boathouse facility on the pond shore, accessed by the boardwalk from the main beach. Finally, although dogs are not allowed on any of the Sandwich public beaches between May 15
and September 15, the Ryder Conservation Area accessed from Cotuit Road does allow dogs.

Like Oak Crest Cove, maintenance of Ryder-Wakeby Park is done primarily by Workampers. The Natural Resources Department provides three trailer spots in an adjacent area for 6 Workampers (3 couples) each year from Memorial Day through the end of September. These work campers live at Ryder-Wakeby Park for the summer, and assist in running, maintaining and monitoring the park, in exchange for free RV camping spots and a modest living stipend. These positions are filled annually after being advertised in Workamper News (www.workamper.com).
3.0 MANAGEMENT STRUCTURE OF SANDWICH PUBLIC BEACHES

The management structure for public beaches within the Town of Sandwich involves a number different departments and personnel, each with different interests and responsibilities in managing the Town’s beaches (Figure 29). These interests range from the daily operations of the beach and summer staffing, to facilities maintenance, to conservation and protection of natural resources. As part of this Beach Management Plan, the roles and responsibilities of the various departments in charge of managing the public beaches have been identified. This information can be useful in providing coordinated and effective management of the Towns public beach sites, and ultimately for meeting the goals stated in this plan for improving the quality of Sandwich Beaches. It does not, however, need to remain static. Roles and responsibilities can be redistributed, at which point, this section would be a useful starting point for streamlining operations in the future.

3.1 DEPARTMENT ROLES AND RESPONSIBILITIES

**Town Manager:** The Town Manager is appointed by the Board of Selectmen and serves as the chief administrative officer of the Town. The Town Manager is responsible for administering and coordinating all employees, activities, and departments within the Town of Sandwich, as well as for annually preparing the Town operating budget and capital improvement budget for all non-school departments and accounts. In addition, in terms of the public beaches, the Town Manager is also responsible for coordinating and issuing the vendor licenses for the kayak and paddle board rentals, and food and souvenir vendors at Town Neck Beach. Finally, the Town Manager also responds to any concerns from residents that are addressed to the Town Manager or the Board of Selectman.

**Natural Resources Department:** The Natural Resources Department oversees much of the environmental workload for the Town. This includes Animal Control/wildlife management, shellfish management, anadromous/catadromous fish management, coastal processes, conservation land management, operation of day use areas, boating enforcement, and wetlands permitting. Specific beach-related responsibilities of the Natural Resources Department include, but are not limited to, the following:

- Hiring and managing work campers and seasonal staff at Ryder - Wakeby Park at the Ryder Conservation Area and at Oak Crest Cove.
- General oversight and day to day operations at Ryder - Wakeby Park at the Ryder Conservation Area and at Oak Crest Cove, including beach cleanings, waterways enforcement, and gate attendant activities.
- Maintenance of elevated walkways and structures at Town Neck Beach (with the exception of the Sandwich Boardwalk, which is maintained by the Engineering Department).
- Shellfish activities and management of anadromous fish runs.
- Coastal access permits.
- Issues related to coastal beach erosion.
- Issues related to endangered species.
- Oversight of Animal Control Division and enforcement of no dogs on the beach.
• Responding to concerns from residents.

**Recreation Department:** The Recreation Department offers and sponsors a wide variety of programs and activities for Sandwich residents. The department oversees lifeguards and activities at Snake Pond, Ryder-Wakeby Park and Oak Crest Cove throughout the summer. The Recreation Department is staffed with a Recreation Director and Assistant Director and is advised by the Recreation Committee. Specific beach-related responsibilities of the Recreation Department include, but are not limited to, the following:

- Staffing lifeguards at Oak Crest Cove, Ryder-Wakeby Park, and Snake Pond.
- Staffing gate attendants at Town Neck Beach and Boardwalk parking lots, East Sandwich Parking lots, and Snake Pond.
- Contracting for seasonal restrooms (portable toilets) at Town Neck Beach and East Sandwich Beach. Restroom cleaning and maintenance at Snake Pond.
- Limited cleanings at Town Neck Beach.
- Responding to concerns from residents.

**Department of Public Works/Engineering Department:** The Engineering Department of the Department of Public Works (DPW) provides services to town facilities related to road and parking lot maintenance, trash collection, and building maintenance. Specific beach-related responsibilities of the DPW include, but are not limited to, the following:

- Trash/recycling pickup at Town Neck Beach and Boardwalk parking lots, East Sandwich Beach parking lots, and Snake Pond.
- Maintenance of large boardwalk at Town Neck Beach.
- Limited clean-ups at Snake Pond and Town Neck Beach as needed.
- Design and oversight of any pavement improvements at any Town-owned parking lot.
- Responding to concerns from residents.

**Facilities Department:** The Facilities Department is responsible for the maintenance and upkeep of all Town owned buildings. Specific beach-related responsibilities of the Facilities Department include, but are not limited to, the following:

- Assistance with Snake Pond building maintenance (concession booth and restrooms).
- Assistance with contracting portable toilets.
- Responding to concerns from residents.

**Health Department:** The Health Department implements and oversees the policies and regulations as mandated by the Board of Health, the Massachusetts Department of Public Health and the Department of Environmental Protection with the responsibility of preserving and protecting the health of the community. The Health Department conducts weekly water quality sampling at all bathing beaches during the summer.
Fire Department: The Sandwich Fire Department responds to limit the effects of fire and other disasters, and medical emergencies. The Town of Sandwich has three fire stations. Beach-related responsibilities for the Fire Department include, but are not limited to, the following:

- Issuing Cook Fire permits.
- Emergency response for 4th of July festivities.
- Assisting with beach related emergency response needs.

Police Department: The Sandwich Police Department’s mission is to enforce the law and promote a feeling of safety and security for all members of the community. Beach-related responsibilities for the Fire Department include, but are not limited to, the following:

- Assisting with crowd control for 4th of July festivities.
- Assisting with emergency response for beach related issues.

Conservation Commission: The Conservation Commission is responsible for reviewing and issuing decisions on all permit applications submitted under the Massachusetts Wetland Protection Act and the Sandwich Wetlands Bylaw and its regulations. Any activities at the public beaches that remove, fill, dredge, build upon, degrade, or otherwise alter resources subject to protection require review by the Conservation Commission.
Figure 29. Department Roles and Responsibilities
3.2 PUBLIC BEACH REVENUE AND EXPENSES

Continued use and maintenance of the Town of Sandwich public beaches both as natural protective buffers to storm and wave damage, and as an important recreational resource, is largely dependent on prudent financial management. As with most municipalities, the limited financial resources within the town must be carefully planned so that the necessary services and goods can be provided. To assess the adequacy of current financial management practices, and to help with long-range fiscal planning, a summary of the operating budget for the Town of Sandwich public beaches has been prepared as part of the Beach Management Plan.

Revenue generated by the public beaches comes from several different sources. The largest contribution (more than 70% of beach revenue) comes from the sale of resident beach stickers, which currently cost $30 for the first vehicle and $20 for the second. Additionally, significant revenue, approximately 20% of the total beach revenue, is also generated through the daily parking fees collected from the Town Neck Beach and Boardwalk parking areas. Day use fees for all three public freshwater beaches combined total only 3% of the total beach revenue. Over the past three years, total annual beach revenues have ranged from $211,156 to $220,336 per year. A summary of public beach revenues generated during the period FY10 to FY 12 is shown in Figure 30.

![Sandwich Public Beaches Revenue](image)

**Figure 30.** Summary of Public Beaches Revenue by Source (FY10 is Considered an Estimate Because Full Revenue Information was Not Available for Oak Crest Cove and Ryder - Wakeby Park Beach Gates).

Operational expenses associated with the public beaches can be attributed to a number of different categories. The Natural Resources Department budget covers wages for the work camper program, as well as operating expenses for the department’s beach
management activities. Expenses for Audubon bird monitoring, beach cleaning and waterways enforcement come out of the Waterways Fund. Expenses for the recreational programs and lessons, life guards, gate attendants and restroom maintenance are covered under the Recreation Department. The other major cost incurred by the Town of Sandwich is a yearly payment to the Town of Barnstable to allow Sandwich residents that have purchased a yearly beach sticker to be able to access Barnstable’s Sandy Neck Beach for free. In FY2012, this payment equaled $40,590, but is increased 2.5% each year. For the past two years, the public beaches operating budget had a surplus of approximately $8,900. Using the FY2012 budget numbers as a baseline, and assuming consistent costs and revenue, factoring in an annual 2.5% increase in the fees paid to Barnstable each year, in FY2020 the Barnstable Sandy Neck fee would have increased to $49,455; this represents an $8,865 increase, which would cause the public beaches operating budget to just about break even. By FY2021, the Barnstable fees will be $10,101 higher than they were in FY2012, resulting in a deficit of approximately $1,200, assuming other sources of revenue and expenses remain constant.

For the past three years, the annual expenditures required to operate the public beaches have ranged from $195,784 to $205,466. A comparison of annual beach revenue and expenditures for the past three years is provided in Figure 31. The data show a net gain for all three years.

![Figure 31. Summary of the Sandwich Public Beaches Operating Budget for FY2010 to FY2012.](image)

The Town of Sandwich may wish to incorporate additional budget considerations, such as the cost for improved visitor facilities at Town Neck Beach. These improved facilities could be trailer toilets or a fully constructed bath house. Other Cape Cod towns have utilized portable trailer toilet facilities with separate men’s and women’s toilet facilities and sinks, with a handicap ramp integrated with the trailer, equipped with water and
electricity for approximately $20,000. Typical portable trailer toilet facilities have a waste holding tank between 500 to 1,000 gallons in size, which would need pumping by a septic maintenance truck approximately three times a week. The cost of pumping would likely range between $1,000 to $1,200 each week. Water and electricity would need to be brought to the trailer site. If conduits for such utilities are not already in place, additional costs would apply.

Additional amenities, such as outdoor showers and/or changing stalls could also be considered. If running water is available, seasonal shower towers could be installed at Town Neck Beach. Stainless steel units are recommended in a marine environment, and cost approximately $1,000 each. The shower site would also need to be prepared with a concrete pad or other natural surface, and drainage from the shower should be directed into French drains, grassy swales, or other locations that would minimize ponding and surface erosion. With seasonal shower towers, the water can be turned off in the off-season, and the shower tower can be removed.

Changing stalls could be installed adjacent to portable trailer facility, or erected independently of an improved toilet facility. These could be built from sections of stockade fencing, with a small gap along the ground to allow for the movement of sand and small animals. The cost for two changing areas (men/women) would be approximately $500.

In the future, the town may be interested in constructing a permanent bath house facility, similar to the visitor facilities at Honeymoon Island State Park in Dunedin, Florida or Horseneck Beach State Park in Westport, Massachusetts. Such a facility would obviously require a great deal more funding, and would also be a riskier development given the unpredictable nature of the coastal environment it would be situated in. To provide a rough idea of the magnitude of costs, the recent Horseneck Beach project cost $8.5 million and consisted of two new bathhouses with handicapped accessible boardwalks, shaded areas with benches, a raised construction plan to allow natural sand migration, solar panels and composting toilets (just over $4 million for each new bathhouse).
4.0 RECOMMENDED MANAGEMENT ACTIVITIES

Information gathered and analyzed as part of the inventory of Sandwich beaches has been used to develop recommended management activities for the Town of Sandwich public beaches. The recommendations represent a balance between preserving and restoring the natural functions of the various natural resources, and providing a quality public beach resource for recreational purposes. As such, the competing interests of various stakeholders have been taken into consideration and protected to the extent possible.

In some cases, the management recommendations include activities that are already being implemented by the Town of Sandwich under existing management practices, and the course of action is simply to continue business as usual. In other cases, the management recommendations define new activities that will require change to existing practices. Some of the recommendations can be implemented immediately, while others will require long-range planning, as well as potential permitting and fundraising before they can be implemented. In some cases, staff and budget restrictions will prohibit certain recommendations from being implemented until additional funding can be obtained. Additionally, although responsibility for each recommendation is given to a certain department(s), it is not important which department ultimately gets assigned to the task, only that it gets done. Responsible parties listed below are merely suggestions, and can be reassigned to better utilize staff members in other departments as the Town chooses to implement each recommendation.

Where possible, a schedule or frequency for implementation has been specified, as some activities require work on a routine or annual basis, while others are needed infrequently, for example only after storms. Although the management recommendations represent a thorough and comprehensive list of activities, the dynamic nature of the public beach sites necessitates a need for flexibility in future application. As such, the Beach Management Plan and associated recommendations should be considered a “living document” that must be reviewed and updated periodically to adjust the changing conditions of the beaches.

The recommended beach management activities have been broken into 6 distinct categories. These include the following: (1) management and planning level activities, (2) routine monitoring activities, (3) routine maintenance and improvement activities, (4) restoration activities, (5) education and outreach activities, and (6) fundraising activities. A brief description of each recommendation is provided below. Where possible, details are given on specific components of the recommendation including beach locations, responsible party, timing of implementation, purpose, relative priority, and pertinent regulations.

4.1 MANAGEMENT AND PLANNING LEVEL ACTIVITIES

Activity 4.1.1 Evaluate the Municipal Management Structure for Sandwich Public Beaches

Purpose: To identify measures that will improve the efficiency and allocation of resources, allocate personnel and funding for daily beach operations (i.e. trash removal,
portable toilet service, etc.), streamline routine maintenance (i.e. repair parking lots, install fencing, etc.), and prioritize capital improvements (i.e. beach nourishment, concession or amenity upgrades, etc.).

**Existing Activities:** Currently the management structure for Sandwich public beaches is outlined in Section 3.1 and is displayed diagrammatically in Figure 29.

**Details:**

1) Convene a meeting with responsible municipal departments to identify and discuss any shortcomings of the existing system.
2) Identify responsible departments for recommended new activities.
3) Identify potential new interdepartmental partnerships or reallocate responsibilities to produce a more effective and efficient beach management system.
4) Clearly define department roles and convene an internal Beach Management Committee 3-4 times a year to facilitate inter-departmental coordination and planning.
5) Consider the possibility of an external (citizen-lead) committee to focus on public education.
6) Review management structure for public beaches used by other Cape towns as potential models.
7) Identify a system for assigning priorities to daily beach operations and routine maintenance.
8) Implement changes in municipal management structure if determined to be beneficial.

**Timing:** 2013-2015

**Priority:** Moderate

**Responsibility:** Town Manager, Board of Selectman, Department of Natural Resources, Department of Public Works, Recreation Department, Police Department, Fire Department, Beach Committee, Department of Public Health.

**Regulations & Permits:** NA

**Activity 4.1.2 Formally Adopt Specific Town Objectives and Goals for Preserving and Maintaining Beaches**

**Purpose:** To clarify and solidify the Town’s goals and objectives for preserving and maintaining their public beaches. Codifying these goals will facilitate projects in the future.

**Existing Activities:** Currently the Sandwich Board of Selectman approve an update to the Town’s long range plan annually, addressing needs, goals and objectives for the town. In 2012, an item was included to address beach erosion, but other factors important to the management and preservation of Sandwich beaches were not included.
Details:

1) Develop a broad statement addressing the Town’s commitment to improved management and preservation of all components of Sandwich’s coastal resources and beaches (not just erosion).

2) Examples (adapted from the Town of Falmouth Long Range Plan): improve the quality of Sandwich beaches; improve the quality of wetland, estuarine and other coastal resources; and improve public amenities and facilities.

3) Board of Selectman adopts the newly developed item as part of 2013 Long Range Plan Update.

**Timing:** 2013-2015

**Priority:** Low

**Responsibility:** Board of Selectman

**Regulations & Permits:** NA

**Activity 4.1.3 Establish a Beach Maintenance Record Keeping System**

**Purpose:** Establish a record keeping system for beach maintenance activities, beach/dune restoration, inlet dredging activities, stairs and boardwalk reconstructions, and storm damages at each beach to maintain a history of work and storm response at each beach to guide future restoration and management decisions.

**Existing Activities:** Financial records are currently kept in the Accounting Department, but individual departments also maintain their own records. Photographs are taken pre- and post- storm and are stored electronically. Permits and Orders of Condition are maintained by project.

**Details:**

1) For all beach maintenance activities, document type of activity, materials needed, cost, dates of work, location and any outside contractors. Document each activity with photographs.

2) For all beach nourishment and/or dune restoration work, document dates of work, location, volume of sand, elevation and slope of fill, as well as source and quality of sand. Document each activity with photographs.

3) Maintain records for any dredging work at Sandwich Harbor Inlet, including dates and location of work, volume and quality of material dredged, placement location(s), and dredging/placement methodology.

4) Document all storms and associated beach impacts, by recording date and duration of storm, beach sites impacted, extent of erosion, and impacts to infrastructure. Flag high water marks as soon as possible after major storm events at all impacted beach sites. Survey and record the elevation of high water flags.

5) Identify lead department or a responsible party to serve as a database manager to acquire, update, and maintain necessary records.
6) A sample documentation Excel spreadsheet is provided in Appendix B.

Timing: Annually and post-storm

Priority: High

Responsibility: Department of Natural Resources, Recreation Department, Department of Public Works.

Regulations & Permits: NA

**Activity 4.1.4 Prepare Spring Letter to the Sandwich Conservation Commission**

Purpose: Prepare an annual spring letter to the Conservation Commission describing the necessary beach activities required to open the public beaches. This letter will inform the Commission about the level of activity required and allow them to ensure protection of wetland resources.

Existing Activities: Currently the Conservation Commission is administratively under the Department of Natural Resources and obtaining permits is relatively simple, but are only pursued when needed.

Details:

1) Conduct site visits to each beach during early March to identify necessary activities.
2) Identify the types of work, locations, schedule, and equipment needed, as well as the work methodology. The spring letter should reference the Sandwich Beach Management Plan, and describe all anticipated work. A sample letter is provided in Appendix B.
3) Provide an opportunity for a meeting and/or site visit with the Conservation Commission to discuss the upcoming work.

Timing: Annually in March or April

Priority: High

Responsibility: Natural Resources Department, Conservation Commission

Regulations & Permits: Notice of Intent; Order of Conditions

**Activity 4.1.5 Prepare Fall Letter to the Sandwich Conservation Commission**

Purpose: Prepare fall letter to the Conservation Commission describing activities undertaken during the previous year at each of the public beaches to inform the Commission of the required activities and resources protected, and to document compliance with any active Order of Conditions. This would also serve as a useful summary document for the Natural Resources Department to maintain in its own records.
Existing Activities: Currently Department of Natural Resources does not prepare a letter to the Conservation Commission summarizing the year’s activities.

Details:

1) Describe all beach activities completed, including location, dates and duration, and equipment utilized. A sample letter is included in Appendix B.
2) Describe all anticipated winter beach activities planned for construction.

Timing: Annually in October or November
Priority: High
Responsibility: Natural Resources Department, Conservation Commission

Regulations & Permits: Notice of Intent; Order of Conditions

Activity 4.1.6 Maintain Active Environmental Permits for Work on Public Beaches

Purpose: To allow work within the resource areas and buffer zones on the Sandwich public beaches, as required by the Massachusetts and Sandwich Wetlands Regulations.

Existing Activities: Currently copies of all environmental permits are maintained in a file, but a central database organizing this information does not yet exist.

Details:

1) Maintain an Excel database record of all permits obtained for work on public beach sites, including issuing agency, permit and/or tracking number, dates of issuance and expiration, recording information, and dates of any extensions. Begin by entering all active permit information.
2) Maintain a file with hard copies of all permits, referenced plans, and extension permits. The file should be maintained by the Natural Resources Department.
3) Prepare all extension requests and applications for re-issuance 3 months prior to permit expiration.
4) Ensure the Certificates of Compliance are requested, received and recorded.

Timing: As-needed.
Priority: High
Responsibility: Natural Resources Department; Conservation Commission

Regulations & Permits: Notice of Intent and Order of Conditions under the MA Wetlands Protection Act; Massachusetts Endangered Species Act; MEPA Certificate; MA DEP Chapter 91 License; MA DEP Water Quality Certificate; USACE Programmatic General Permit or Individual Permit
Activity 4.1.7 Develop Pre- and Post-Storm Response Plans for Sandwich Public Beaches

**Purpose:** To minimize the risks of storm damage to wetland resources and public/private infrastructure and to improve efficiency and reduce adverse impacts to resources during post-storm clean-up.

**Existing Activities:** Currently the Sandwich Emergency Management Committee meets 3-4 times a year and is responsible for creating plans for emergency response. Additionally, the local Sandwich Emergency Management Committee sends one representative to the regional Emergency Management Committee, which meets monthly. The Town is currently finalizing a Multi-Hazard Mitigation Plan. The Multi-Hazard Mitigation Plan outlines many suggestions for reducing potential impacts, but does not discuss how to respond once an emergency or hazard has occurred.

**Details:**

1. Identify specific activities that must be performed in advance of an upcoming hurricane or major storm, such as removing all unsecured items from the beach and parking areas, etc.
2. Identify responsible parties for all pre-storm activities.
3. Develop a chain of command list with contact information for all pre- and post-storm activities. Points of contact should be included for local, state, and federal emergency management officials, utility suppliers for electricity and gas, local materials haulers, heavy equipment contractors, and tree trimming specialists. Update points of contact as necessary.
4. Develop a plan and obtain advance approval for post-storm emergency response actions, such as removing sand from roads and parking lots, collecting and appropriately disposing of storm debris, and assess access structures (e.g. boardwalks, stairs, etc) and repair them as necessary. Advance approval would allow these activities to be performed quickly without permit.
5. Incorporate all above information into a comprehensive Emergency Response Plan.

**Timing:** 2013-2014

**Priority:** High

**Responsibility:** Emergency Management Committee; Town Manager; Natural Resources Department; Recreation Department; Facilities Department

**Regulations & Permits:** NA

Activity 4.1.8 Review Standing Agreement for Use of Sandy Neck Beach in Barnstable

**Purpose:** Evaluate the current agreement, and assess additional costs needed to improve Sandwich public beaches and amenities, specifically at Town Neck Beach.
Existing Activities: Currently the Town of Sandwich gives the Town of Barnstable approximately $40,000 each year in exchange for allowing Sandwich residents with a town beach sticker to access Sandy Neck Beach in Barnstable for free; this fee increases 2.5% each year.

Details:

1) Develop a full understanding of the current costs associated with the current Barnstable agreement and the current usage of Sandy Neck Beach by Sandwich residents.
2) Determine estimated costs associated with the construction and long-term maintenance of facility and amenity improvements at Sandwich public beaches, including nicer portable trailer toilet facilities, changing stalls, outdoor showers, a full bathhouse, etc. Some price estimates have already been provided at the end of Section 3.2.


Priority: Moderate

Responsibility: Town Manager, Accounting Department

Regulations & Permits: NA

Activity 4.1.9 Lifeguards at Town Neck Beach

Purpose: To provide regular staffed lifeguards at Town Neck Beach for the safety and protection of visitors to that location.

Existing Activities: Currently the Town does not staff lifeguards at any salt water beach.

Details:

1) Acquire additional funding to add additional life guards for the summer.
   a. Decide whether the whole beach will be guarded (the area would require 6 life guards and one head guard on duty each day), or if only a small designated swim area would be guarded (at minimum this would require 2 life guards and 1 head guard on duty).
   b. Associated costs would include staff ($20,000-$46,000 annually, depending on how many staff), equipment (initial cost of ~$10,000 for rescue boards, back boards, life guard stands, uniforms, etc), and storage (cost will vary depending on storage method chosen).
2) Hire and staff lifeguards daily at Town Neck Beach during the summer season.

Timing: Annually

Priority: Moderate
Responsibility: Recreation Department

Regulations and Permits: NA

Activity 4.1.10 Maintain and Expand Work Camper Program

**Purpose:** To retain a reliable, cost-effective work base for the regular maintenance and operations at Ryder-Wakeby Park, and to consider the expansion of this program to provide the same benefits to one or more of the salt water beach locations.

**Existing Activities:** Currently the Town of Sandwich runs a work camper program at the public beach at Ryder-Wakeby Park in the Ryder Conservation Area. Each summer 12 people are accepted as work campers. They reside in RVs on the property from approximately Memorial Day through the end of September each year. The program allows them to live on the Town property for free in addition to providing a small living stipend, in exchange for assisting the Town with the operations and maintenance of the beach. Locations with work campers tend to experience much less vandalism and have better maintenance oversight.

**Details:**

1) Maintain current practice of accepting 12 work campers each year for Ryder – Wakeby Park and Oak Crest Cove each summer.
2) Continue advertising the opportunity annually in Workamper News (www.workamper.com).
3) Investigate the possibility of potential land acquisitions for property abutting or near to Town Neck Beach that could accommodate housing for work campers. This might include purchasing 3-4 acres of the land owned by a local utility company outlined in Figure 32. The parcel closest to Coast Guard Road would provide adequate space, as well as privacy, to house Workampers for Town Neck Beach.
Activity 4.1.11 Consider Potential Land Acquisition Opportunities to Improve Public Beach Properties and Facilities

**Purpose:** Potentially acquire land to support additional beach visitor facilities for the salt water beaches.

**Existing Activities:** The Town of Sandwich is not currently pursuing additional land acquisition but would like to consider the possibility of upgrading visitor facilities to the Town Neck Beach if suitable locations could be found.

**Details:**
1) Evaluate how much area the Town would need to construct visitor facilities at Town Neck Beach.
2) Discuss the potential for purchasing adjacent/nearby land with abutters, specifically parcels closest to the Sandwich Boardwalk owned by McGrath Realty.
Trust on Boardwalk Road, and the parcels near the canal owned by Genon on Town Neck Road and Coast Guard Road.


Priority: Low

Responsibility: Town Manager

Regulations & Permits: NA

Activity 4.1.12 Develop Formal Agreements with Abutters of Town Beach Properties

Purpose: To clarify allowable activities and methods for informing the public about actions on and around abutter properties, specifically Hemisphere’s Restaurant on Freeman Avenue, the Genon Property between Town Neck Beach and the Cape Cod Canal, and the private abutters surrounding the Town owned East Sandwich Beach parcels.

Existing Activities: Currently, the Town of Sandwich and Hemisphere’s share the parking lot at the corner of Town Neck Road and Freeman Avenue, but there are conflicts with beach visitors using the restaurant facilities. It would also be beneficial to the Town to charge for parking at that location, but that would affect the restaurant’s parking situation. Beach visitors parking in this location also utilize the beach owned by Genon. Finally, signs are posted at the edges of Town property to indicate no trespassing is allowed on the adjacent private beaches (Figure 33).

Details:
1) Contact abutters to begin formal discussions.
2) Remain aware of changes in ownership (the utility company parcel along the canal, currently owned by Genon, has changed ownership frequently).
3) Develop a written agreement separately with each abutter addressing the current user conflict issues.
4) Implement necessary changes resulting from abutter conversations (i.e. install symbolic fencing in addition to “No Trespassing” signs at East Sandwich Beach; partition parking lot near the Hemisphere’s restaurant and employ a parking attendant in that lot; provide portable toilets at this location, etc.).


Priority: Moderate
Responsibility: Town Manager, Department of Public Works, Natural Resources Department

Regulations & Permits: NA

Activity 4.1.13 Review and Update Beach Management Plan Periodically

Purpose: To ensure effective management of the public beaches by adjusting future management practices to respond to changing conditions and uses of the beaches.

Existing Activities: Prior to this document, the Town of Sandwich did not have a comprehensive Beach Management Plan.

Details:

1) Review past maintenance and restoration activities, as well as storm damage records.
2) Review and consider effectiveness of past management strategies.
3) Update Beach Management Plan as necessary.

Timing: Every 5 years

Priority: High

Responsibility: Town Manager, Natural Resources Department, Department of Public Works, Recreation Department, Conservation Commission, Fire Department, Police Department

Regulations & Permitting: NA

4.2 ROUTINE MONITORING ACTIVITIES

Activity 4.2.1 Conduct Bi-Annual Beach Profile and Photographic Surveys at All Public Beaches

Purpose: To quantify long-term and seasonal changes in beach profile and shoreline location, and to identify when beach nourishment and dune restoration are needed, especially at salt water beaches.

Existing Activities: Beach profiles and photographic surveys have been conducted in the past, but are not performed on a regular basis or at all locations.

Details:

1) Saltwater beaches:
   a. Collect beach profiles at all public salt water beach locations established as part of the Beach Management Plan. Survey the beach profiles bi-annually in the late winter (Mar. to Apr.) and early fall (Sept. to Oct.).
b. Utilize GPS or total station survey equipment to collect horizontal (x,y,) and vertical (z) positions along each beach profile. Collect information regarding position of high water during the surveys, as well as breaks in slope, types of resource area, and extent of vegetation.

c. Maintain the survey data in an Excel spreadsheet. An example spreadsheet is provided in Appendix B.

d. Compare successive surveys to evaluate changes in elevation, volume and shoreline position. Review beach profile data on an annual basis to identify areas where beach width is consistently narrowing, or where dune width/height is compromised. Establish these areas as priority sites for beach nourishment and dune restoration.

2) Freshwater beaches:
   a. Visually assess the freshwater beaches bi-annually to determine whether erosion controls are needed.
   b. Monitor for areas of poor drainage (such as the gully being formed at Snake Pond Beach due to excessive road runoff), and create a plan to address any issues observed.

3) All beaches:
   a. Establish 2-4 sites at each beach for the collection of photographs that can be used to document visual changes. Collect the photography bi-annually along with the beach profile data. Document the dates and tide levels during the photography and maintain in a binder or electronic database. This information should be maintained with other beach related records noted in Activity 4.1.3.
   b. Note and photo-document dominant plant species and any invasive weeds to determine whether a revegetation, restoration, or invasive species removal project is needed.

**Timing:** Bi-annually

**Priority:** High

**Responsibility:** Department of Natural Resources, Engineering Department, consultant.

**Regulations & Permits:** NA

**Activity 4.2.2 Conduct Annual Condition Surveys of All Coastal Engineering Structures at the Public Beaches.**

**Purpose:** To identify damaged or deteriorating structures in need of repair.

**Existing Activities:**

The groin field at Town Neck Beach is owned by the state. Currently annual condition surveys are not conducted, and not required for most structures since they are not currently functioning to trap sediment.
Details:

1) There is only one structure currently trapping sediment along Town Neck Beach (Figure 29), as seen by the extensive buildup of sediment on one side. The condition of this structure should be monitored by examining rip rap placement, toe scour and undermining, concrete failure, backfill erosion, etc.

2) Document erosion and accretion rates on both sides of the structure.

3) Collect photographs of structures during each survey.

4) All other groins and jetties along Town Neck Beach should be visually monitored. If it is determined that additional structures are actively trapping sediment, those structures should be monitored as described in steps 1-3.

5) If Sandwich Harbor Inlet is relocated, or if new jetties are constructed to contain the inlet, those structures should be carefully monitored as well.

Timing: Annually

Priority: Low

Responsibility: Natural Resources Department

Regulations & Permits:

Activity 4.2.3 Collect Bathymetric Data for Sandwich Harbor Inlet

Purpose: Bathymetry data should be collected for Sandwich Harbor Inlet to gage the amount of potential dredging material for beneficial reuse as a stop gap erosion measures at overwash or high erosional areas along Town Neck Beach and Springhill Conservation Lands. Additionally, if the inlet is not going to be restabilized, it is important to document and understand how it’s changing.

Existing Activities: Bathymetric data is not currently collected for Sandwich Harbor Inlet.

Details:

1) Simple inlet cross sections would serve as the basis for any planned dredging to support beach nourishment activities in the future.

2) It is recommended that 4 cross sections be profiled during each survey of Sandwich Harbor Inlet.

3) Bathymetric surveys should be completed bi-annually.

Figure 29. Active groin at Town Neck Beach
Timing: Bi-annually

Priority: Moderate

Responsibility: Department of Public Works, Natural Resources Department

Regulations & Permits: NA

**Activity 4.2.4 Update Estimates of Shoreline Change at Saltwater Beaches Using Additional Aerial Photography**

Purpose: To quantify long-term trends in shoreline change and to improve decisions regarding sediment management.

Existing Activities: The Town has done shoreline change analyses in the past, but does not update this information on a regular basis and does not analyze all salt water beach locations.

Details:

1) Review the CZM shoreline change database and updated analysis incorporating additional aerial photography from 2001 and 2009. (An updated analysis with these years was completed as part of this Beach Management Plan.)
2) Continue to update the shoreline change analysis with new photographs as they become available, approximately every 5 years.
3) Use the updated shoreline change data to forecast erosion rates as the basis for planning restoration opportunities.

Timing: Every 5 years

Priority: Moderate

Responsibility: Natural Resources Department

Regulations & Permits: NA

**Activity 4.2.5 Conduct Weekly Water Sampling at all Public Swimming Beaches**

Purpose: To ensure public safety and health of the community by conducting weekly inspections of water quality at all swimming beaches.

Existing Activities: Currently the Town conducts weekly water quality sampling at the following locations: Town Neck Beach in front of Hemisphere’s restaurant, Town Neck Beach, Mill Creek (downstream of boardwalk bridge), East Sandwich Beach, RydWakeby Park in the Ryder Conservation Lands, Snake Pond Beach and Oak Crest Cove.
Details:

1) Collect water samples weekly at all beaches noted above.
2) Water samples are sent to an analytical laboratory for analysis of *Enterococcus sp.* for salt water beaches and *E. coli* for fresh water beaches.
3) Post water quality results on town website to inform the public of any health concerns.
4) If results exceed the recommended limit (above 104 colonies/100ml for *Enterococcus* in salt water sites; above 235 colonies/100ml for *E. coli* in freshwater sites) post beach closure signs at any affected location and post a notification online.

**Timing:** Weekly, during the summer.

**Priority:** High

**Responsibility:** Health Department

**Regulations & Permits:** MA DEP Water Quality Certificate

### 4.3 ENDANGERED SPECIES MANAGEMENT ACTIVITIES

**Activity 4.3.1 Conduct Shorebird Surveys at the Public Beach Sites Located Within Mapped Priority and Estimated Habitat Areas.**

**Purpose:** To protect rare and endangered shorebird species.

**Existing Activities:** The Town currently hires Mass Audubon monitors to perform daily monitoring (weather permitting) and surveying of nest sites. The monitors also produce an annual summary report at the end of each summer.

**Details:**

1) Continue to utilize trained observers to monitor the mapped beaches during the nesting season starting during the beginning of March. Mapped beaches include Town Neck Beach, Springhill Conservation Lands, East Sandwich Beach and Scorton Neck Conservation Lands.
2) Immediately notify the Massachusetts NHESP if any nesting sites are located.
3) An exclusionary zone 50 yards around each nest should be established using symbolic fencing. The nests should be monitored until the chicks have fledged.
4) Mass Audubon compiles a summary report at the end of each year, which details the numbers of nests and fledglings, and which areas were fenced off for bird protection.
5) A copy of these reports should be kept on file by the Natural Resources Department. As with other record keeping tasks, this information should be maintained with other beach related records noted in Activity 4.1.3.
Timing: Annually

Priority: High

Responsibility: Department of Natural Resources, MA Audubon

Regulations & Permits: Massachusetts Endangered Species Act (MA Division of Fish and Wildlife)

**Activity 4.3.2 Install Protective Sand and/or Symbolic Fencing Around Known Nesting Areas**

Purpose: To protect nests, eggs and fledglings of endangered species on public beaches.

Existing Activities: The town currently hires Mass Audubon monitors during the nesting season. Monitors install and maintain symbolic fencing between April 1 and September 15 each year. In addition, to further prevent disruption to the birds during the peak summer season, temporary sand fencing is installed around the nest area in the most actively used area of Town Neck Beach (Figure 35).

Figure 35. Suggested Location for Temporary Sand Fencing and Symbolic Fencing for Bird Protection at Town Neck Beach.

Details:

1) Install symbolic fencing prior to April 1 in established nesting areas for threatened and endangered shore bird populations.

2) In the western portion of the Town Neck Beach nesting area, install temporary sand fencing prior to the beach season (Memorial Day) to reduce disturbance to the birds from visitors in the most heavily trafficked areas.
3) Monitor nesting areas regularly throughout the nesting season to maintain and repair/replace fencing as necessary.
4) After birds have fledged (approximately September 15), remove sand and symbolic fencing.

**Timing:** Annually, April 1 – September 15

**Priority:** High

**Responsibility:** Natural Resources Department, MA Audubon

**Regulations & Permits:** Massachusetts Endangered Species Act

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**Activity 4.3.3 Implement Crowd Control Measures for 4th of July and Other Large Events at Town Neck Beach**

**Purpose:** To reduce the risk that nesting sites of species of concern will be disturbed by holiday activities and to more closely enforce other beach rules, such as fire permits and the prohibition of fireworks.

**Existing Activities:** The police department sets up a barricade after a certain time at the Wood Avenue Extension parking lot at Town Neck Beach to reduce the volume of people on the beach for 4th of July activities. The police department also deploys ATVs on private beaches to enforce beach rules.

**Details:**

1) All departments should hold a pre-4th of July planning meeting to coordinate efforts.
2) During the day on July 3-5, continue police ATV patrols at saltwater beaches.
3) Extend hours for fee collection at Town Neck Beach until sunset.
4) After sunset on July 4th, install and staff a barricade in front of the Wood Avenue Extension Town Neck Beach parking area to control and reduce the volume of people utilizing the parking lot and the beach.
5) Prohibit public access on the beach east of boardwalk.
6) Increase patrols for and enforcement of use of fireworks.

**Timing:** Annually (July)

**Priority:** High

**Responsibility:** Natural Resources Department, Fire Department, Police Department, Department of Public Works, Recreation Department

**Regulations & Permits:** Massachusetts Endangered Species Act
Activity 4.3.4 Submit MESA Information Request Form

Purpose: To identify the threatened and endangered species in and around the public beach sites to inform management and conservation policies, and develop targeted conservation practices.

Existing Activities: It is generally known that the salt water beaches serve as nesting areas to endangered and threatened least terns and piping plovers. However, all Sandwich public beaches, including the freshwater beaches, have NHESP Priority Habitat mapped on the Town parcels containing the beach, and in many cases, encompassing the beach itself. However, in the freshwater beach locations, is not known which protected species are driving the protected designation in each of these areas.

Details:

1) Obtain, fill out and submit a MESA Information Request Form (blank form can be found in Appendix B).
2) Describe the pertinent objectives and recommendations from this Beach Management Plan under “Description of Proposed Project” on the form.
3) When information is received from NHESP, evaluate existing uses and policies, and modify as necessary to ensure adequate protection of species.

Timing: 2013-2014

Priority: High

Responsibility: Natural Resources Department

Regulations & Permits: Massachusetts Endangered Species Act

4.4 ROUTINE MAINTENANCE AND IMPROVEMENT ACTIVITIES

Activity 4.4.1 Complete Pre-Season Activities Required to Open the Public Beaches.

Purpose: To provide the services required to operate the public beaches.

Existing Activities: The Town of Sandwich annually completes a series of necessary activities to make the public beaches ready for summer visitors.

Details:

1) Place newspaper advertisement soliciting applications for vendor contracts at Town Neck Beach.
2) Advertise for and fill work camper and life guard positions.
3) Install lifeguard stands at Town Neck Beach, Peters Pond, Snake Pond and Wakeby Pond/Ryder Conservation Area.
4) Install parking attendant booths at the three Town Neck Beach parking areas (Hemisphere’s, main Town Neck Beach parking area, and the Boardwalk parking
area) and the two East Sandwich Beach parking areas (East Sandwich beach west and at the lot by Ploughed Neck Road).

5) Place and service trash bins and recycling bins at all beaches.
6) Oversee pre-season placement of portable toilets at saltwater beaches by contractors. Clean and prepare restroom facilities at fresh water beaches.
7) Replace and install signs as necessary.

Timing: Annually – May

Priority: High

Responsibility: Natural Resources Department, Recreation Department, Department of Public Works, Town Manager

Regulations & Permits: Notice of Intent; Order of Conditions

Activity 4.4.2 Perform Maintenance of the Parking Areas at All Public Beaches.

Purpose: To maintain and preserve existing parking lots, ensuring public safety and access, and minimizing the loss of sand from the beach.

Existing Activities: The Town of Sandwich currently sweeps all paved parking lots once a year, and repaints the stripes approximately every 5 years.

Details:

1) General parking lot maintenance:
   a. Sweep all paved parking lots and return clean sand back to the beach above the high tide line. Any sand that is contaminated with oil or grease, or mixed with trash or debris should be removed to an approved off site location. Any questions regarding sand contamination should be resolved using best management practices including stockpiling on the parking area, and a site meeting with the DPW supervisor, Director of the Natural Resources Department and/or the Conservation Commission.
   b. Paint parking lines, directional arrows, and seal parking areas as needed.
   c. Regrade natural surface parking areas at the beginning of the beach season, and as needed throughout the year to avoid the collection of rain water.

2) Town Neck Beach: Reconstruct Wood Avenue Extension and Boardwalk parking lots according to the July 2011 plans developed by the Department of Public Works as part of the Sandwich Harbor Stormwater Mitigation study. The current parking lots are cracked, degraded along the edges, and do not drain adequately, which often results in flooded sections after a moderate to heavy rain. The new design includes better grading to shed water from the parking lot, an area of porous pavement at on the marsh edge of the parking lot to allow water to infiltrate into the ground, and a siltation barrier to minimize sedimentation in the marsh.

3) East Sandwich Beach: Redesign parking at East Sandwich Beach, eliminating the small parking area by the east access trail and along the street east of Ploughed
Neck Road, and expand the lot at the corner of Ploughed Neck Road to accommodate 5-10 additional cars. This would consolidate parking and better utilize the parking attendant staff available. Additionally, it would allow the portion of the dune at the head of the access trail that is currently used as a parking area to be restored.

4) Springhill Beach: Create a small, un-paved public parking area to avoid trespassing and nuisance issues with visitors parking on private property (Figure 36). This parking area would have seasonal restrictions due to shorebirds nesting on the back side of the dunes.

**Timing**: Annually and as needed.

**Priority**: Moderate-Low

**Responsibility**: Department of Public Works, Recreation Department

**Regulations & Permits**: Notice of Intent; Order of Conditions; Massachusetts Endangered Species Act

Figure 36. Suggested Location for a New, Unpaved Parking Lot at Springhill Beach. The black Rectangle Denotes Suggested Parking Area Location. The Double Black Bar Represents the Suggested Location for a Gate Blocking Vehicle Traffic Beyond That Point. The Red Line Indicates a Potential Access Path from the Parking Lot to the Beach.
Activity 4.4.3 Install and Repair Fencing and Guard Rails as Needed

Purpose: To maintain adequate fencing for public safety as well as for the protection of resource areas.

Existing Activities: Currently a split rail fence is located around the Ploughed Neck Road parking area and a wooden guard rail separates the small parking area at the east access to East Sandwich Beach on North Shore Boulevard.

Details:

1) Conduct an inventory of damaged fencing in March or April.
2) Repair and/or replace fencing as needed. All work in the Coastal Dune and Coastal Beach areas should be performed by hand, and should avoid disturbance of existing vegetation.
3) Dispose of old fencing in an approved off site location.
4) Identify areas where fence installation would be beneficial. Installation of fencing should be considered along the dune side of the Wood Avenue Extension parking lot at Town Neck Beach (except in locations of designated access paths), on the beach side of the dune trails at both sections of East Sandwich Beach, and around the marsh areas near the boardwalk to reduce the trampling of dunes and wetlands, and to eliminate the creation of unwanted access paths (Figure 37).
5) Although sand fencing would generally not be allowed in areas where shorebirds are nesting per NHESP, it would be beneficial to install sand fencing to help build up sand on Town Neck Beach dunes if nesting locations shift, and NHESP approves the installation.

Timing: Annual – Spring or Fall

Priority: Moderate

Responsibility: Department of Public Works, Natural Resources Department, Recreation Department, Town Manager

Regulations & Permits: Notice of Intent; Order of Conditions; Massachusetts Endangered Species Act

Activity 4.4.4 Boardwalk and Stairway Maintenance and Repair

Purpose: To maintain public safety and access to the beach.
Existing Activities: The boardwalk and stairways at Town Neck Beach are repaired/replaced as necessary. The Town of Sandwich has requested and received emergency approval from the state to accelerate getting repairs done to the Sandwich Boardwalk, as well as the elevated walkways and staircases at Town Neck Beach as a result of the recent storms. The initial cost for the necessary immediate work to make the Sandwich Boardwalk and beach access ways usable is approximately $30,000. As of this writing, the funding has yet to be acquired and the repairs have not yet been completed.

Details:

1) Inspect structures each year in late spring, prior to opening beaches, to assess the condition of all boardwalks and stairways.
2) Replace boardwalk planks, handrails, steps or staircases as they become degraded, unsafe, or damaged.

Timing: Annually and as needed.

Priority: Moderate

Responsibility: Department of Public Works, Natural Resources Department

Regulations & Permits: Notice of Intent; Order of Conditions; Massachusetts Endangered Species Act

Activity 4.4.5 Visitor Facilities Maintenance and Repair

Purpose: To maintain restroom and concession facilities in good working order, collect and dispose of trash and recycling, and coordinate portable toilets services for beaches with no permanent facilities. Consider building a permanent restroom/changing facility at Town Neck Beach.

Existing Activities: Responsibility for the maintenance, cleaning and repair of visitor facilities at the freshwater beaches is shared between three departments (Natural Resources Department, Recreation Department, and the Facilities Department). Likewise, the responsibility for scheduling and maintaining portable toilets at the salt water beaches, none of which currently have permanent restrooms, is shared between two departments (Recreation Department and Facilities Department). The Department of Public Works is responsible for trash collection at all public beach locations.

Details:

1) Streamline coordination of visitor facilities: assign only one department to coordinate visitor facilities at each beach location; assign only one department to coordinate portable toilets at all Town Neck Beach and East Sandwich Beach.
2) Investigate pricing and feasibility of various visitor facilities for Town Neck Beach: constructing a full bathhouse with restrooms and changing rooms, portable trailer toilets, etc. Some initial information and pricing for these improvements can be found in Section 3.2 of this report.
3) Clean/maintain restrooms at freshwater beaches daily.
4) Pump portable toilets from salt water beach locations as needed.
5) Collect trash and recycling from all locations 2-4 times per week during the summer. Continue trash collection once a week during the off-season at popular locations, such as Town Neck Beach and the Boardwalk parking lots.

**Timing:** Daily/weekly throughout beach season; occasionally during the off-season.

**Priority:** Moderate

**Responsibility:** Natural Resources Department, Recreation Department, Facilities Department, Department of Public Works

**Regulations & Permits:** NA

**Activity 4.4.6 Clean and Rake Freshwater Beaches**

**Purpose:** To improve the quality and aesthetics of the beach environment.

**Existing Activities:** Beach raking occurs at Wakeby-Ryder Park at Ryder Conservation Area and Peters Pond.

**Details:**

1) Utilize a beach rake to remove debris on the beach.
2) Regrading should only occur above high water and no sand should be removed from the beach.
3) Dispose of trash/debris in a suitable off-site location.

**Timing:** Annually.

**Priority:** Low

**Responsibility:** Natural Resources Department

**Regulations & Permits:** Notice of Intent; Order of Conditions

**Activity 4.4.7 Prune Shrubs and Other Vegetation at the Edges of the Parking Areas and Along Access Paths.**

**Purpose:** To maintain full use of the parking areas and access paths, and to improve public safety.
Existing Activities: Department of Public works mows two public access paths (from Freeman Avenue) twice a year.

Details:

1) Pruning should be limited to vegetation that overhangs or encroaches on the parking areas, sidewalks and access paths (Figure 38).
2) All work in dunes should be performed by hand and the clippings should be removed off site to an approved location.
3) This activity is routinely needed (approximately every other week) at the Freeman Avenue access paths and only infrequently needed at East Sandwich Beach western parking lot and dune access paths.
4) Consider spraying herbicide or grub out poison ivy in areas where needed, such as around the portable toilets at the west parking lot of East Sandwich Beach.

Timing: Annually and as needed.

Priority: Moderate

Responsibility: Department of Public Works, Department of Natural Resources

Regulations & Permits: Notice of Intent; Order of Conditions

Activity 4.4.8 Continue Management and Maintenance of Boardwalk Area Boat Launch at Town Neck Beach

Purpose: To provide access for small watercraft to launch at Mill Creek.

Existing Activities: An unimproved boat launch currently exists, but is not maintained (Figure 39).
Details:

1) Regrade and repave the edge of the parking lot allowing access to the boat launch to eliminate erosion and create a more gradual approach.
2) Install signage describing appropriate and safe tide levels necessary to use boat launch.
3) Develop and carry out a monitoring plan to determine if the boat launch, and associated boat traffic is negatively affecting the marsh.
4) If monitoring shows adverse impacts, consider redesigning or eliminating boat launch to avoid degradation to surrounding marsh.

Priority: Low
Responsibility: Department of Public Works, Natural Resources Department, Public Access Board
Regulations & Permits: Notice of Intent; Order of Conditions

Activity 4.4.9 Begin a Parking Meter Pilot Program at the Hemisphere’s Parking Area.

Purpose: To increase the Town’s ability to capture collect revenue from this currently unmonitored parking lot near Town Neck Beach.

Existing Activities: Parking meters are not currently used at any public beach parking area. Also, although many of the parking areas are staffed with an attendant during the day in the summer, the parking lot near Hemisphere’s restaurant at the corner of Town Neck Road and Freeman Avenue is currently unmonitored; potential revenue from visitors parking there is not captured.

Details:

1) Research appropriate parking meters to be installed. Important considerations include initial cost, weather-resistance/durability, power source (i.e. solar), and payment type accepted (i.e. cash, credit, etc).
2) Implement parking meters at the parking area near Hemisphere’s as a trial run.
3) If successful, consider expanding the use of parking meters to other beach parking lots. If not, consider hiring an additional parking attendant during peak season to staff the parking area near Hemisphere’s restaurant.

Priority: Low
Responsibility: Recreation Department
Regulations & Permits: NA
Activity 4.4.10 Gate Off Beach Parking Areas at Night

Purpose: To reduce the incidence of vandalism, fires, and trespassing on Town beaches overnight.

Existing Activities: Entrance gates are closed every evening at Ryder-Wakeby Conservation Lands and Oak Crest Cove (gates are tended by Workampers).

Details:

1) Continue closing the parking lot gates after hours at both Ryder-Wakeby Conservation Lands and Oak Crest Cove.
2) Develop and utilize a gate closure system at Town Neck Beach and Snake Pond.

Timing: Daily (July-September)

Priority: High

Responsibility: Natural Resources Department

Regulations & Permits: NA

4.5 RESTORATION ACTIVITIES

Activity 4.5.1 Initiate Program of Ongoing Beach Nourishment at Town Neck Beach.

Purpose: To increase the ability of the Coastal Beaches to provide buffering against storms, flood control, and sediment to adjacent beaches, to mitigate erosion, and to enhance the recreational resource.

Existing Activities: Although the dunes at Town Neck Beach have been restored in the past, the Town of Sandwich has never engaged in a directed beach nourishment project; all past work focused on dunes above mean high water.

Details:

1) Identify suitable sources of sand for beach nourishment programs, including sand from channel and harbor dredging, offshore dredging, and upland sources.
2) Explore opportunities for cooperation with other municipalities, private stakeholders, and state and federal agencies for the implementation of large-scale nourishment projects.
3) Establish coordination with the U.S. Army Corps of Engineering regarding potential beneficial reuse of sediment dredged from the Cape Cod Canal. Request early notification by the U.S. Army Corps of Engineers of future dredging so that the necessary agreements for beneficial reuse can be developed.
4) Identify potential funding sources for large-scale beach nourishment projects.
Timing: 2013-2020

Priority: High

Responsibility: Town Manager, Board of Selectman, Natural Resources Department, Department of Public Works, Conservation Commission.

Regulations & Permits: USACE Programmatic General Permit or Individual Permit; Notice of Intent; Order of Conditions; Massachusetts Endangered Species Act

**Activity 4.5.2 Initiate Dune Restoration Program at Town Neck Beach**

**Purpose:** To improve the ability of the Coastal Dunes to provide storm damage protection and flood control, an ongoing dune maintenance program should be developed to bolster storm protection. Dune restoration should be coupled with beach nourishment activities.

**Existing Activities:** In the past dune restoration has been performed on an ad hoc basis as sand becomes available.

**Details:**

1) Consult with appropriate agencies (Natural Heritage Program, U.S. Fish and Wildlife Service, etc.) to specifically discuss potential solutions to problematic areas, such as the low portion of the dunes at Town Neck Beach. For example, could sand fencing be installed across the center of the dune, instead of seaward of the dune to minimize bird impacts but still help build the dune?

2) Secure permits in advance so when sand becomes available, work can start immediately.

3) Identify suitable sources of sand that are compatible in size to the existing dune sands, including material from upland and dredging sources. (Utilize sand from Canal dredging, or any project involving relocation of Sandwich Harbor Inlet.)

4) Facilitate the use of compatible sand sources generated from local dredging projects, both private and public, for restoration of dunes at the public beach. Applicants for private dredging projects should be made aware of beneficial reuse options on the town beach during the Conservation Commission review and permitting process. Dredge quantities and sediment analyses should be made available to the Natural Resources Department for determining suitability as beneficial reuse. Acceptance of compatible dredge sediments should be confirmed through a letter to the applicant, with a copy to the Conservation Commission.

5) At Town Neck Beach, rebuild seaward face of dunes, and restore washout area that divides the Coastal Dune system in half.

6) Vegetate all dune restoration areas with beach grass and protect with sand fencing.

Timing: 2013-2020

Priority: High

Responsibility: Natural Resources Department, Conservation Commission, Contractor
Activity 4.5.3 Initiate Program of Invasive Species Removal and Revegetation within the Coastal Dunes

**Purpose:** To restore native vegetation, promote sand accumulation and dune growth, and minimize disturbance of the dunes by foot traffic.

**Existing Activities:** Invasive weeds are not currently managed.

**Details:**

1) Use hand pulling techniques to remove invasive Spotted knapweed (*Centaurea stoebe*) from all Coastal Dunes.
2) Revegetate sparsely covered areas and areas where Spotted knapweed was removed with beach grass and beach plum. Beach grass should be utilized for the seaward facing sides of the dunes and the beach plum should be planted along the more protected landward sides of the dunes.
3) All planting should be done by hand and care should be taken to protect existing native vegetation.
4) Beach grass should be purchased as bare root culms and planted 2-3 culms per hole, spaced 12 inches on center.
5) All revegetation work should take place between October 1 and April 1.

**Timing:** Annually and as needed

**Priority:** Low

**Responsibility:** Natural Resources Department, Conservation Commission

**Regulations & Permits:** Notice of Intent; Order of Conditions

Activity 4.5.4 Eliminate Unnecessary Dune Access Paths.

**Purpose:** To minimize disturbance to the Coastal Dunes and improve their ability to function as storm damage protection and flood control.

**Existing Activities:** Signs advising visitors to stay off the dunes are posted, but little is done to prevent access to or revegetate paths that have already formed.

**Details:**

1) Eliminate unnecessary dune access paths by filling with dune compatible sand, revegetating with beach grass and/or beach plum, installing fencing, and educational signage.
2) Closure of visitor-made dune paths is recommended at Town Neck Beach and East Sandwich Beach.
Timing: 2013-2020

Priority: Moderate

Responsibility: Natural Resources Department, Department of Public Works, Contractor

Regulations & Permits: Notice of Intent; Order of Conditions

**Activity 4.5.5 Reorient the Angle of Dune Access Paths.**

Purpose: To minimize risks from storm damage and flooding.

Existing Activities: Almost all dune access paths currently run perpendicular to the coastline.

Details:

1) Because this is more important for low paths, subject to flooding, and Sandwich salt water beaches tend to have relatively high dunes, no action is needed at this time. But this technique for minimizing storm damage and flooding should be kept in mind for any future paths created and/or during any restructuring of existing paths.

2) Dune access paths should be reoriented so that they are not perpendicular to the shoreline.

3) During the process of reorienting the paths, the old pathways should be filled with dune compatible sand and revegetated as described in Activity 4.5.3.

Timing: 2013-2020

Priority: Low

Responsibility: Department of Public Works, Natural Resources Department, Conservation Commission

Regulations & Permits: Notice of Intent; Order of Conditions

**Activity 4.5.6 Minimize Public Access and Impacts to Salt Marsh Habitat**

Purpose: To protect and allow the salt marsh adjacent to the Boardwalk to reestablish.

Existing Activities: Currently there are signs advising visitors to avoid walking on or in the marsh, but with no actual barrier, the marsh areas near the board walk are negatively impacted by heavy visitor traffic in the summer months.

Details:

1) Install fencing to keep visitors on the marsh side of Town Neck Beach from trampling the salt marsh (Figure 40).
2) Install educational signs along the fencing to explain the need for wetland conservation and to advise visitors not to enter fenced off areas.
3) Monitor the protected area. If salt marsh plants don’t show substantial recruitment after the first year, consider experimental planting.

**Timing:** 2013-2015

**Priority:** Moderate

**Responsibility:** Natural Resources Department

**Regulations & Permits:** Notice of Intent; Order of Conditions

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**Figure 40. Area of Concern at Town Neck Beach**

**Activity 4.5.7 Close Springhill Conservation Lands to ORV use**

**Purpose:** To eliminate destruction of salt marsh habitat by ORVs driving in undesignated areas.

**Existing Activities:** Currently, off-road vehicles (ORVs) are allowed to access the Springhill Conservation Lands via an access road along the marsh. However, irresponsible use of this area has led to destruction and deterioration of the salt marsh vegetation along and around the path (Figure 41).
Figure 41. Destruction of Salt Marsh Habitat by ORV Use. Red Arrows Point to Areas Where Vehicles Have Driven Outside the Bounds of the Access Road and Have Torn Up Salt Marsh Vegetation.

Details:

1) Construct a gate (such as in Figure 36) to close off the majority of the current path to motorized vehicles.
2) Plant *Spartina patens*, *Distichlis spicata*, or other high marsh species to revegetate disturbed area.

Timing: 2013

Priority: High

Responsibility: Natural Resources Department

Regulations & Permits: Notice of Intent; Order of Conditions

4.6 EDUCATION AND OUTREACH ACTIVITIES

**Activity 4.6.1 Update and Improve Website for Town of Sandwich Public Beaches**

Purpose: To better disseminate information about Sandwich’s public beaches, including locations, entrance fees, availability of lifeguards, water quality results, various recreational opportunities, and Town conservation efforts.
Existing Activities: Current the Town website has a page devoted to Public Beaches and Conservation Areas under the Recreation Department, but only provides beach names and beach sticker pricing information.

Details:

1) Update the current Public Beaches and Conservation Areas website.
2) Add links to beach rules, information about seasonal bird closures, water quality testing results, and other relevant beach information.
3) Designate a specific department or staff person to ensure the information on the web page remains current.

Timing: Ongoing

Priority: Moderate

Responsibility: Town Manager, Natural Resources Department, Recreation Department, Department of Public Works

Regulations & Permits: NA

Activity 4.6.2 Assess Signage for all Public Beaches and Update as Necessary

Purpose: To improve the dissemination of important information regarding the beaches and to increase public safety.

Existing Activities: Numerous small informational signs currently exist at all Sandwich public beach locations. Small text makes reading them from a distance difficult, and necessitates repetitive postings. Additionally, Town Neck Beach is the only location with educational material about the ecology and conservation of the beach’s natural resources. All other locations have signs solely for dissemination of rules (i.e. dog policy, stay off the dunes, parking restrictions, etc.).

Details:

1) Prepare a comprehensive list of necessary informational signage for the public beaches sites (i.e. hours of operation, dog access and leashing, dune protection, daily fees, bird protection, etc.). Develop clear, highly visible, easily readable signs, using pictures and few words (Figure 42).
2) Prepare additional educational material (i.e. endangered species conservation, importance of wetlands, water quality issues, plant or wildlife identification, etc.).
3) Develop a plan to upgrade the signs as necessary, using a consistent format and unified design across all public beach locations.
4) Identify strategic locations where signs will have the greatest impact and determine the number of signs needed at each beach.
5) Install and replace signs as needed.

Timing: Ongoing

Priority: Low

Responsibility: Natural Resources Department, Recreation Department, Department of Public Works

Regulations & Permits: NA

Activity 4.6.3 Distribute Beach Information with Yearly Beach Stickers.

Purpose: To better educate beach visitors about various rules, conservation measures and beach activities associated with public beaches in Sandwich.

Existing Activities: Beach rules are available on the Town website, but are not directly distributed with the purchase of a yearly beach sticker.

Details:

1) Develop informational materials to distribute to all purchasers of yearly beach stickers.
2) This information could be distributed in printed form or electronically as a PDF if beach stickers can be purchased online.
3) Create a link to the electronic version of this information on the Town’s public beaches website (Activity 4.6.1).

Timing: 2013

Priority: Moderate

Responsibility: Natural Resources Department, Recreation Department, Town Manager

Regulations & Permits: NA

Activity 4.6.4 Continue and Potentially Expand Youth Programs Run by the Recreation Department

Purpose: Provide recreational and educational opportunities for Sandwich residents at public beaches.

Existing Activities: The Recreation Department currently runs a variety of summer recreation programs at the public beach locations: stand up paddle board, kayaking, and sailing lessons at Ryder-Wakeby Park; tennis and swimming lessons, a teen leadership
program, an outdoor fitness challenge, and a girls’ adventure club at Oak Crest Cove; and shellfishing activities at Town Neck Beach.

Details:
1) Continue to plan and develop recreational and educational summer activities at public beaches.
2) Advertise activities on the Town website, through fliers at major points in town and in local newspapers.
3) Hire seasonal staff to run and administer programs at Sandwich public beach locations.
4) Administer programs.
5) Solicit, collect and review feedback from participants (and/or parents of participants) to help improve programs in the future.

Timing: Annually
Priority: Moderate
Responsibility: Recreation Department, Natural Resources Department
Regulations & Permits: NA

Activity 4.6.5 Increase Activities Associated with Enforcement of Dog Regulations on All Public Beaches.

Purpose: To protect public health and safety, and to eliminate interactions between dogs and endangered nesting shore birds.

Existing Activities: Deputy Animal Control Officers currently patrol Town Neck Beach and East Sandwich Beach locations as needed.

Details:
1) Consider increased patrolling of public beach areas by Animal Control Officer.
2) Posted lifeguards could also monitor the beach for enforcement of dog regulations.
3) Issue citations for violations of dog regulations.

Timing: May 15 through September 15
Priority: High
Responsibility: Natural Resources Department, Recreation Department, Town Manager
Regulations & Permits: NA
Activity 4.6.6 Increase Activities Associated with Fire Permit Enforcement on All Public Beaches

**Purpose:** To help eliminate large bonfires and fire debris (Figure 43) on the public beaches.

**Existing Activities:** Currently a cook permit is required in order to have a fire on the beach, but patrols are too infrequent to adequately enforce the permits. Additionally, fires are often detrimental to bird protection either because they are set too close to nesting areas, or because protective fencing is torn down to use as firewood.

**Details:**

1) To facilitate enforcement, designate only specific areas of Town Neck Beach where fires are permitted, such as only in front of Hemisphere’s restaurant. This increases visibility of the activities, and reduces the chances that people will disassemble protective bird fencing for burning material.
2) From Memorial Day to Labor Day, have Sandwich Police Officers frequent the Hemisphere’s parking area during their regular patrols to monitor for fires on the beach.
3) If fires are observed, determine whether a Cook Permit was obtained.

**Timing:** Daily from Memorial to Labor Day

**Priority:** Moderate

**Responsibility:** Fire Department, Police Department, Natural Resources Department, Department of Public Works, Recreation Department

**Regulations & Permits:** NA

4.7 FINANCE OPPORTUNITIES

**Activity 4.7.1 Identify Opportunities for Pre- and Post-Disaster Funding for Projects from FEMA.**

**Purpose:** To secure funding for upgrades to the bathhouse/concession buildings, dune enhancement, etc. that will reduce the potential for storm damages.

**Existing Activities:** The Town of Sandwich, in accordance with existing federal guidelines and regulations, developed a Flood Hazard Mitigation Plan that was adopted
by the Board of Selectmen and subsequently approved by The Federal Emergency Management Agency (FEMA) in 2003. Sandwich then chose to participate in a Regional Pre-Disaster Mitigation Planning Project by participating in the Regional Planning Team and by developing a Multi Hazard Mitigation Plan as a complement to the FEMA approved Flood Hazard Mitigation Plan.

Details:
1. Update the Flood Hazard Mitigation Plan and the Multi Hazard Mitigation Plan as needed to remain eligible for FEMA grant funding.
2. Review needs on an annual basis and submit the necessary grant applications.
3. Research specific ideas for which FEMA Funding could be used. For example, if the Town of Sandwich engineers and builds a large scale beach nourishment project, and monitors it regularly, FEMA Funding could be utilized to rebuilt the beach if it badly damaged during a storm.
4. Utilize information available at the following FEMA web site to investigate grant opportunities - [http://www.fema.gov/plan/mitplanning/index.shtm#3](http://www.fema.gov/plan/mitplanning/index.shtm#3).

Timing: 2013-2018

Priority: High

Responsibility: Town Manager, Board of Selectmen, Planning Department, Natural Resources Department, Department of Public Works, Emergency Management Department.

Regulations & Permits: FEMA guidelines found in 44 CFR Part 201

Activity 4.7.2 Identify Opportunities for Financial and Technical Assistance Through the Rivers and Harbors Grant Program.

Purpose: To secure funding for various waterways-related projects that would benefit Sandwich public beaches.

Existing Activities: Rivers and Harbors Grant Program funding is currently pursued as available.

Details:

1) Utilize information available from Massachusetts Department of Conservation and Recreation (DCR) to investigate grant opportunities. Typical projects qualifying for the program include: dredging of channels for navigation and tidal flushing; provision of public access; management activities for improving public access; water-dependent recreation or habitat enhancement for recreational purposes; beach nourishment for barrier beach maintenance, habitat enhancement or recreational purposes; coastal wetlands restoration; and shoreline erosion control protection.

2) Review needs on an annual basis and submit the necessary grant applications.
Activity 4.7.3 Increase Outreach to Local Community Groups for Potential Projects

**Purpose:** To promote local involvement in beach maintenance and conservation projects, while at the same time assisting the Town with capacity building.

**Existing Activities:** Although not common, the Town did partner with a local Boy Scout troop to develop and install the educational signs at Town Neck Beach, and the Sandwich Boardwalk were built though a program of purchased planks.

**Details:**

1) Approach local organizations (boy scouts troops, church groups, schools, etc.) to discuss the possibility of collaboration.
2) Develop a new donation-based beach maintenance and improvement program.

**Timing:** As opportunities arise

**Priority:** Low

**Responsibility:** Town Manager, Natural Resources Department, Recreation Department, Department of Public Works, Facilities Department.

**Regulations & Permits:** Will depend on type of project.

Activity 4.7.4 Develop Additional Visitor Activities at Town Neck Beach

**Purpose:** To expand organized family and recreational activities to Town Neck Beach, and to create an additional source of revenue to support facilities and parking lot construction at that location.

**Existing Activities:** Currently the Recreation Department runs a various Shellfishing programs at Town Neck Beach (one for girls and one for adults), but the programs are limited to a small number of participants (10-20) and only run once a summer.

**Details:**

1) Continue the Shellfishing programs currently run by the Recreation Department and the Natural Resources Department.
2) Continue expanding the Shellfishing programs to include multiple sessions and/or a day specific for boys, which are not currently included in Shellfishing related recreational programs.

3) Consider additional activities that could bring in added revenue, such as:
   a. Movie night: an outdoor movie screen could be rented or purchased, admission could be charged, and vendors could be invited.
   b. Conservation/Ecology focused programs for youth: a day long-program similar to the Shellfishing program that would educate children or teenagers about the natural resources, native flora and fauna, and threatened and endangered species found at Town Neck Beach.

   **Timing:** 2013-2016

   **Priority:** Low

   **Responsibility:** Town Manager, Recreation Department, Natural Resources Department

   **Regulations & Permits:** Will depend on the type of activity.

### Activity 4.7.5 Create a Summer Beach Management Internship

**Purpose:** To help increase personnel capacity for the Town of Sandwich to run beach related programs and management activities during the busy summer season.

**Existing Activities:** The Town of Sandwich does not currently run a Beach Management Summer Internship.

**Details:**

1) Consider what aspects of managing the public beaches could be improved by seasonal help, such as increased beach patrols, public education, recreational or educational programs at the beaches, wildlife or vegetation monitoring, etc., and develop a scope of work for a summer intern.

2) It would also be beneficial to the Town, as well as educational for the intern, if the internship also offered an opportunity for conducting a research project related to some aspect of beach management.

3) Determine which department or staff member will oversee the intern, since it will take considerable time and effort, especially initially to develop a position, and to training and supervising the intern.

4) If funding can be obtained, a modest stipend can be offered (i.e. $3,000-4,000 for the summer). If not, the internship could be advertised as an unpaid internship.

5) Advertise internship with local colleges and high schools (limit high school applicants to graduating seniors).

6) Hire and oversee summer intern during the summer.

7) Solicit, collect and review feedback from intern to help improve internship in the future.

   **Timing:** Annually
Priority: Low

Responsibility: Town Manager; Natural Resources Department, Recreation Department, Department of Public Works

Regulations & Permits: NA
## 4.8 SUMMARY OF RECOMMENDED ACTIVITIES

<table>
<thead>
<tr>
<th>#</th>
<th>Recommendation</th>
<th>Priority</th>
<th>Site Applicability</th>
<th>Initial Costs</th>
<th>Ongoing Costs</th>
<th>Existing Activity?</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Management and Planning Level Activities</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>Establish a beach management record keeping system</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Prepare spring letter to the Sandwich Conservation Commission</td>
<td>High</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
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<tr>
<td>5</td>
<td>Prepare fall letter to the Sandwich Conservation Commission</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Maintain active environmental permits for work on public beaches</td>
<td>High</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>Develop pre- and post-storm response plans for Sandwich public beaches</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Review and update Beach Management Plan periodically</td>
<td>High</td>
<td>All</td>
<td>--</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Maintain and expand Workamper program</td>
<td>High</td>
<td>OCC,RWP</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Maintain program</td>
<td>Low</td>
<td>TNB</td>
<td>High</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Expand program</td>
<td></td>
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<tr>
<td>1</td>
<td>Evaluate the municipal management structure for Sandwich public beaches</td>
<td>Moderate</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
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<tr>
<td>8</td>
<td>Review standing agreement for use of Sandy Neck Beach in Barnstable</td>
<td>Moderate</td>
<td>TNB</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>Lifeguards at Town Neck Beach</td>
<td>Moderate</td>
<td>TNB</td>
<td>High</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Develop formal agreements with abutters of Town beach properties</td>
<td>Moderate</td>
<td>TNB, ESB, SHCL</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Formally adopt specific town objectives and goals for preserving and maintaining beaches</td>
<td>Low</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
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<td>11</td>
<td>Consider potential land acquisition opportunities to improve public beach properties and facilities</td>
<td>Low</td>
<td>TNB, ESB</td>
<td>High</td>
<td>Low</td>
<td>No</td>
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<td>#</td>
<td>Recommendation</td>
<td>Priority</td>
<td>Site Applicability</td>
<td>Initial Costs</td>
<td>Ongoing Costs</td>
<td>Existing Activity?</td>
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<tr>
<td>5</td>
<td>Conduct weekly water sampling at all public swimming beaches</td>
<td>High</td>
<td>TNB, ESB, RWP, SP, OCC</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>Conduct bi-annual beach profile and photographic surveys at all public beaches</td>
<td>High</td>
<td>All</td>
<td>--</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Collect bathymetric data for Sandwich Harbor Inlet</td>
<td>Moderate</td>
<td>TNB, SHCL</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Update estimates of shoreline change at saltwater beaches using additional aerial photography</td>
<td>Moderate</td>
<td>TNB, SHCL, ESB, SNCL</td>
<td>--</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Conduct annual condition surveys of all coastal engineering structures at the public beaches</td>
<td>Low</td>
<td>TNB</td>
<td>Low</td>
<td>Low</td>
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<tr>
<th>#</th>
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<th>Site Applicability</th>
<th>Initial Costs</th>
<th>Ongoing Costs</th>
<th>Existing Activity?</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Conduct shorebird surveys at the public beach sites located within mapped priority and estimated habitat areas</td>
<td>High*</td>
<td>TNB, SHCL, ESB, SNCL</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Install protective sand and/or symbolic fencing around known nesting areas</td>
<td>High*</td>
<td>TNB, SHCL, ESB, SNCL</td>
<td>--</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Improve crowd control measures for 4th of July and other large events at Town Neck Beach</td>
<td>High</td>
<td>TNB</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Submit MESA information request form</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>--</td>
<td>No</td>
</tr>
<tr>
<td>#</td>
<td>Recommendation</td>
<td>Priority</td>
<td>Site</td>
<td>Initial</td>
<td>Ongoing</td>
<td>Existing Activity?</td>
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<td></td>
<td></td>
<td></td>
<td>Applicability</td>
<td>Costs</td>
<td>Costs</td>
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<tr>
<td></td>
<td>Routine Maintenance and Improvement Activities</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>Complete pre-season activities required to open the public beaches</td>
<td>High</td>
<td>All</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Gate off beach parking areas at night</td>
<td>High</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>Yes/No</td>
</tr>
<tr>
<td>3</td>
<td>Install and repair fencing and guard rails as needed</td>
<td>Moderate</td>
<td>TNB, ESB</td>
<td>High</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Boardwalk and stairway maintenance and repair</td>
<td>Moderate</td>
<td>TNB</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>Visitor facilities maintenance and repair</td>
<td>Moderate</td>
<td>TNB, ESB, OCC, RWP, SP</td>
<td>--</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>Prune shrubs and other vegetation at the edges of the parking areas and along access paths</td>
<td>Moderate</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Perform maintenance of the parking areas at all public beaches</td>
<td>Moderate-Low</td>
<td>All</td>
<td>High</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Clean and rake freshwater beaches</td>
<td>Low</td>
<td>OCC, RWP, SP</td>
<td>--</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>Continue management and maintenance of boardwalk area boat launch at Town Neck Beach</td>
<td>Low</td>
<td>TNB</td>
<td>High</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>Begin a parking meter pilot program at the Hemisphere’s parking area</td>
<td>Low</td>
<td>TNB</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Restoration Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Initiate program of ongoing beach nourishment at Town Neck Beach</td>
<td>High</td>
<td>TNB</td>
<td>High</td>
<td>High</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Initiate dune restoration program at Town Neck Beach</td>
<td>High</td>
<td>SHCL</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Eliminate unnecessary dune access paths</td>
<td>Moderate</td>
<td>TNB, ESB</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>Minimize public access and impacts to salt marsh habitat</td>
<td>Moderate</td>
<td>TNB</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Initiate program of invasive species removal and revegetation within the coastal dunes</td>
<td>Low</td>
<td>TNB</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Reorient the angle of dune access paths</td>
<td>Low</td>
<td>TNB, ESB</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
</tbody>
</table>
### Education and Outreach Activities

<table>
<thead>
<tr>
<th>#</th>
<th>Recommendation</th>
<th>Priority</th>
<th>Site applicability</th>
<th>Initial costs</th>
<th>Ongoing costs</th>
<th>Existing activity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Increase activities associated with enforcement of dog regulations on all public beaches</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>Update and improve website for Town of Sandwich public beaches</td>
<td>Moderate</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Distribute beach information with yearly beach stickers</td>
<td>Moderate</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Continue and potentially expand youth programs run by the Recreation Department</td>
<td>Moderate</td>
<td>RWP, OCC, TNB</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>Increase activities associated with fire permit enforcement on all public beaches</td>
<td>Moderate</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Assess signage for all public beaches and update as necessary</td>
<td>Low</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Finance Activities

<table>
<thead>
<tr>
<th>#</th>
<th>Recommendation</th>
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<th>Site applicability</th>
<th>Initial costs</th>
<th>Ongoing costs</th>
<th>Existing activity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify opportunities for pre- and post-disaster funding for projects from FEMA</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Identify opportunities for financial and technical assistance through the Rivers and Harbors Grant Program</td>
<td>High</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Increase outreach to local community groups for potential projects</td>
<td>Low</td>
<td>All</td>
<td>Low</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Develop additional visitor activities at Town Neck Beach</td>
<td>Low</td>
<td>TNB</td>
<td>Moderate</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Create a summer Beach Management Internship</td>
<td>Low</td>
<td>All</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
</tbody>
</table>

†Cost estimates to do not account for any associated revenue from activities.

Code for Beaches:
- TNB – Town Neck Beach
- OCC – Oak Crest Cove
- SHCL – Spring Hill Conservation Lands
- RWP – Ryder-Wakeby Park
- ESB – East Sandwich Beach
- SP – Snake Pond
- SNCL – Scorton Neck Conservation Lands

Cost:
- Low = <$10,000/yr
- Moderate = $10,000-$50,000/yr
- High = >$50,000/yr
5.0 RELEVANT ENVIRONMENTAL STATUTES, REGULATIONS AND PERMITS

A variety of environmental statutes and regulations apply to work on the Town of Sandwich public beaches. A summary is provided as follows:

**Agency: Sandwich Conservation Commission**

**Activities Subject to Regulation:** Any activity within a resource area, or within 100 feet of a resource area, that will remove, fill, dredge, build upon, degrade, or otherwise alter an area subject to protection under the bylaw.

**Regulations:** Sandwich Wetlands Bylaw

**Application:** Notice of Intent

**Permit:** Order of Conditions

**Agency: Massachusetts Department of Environmental Protection - Wetlands**

**Activities Subject to Regulation:** Any activity within a resource area, or within 100 feet of a resource area, that will remove, fill, dredge, or alter an area subject to regulation under M.G.L. c. 131, § 40.

**Regulations:** 310 CMR 10.00

**Application:** Notice of Intent (filed jointly with Sandwich Conservation Commission)

**Permit:** Order of Conditions (issued jointly by Sandwich Conservation Commission)

**Agency: Massachusetts Division of Fisheries and Wildlife**

**Activities Subject to Regulation:** Any activity within sites mapped as Estimated or Priority Habitat.

**Regulations:** 321 CMR 10.00

**Application:** MESA Project Review

**Permit:** MESA Project Review Decision

**Agency: Massachusetts Environmental Policy Act Unit (MEPA)**

**Activities Subject to Regulation:** Projects that exceed review thresholds listed in 301 CMR 11.03.

**Regulations:** 301 CMR 11.00 – 12.00

**Application:** Environmental Notification Form (ENF) or Environmental Impact Report
Permit: Certificate from the Secretary of Environmental Affairs

**Agency: Massachusetts Environmental Policy Act Unit (MEPA)**

Activities Subject to Regulation: Projects that exceed review thresholds listed in 301 CMR 11.03.

Regulations: 301 CMR 11.00 – 12.00

Application: Environmental Notification Form (ENF) or Environmental Impact Report

Permit: Certificate from the Secretary of Environmental Affairs

**Agency: Massachusetts Department of Environmental Protection - Waterways**

Activities Subject to Regulation: In general, any activities that require work below the mean high water line, or in Commonwealth Tidelands.

Regulations: 310 CMR 9.00

Application: Chapter 91 License or Permit application

Permit: Chapter 91 License/Permit

**Agency: Massachusetts Department of Environmental Protection – Water Quality**

Activities Subject to Regulation: Activities that involve the discharge of dredged or fill material, dredging, and dredged material disposal activities in waters of the Commonwealth.

Regulations: 314 CMR 9.00

Application: Water Quality application

Permit: Water Quality Certificate

**Agency: US Army Corps of Engineers**

Activities Subject to Regulation: In general, any activities that require work below the extreme high water line.

Regulations: 33 CFR 320-331, 40 CFR Part 230

Application: Programmatic General Permit or Individual Permit applications

Permit: Programmatic General Permit, Individual Permit
6.0 NEXT STEPS

This management plan incorporates numerous recommendations for beach management activities (Section 4). Included with each recommended activity and action item is information related to the purpose, existing activities, details of implementation, timing, priority, and responsibility. The priority is a recommendation from Woods Hole Group based upon our understanding of the stakeholder interests for Town of Sandwich public beaches. However, the final priorities must be defined by responsible Town departments and department heads. In this regard, the beach management plan is a working document that we present to the Town for review and action. (Summary tables with recommended management activities).

Once the items are prioritized, an action plan with concrete next steps, permitting requirements, and funding commitments can be developed by the stakeholders. We also recommend that the Town develop an implementation schedule based on their priorities and available resources.

One of the obvious constraints to implementing the recommendations outlined in the management plan is the availability of finances. Several of the recommendations above (Section 4.7) address avenues to raise funds for more proactive management and restoration of Town of Sandwich beaches, or increase capacity, such as through partnerships or internships.
7.0 CITED REFERENCES


APPENDIX A. SITE MAPS
APPENDIX B.  EXAMPLE DOCUMENTS
<table>
<thead>
<tr>
<th>Dates</th>
<th>Activity</th>
<th>Location</th>
<th>Materials Required</th>
<th>Cost</th>
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<td>Activity</td>
<td>Location</td>
<td>Volume (cu yards)</td>
<td>Sand Source</td>
<td>Elevation and Slope of Fill</td>
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<td>Duration of Storm</td>
<td>Beach Sites Impacted</td>
<td>Extent of Erosion</td>
<td>Impacts to Infrastructure</td>
<td>Elevation of High Water</td>
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</table>
## Beach Profile Records - Examples

### Example Beach #1
Begin Pt: <Begin Point ID>

<table>
<thead>
<tr>
<th>Dist (ft)</th>
<th>Elev (m)</th>
<th>Elev (ft,NGVD)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.847</td>
<td>6.05816</td>
<td>parking lot</td>
</tr>
<tr>
<td>15.2</td>
<td>2.072</td>
<td>6.79616</td>
<td>parking lot</td>
</tr>
<tr>
<td>23</td>
<td>2.094</td>
<td>6.86832</td>
<td>edge of parking lot/beach</td>
</tr>
<tr>
<td>76.5</td>
<td>2.094</td>
<td>6.86832</td>
<td>beach</td>
</tr>
<tr>
<td>132.2</td>
<td>1.883</td>
<td>6.17624</td>
<td>beach</td>
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<tr>
<td>167.1</td>
<td>1.74</td>
<td>5.7072</td>
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<tr>
<td>175.3</td>
<td>1.754</td>
<td>5.75312</td>
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</tr>
<tr>
<td>185.5</td>
<td>1.623</td>
<td>5.32344</td>
<td>beach</td>
</tr>
<tr>
<td>197.6</td>
<td>1.233</td>
<td>4.04424</td>
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<tr>
<td>212.5</td>
<td>0.808</td>
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<tr>
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<td>265.7</td>
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<td>-0.41</td>
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### Example Beach #2
Begin Pt: <Begin Point ID>

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<th>Description</th>
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<tr>
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<td>1.679</td>
<td>5.50712</td>
<td>upland</td>
</tr>
<tr>
<td>-92.4</td>
<td>2.528</td>
<td>8.29184</td>
<td>upland</td>
</tr>
<tr>
<td>-87.9</td>
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<td>-85.7</td>
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<td>11.58168</td>
<td>upland</td>
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<td>-77.4</td>
<td>3.659</td>
<td>12.00152</td>
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</tr>
<tr>
<td>-65.9</td>
<td>3.976</td>
<td>13.04128</td>
<td>upland</td>
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<td>4.284</td>
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<td>2.324</td>
<td>7.62272</td>
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</tr>
<tr>
<td>137.7</td>
<td>2.075</td>
<td>6.806</td>
<td>toe dune</td>
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### Beach Profile Records - Examples

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<td>land under the ocean</td>
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<tr>
<td>273.4</td>
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<td>land under the ocean</td>
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<td>289.9</td>
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<td>land under the ocean</td>
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### Example Beach #3

**Begin Pt: <Begin Point ID>**

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<th>Dist (ft)</th>
<th>Elev (m)</th>
<th>Elev (ft,NGVD)</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>3.651</td>
<td>11.97528</td>
<td>parking lot</td>
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<tr>
<td>0.7</td>
<td>3.194</td>
<td>10.47632</td>
<td>dune</td>
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<tr>
<td>3.3</td>
<td>3.627</td>
<td>11.89656</td>
<td>dune</td>
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<tr>
<td>8</td>
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<td>11.83752</td>
<td>dune</td>
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<tr>
<td>15.7</td>
<td>4.034</td>
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</table>
Sample Spring Notification Letter

March 15, 2013

Sandwich Conservation Commission
16 Jan Sebastian Drive
Sandwich, MA 02563

Dear Commissioners,

The Department of Natural Resources, Department of Public Works and the Recreation Department have identified the following activities that will be necessary in order to open the Town of Sandwich beaches for the upcoming summer season:

Sand Fence Repair/Installation – Town Neck Beach, East Sandwich Beach
Boardwalk Repair – Town Neck Beach
Parking lot sweeping – North Shore Boulevard west lot at East Sandwich Beach
Beach Sweeping – Peter’s Pond

We anticipate starting these activities within the next two weeks. If the Commission would like to view any of the areas where the work is planned, please contact the Department of Natural Resources so that a site visit can be scheduled.

Sincerely,

Director of Department of Natural Resources
October 15, 2013

Sandwich Conservation Commission
16 Jan Sebastian Drive
Sandwich, MA 02563

Dear Commissioners,

The Department of Natural Resources, Department of Public Works and the Recreation Department successfully completed the following activities to maintain the Town of Sandwich beaches during the 2013 summer season:

**Sand Fence Repair** – 100ft of sand fence repaired by hand at Town Neck Beach around eastern dune system from April 1-5, 2013.

**Sand Fence Installation** – 300ft of sand fence was installed to reduce erosion and eliminate unwanted pedestrian paths around the perimeter of the dunes at the western section East Sandwich Beach from April 20-29, 2013.

**Boardwalk Repair** – Broken and/or degraded planks were replaced on the boardwalks at Town Neck Beach from May 3-7, 2013.

**Parking Lot Sweeping** – The parking lot at North Shore Boulevard for the west section of East Sandwich Beach was swept on April 17, 2013. Sand was disposed of at an off-site approved location.

**Beach Raking** – The beach at Peter’s Pond was raked to regrade sand on May 11, 2013.

In addition, we have identified the following anticipate performing the following activity during the 2013-2014 winter season:

**Beach Nourishment** – Town Neck Beach

If the Commission would like to view the areas where the work is planned, please contact the Department of Natural Resources so that a site visit can be scheduled.

Sincerely,

Director of Department of Natural Resources
MESA Information Request Form

Please complete this form to request site-specific information from the Natural Heritage & Endangered Species Program
(Please submit only one project per request form).

Please include a check for $50.00 made out to the Comm. of MA - NHESP

Requestor Information

Name:

Affiliation:

Address:

City: State: Zip Code:

Daytime Phone: Ext. Email address:

Project Information

Project or Site Name:

Location: Town:

Name of Landowner or Project Proponent:

Acreage of the Property:

Description of Proposed Project and Current Site Conditions: (If necessary attach additional sheet)

☐ Will this project be reviewed as a Notice of Intent by the local Conservation Commission?

☐ Will this project be undergoing MEPA review for reasons other than rare species?

☐ Have you enclosed the required copy of a USGS topographic map in the scale 1:24,000 or 1:25,000 (not copy reduced) with the site location clearly marked and centered on the copy page? (Copies of Natural Heritage Atlas pages are not accepted)

Please mail this completed form and topographic map to:

Regulatory Review
Natural Heritage and Endangered Species Program
MA Division of Fisheries and Wildlife
100 Hartwell Street, Suite 230
West Boylston, MA 01583

Questions regarding this form should be directed according to the county that the property is located:
Barnstable, Bristol, Dukes, Nantucket, Norfolk, Plymouth & Suffolk Counties call: 508-389-6364

Persons requesting information will receive a written response within 30 days of receipt of all information required. Please do not ask for an expedited review. *If you are requesting information for habitat management or conservation purposes and you are a non-profit conservation group, government agency or working with a government agency please fill out a Data Release Form.