Massachusetts Coastal Infrastructure
Inventory and Assessment Project
Coastal Hazards Commission

Cape Cod Islands

Nantucket
Edgartown
Oak Bluffs
Tisbury
West Tisbury
Aquinnah
Chilmark
Gosnold

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Hingham, Massachusetts

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Franklin, Massachusetts
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Section I

Coastal Hazards Infrastructure and Assessment Program

INTRODUCTION

PURPOSE

DEVELOPMENT OF MassGIS DATABASE ATTRIBUTES

DEVELOPMENT OF REPAIR / RECONSTRUCTION COSTS
Section I – Coastal Hazards Infrastructure and Assessment Program

INTRODUCTION

The Project and Client

The Commonwealth of Massachusetts has initiated a Coastal Hazards Commission (CHC) to identify the vulnerability of the state to coastal hazards. As one of five working groups working under the CHC, the 20-Yr Infrastructure Plan was to establish a prioritization for the repair of coastal structures. The focus areas of the Working Group include:

- Publicly owned infrastructure
- Infrastructure for which State is responsible
- Inventory of public hazards infrastructure
- Evaluation on conditions
- Development for a prioritization of work
- Estimation of capital and maintenance costs

The 20-Yr Infrastructure Working Group is led by Representative Frank Hynes with CZM as the lead State Agency overseeing the management of the project. The Massachusetts coastline has been broken up into 4 major regions consisting of the North Shore, Boston, South Coast, and the Cape and Islands. The South Shore (the Towns of Hull, Cohasset, Seekonk, Hingham, Plymouth, Kingston, Scituate and Duxbury) was previously evaluated by Bourne Consulting Engineering as a demonstration project in 2006.

Consultant Team

The consultant team that performed the demonstration project was led by Bourne Consulting Engineering (BCE) of Franklin, MA who was responsible for overall project management, specified areas of field assessments, and research. Assisting BCE was Applied Coastal Research and Engineering Inc. of Mashpee, MA, Childs Engineering Corporation, of Medfield, MA., and Waterfront Engineer LLC of Stratham, NH.

PURPOSE

Study Purpose

CZM seeks to identify the capacity of Massachusetts coastal structures to resist major coastal storms and prevent storm damage. In working toward this goal, CZM has initiated a program to perform an assessment of Commonwealth owned and/or maintained coastal structures. The first phase of this program was the performance of a demonstration project for coastal structures located on the South Shore. The demonstration project identified existing structures, their general conditions, ability to provide coastal protection and the probable cost for repairs. The information collected and developed has been incorporated into the MassGIS system to allow use for developing a 20 Year Coastal Infrastructure Plan.

The demonstration project served as a basis for the current statewide inventory assessment of all Commonwealth coastal structures and the needs for their maintenance and/or repair.

Cape Cod Islands
Goals of Study

The goals of the Massachusetts Coastal Infrastructure Inventory and Assessment Project include:

- To identify all the coastal structures the state either owns or has responsibility to maintain for the 4 regions included within the study.
- Of the structures identified, determine the structure location and characteristics, the structure condition relative to providing coastal protection and the structure importance in relation to what it is protecting.
- To the degree possible, identify the structure elevation and the FIRM mapping flood elevation and category.
- To the degree possible, identify structure owner and available documents from local, state and federal agencies.
- To establish an estimated cost to rehabilitate the coastal structures to provide the level of project established in the structure’s original design.
- Provide the information in a format compatible for incorporation into the MassGIS system.

Limit of Study

Due to the time constraints and the amount of effort necessary to collect, process and compile the information, the following are identified as limitations of the information presented:

- All property ownership was taken as presumed. No legal investigation of ownership was performed during the project. Property ownership is based on town assessor maps. Where structures were located outshore of assessor map defined property lines, it was assumed to be Town land unless other information indicated otherwise. Where structures were located outshore of Mean Low Water, property is assumed to be State owned.

- The structure ownership was based on assessor maps and research at the local, state and federal levels. Where there was indication of public work on a structure on Town land or on private property, the structure was presumed to be Town owned. Where the structure was on state property, the structure was presumed to be state owned. Where ownership of the structure was not clear but was located on private property, the structure ownership was defined as unknown.

- The study included town and state owned structures as it was assumed that most town owned structures received state funding at some level for construction and/or maintenance.
  - Structures that were determined to be private were not included.
  - Undocumented structures considered to be on private land, but having the potential to have been publicly built and/or maintained, were identified as having an “unknown ownership”.

- The prioritizing of structures was based primarily on risk to general infrastructure and density of housing. Infrastructure included was buildings. The study did not consider all infrastructure issues including:
  - No consideration on utility impacts -- water, electrical, sewer, gas
  - No consideration of roadway and bridge protection
  - Evacuation routes were not considered within the investigation
  - Location of Emergency Shelters were not included in priority assessments

- Research was performed at the local, state and federal levels. The local research was limited to location and documenting available coastal structure contract drawings. Research at DCR was restricted to available historic construction plans for coastal structures at the MA-DCR Waterways office in Hingham, MA, and MA-DCR Division of Urban Parks and Recreation in Cape Cod Islands.
Boston, MA. No investigation of state archives was performed. Research at MA DEP Chapter 91 and USACE was limited to recorded permits and licenses found in their files. No investigation was performed at the Registry of Deeds.

DEVELOPMENT OF MassGIS DATABASE ATTRIBUTES

The specific attributes that would be incorporated into the MassGIS system were developed based on the scope of work and the goals to be achieved. The following was established to standardize the data collection and presentation and to allow total flexibility for sorting by attributes in the final GIS database. The attributes identified below were input into a MS Access database which was used to manage the data from all eight communities within a single file.

Database Attributes
- Attribute Descriptions/Definitions

Structure Number: A unique structure number was given to each coastal structure. The number was based on existing numbering systems that include the State Department of Environmental Protection community number followed by the local community assessor’s parcel numbering system. The last three digits of the number represent the structure within the parcel. Where structures extend over several parcels, the structure is referenced to a parcel that is approximately in the center of the structure. Where Town assessor’s references include letters, those are also included within the structure number. Some communities have block numbering within their numbering system and these are included. Communities without block numbering still have the block numbering included but these are illustrated as all zeros for that specific segment.

Structures that are on Town property, which would otherwise not have a parcel number, are referenced to a parcel that is in the immediate vicinity of the coastal structure.

On this basis, the following is the general numbering convention:

CCC-MMM-BBB-PPP-SSS

Where:
CCC  DEP Community Number
MMM  Community Map Number
BBB  Block Number (000 if no block numbering system)
PPP  Community Parcel Number
SSS  Structure Number

Property Ownership: All property ownership was on a “presumed” basis as no legal verification of ownership was performed. The ownership of the property was classified under four basic areas which were private ownership (Private), Town ownership (Local), Commonwealth of Massachusetts ownership (State), federal government ownership (Federal) or unknown. Property ownership was based on Town assessor’s maps. Where the location was located above Mean Low Water, and not within a defined parcel, the property ownership was presumed to be the Town unless documentation was found to indicate otherwise. Where a structure was located offshore of Mean Low Water, the property ownership was presumed to be federal.

Structure Ownership: The ownership of all structures is presumed as no verification of ownership was performed. Ownership of the structure was determined by research into historic state and federal
permits and the entity indicated on the permits as the applicant. Where no other information was found, the following was utilized:

- Structures located on private land but appearing to be significant structures were identified as owned by the Town or as "Unknown". Unknown was used were there was a question of local or private ownership.
- Structures on Town property were assumed to be owned by the Town
- Structures that were located off-shore were presumed to be federally owned
- Structures that were identified as being privately owned were eliminated from the database

**Basis of Ownership:** The basis of structure ownership was provided to give rationale to the structure ownership and identified the research resource that identified the ownership or the methodology otherwise used. The responses utilized were limited to the following:

- DPW – DPW Employee Interview
- DCR - Contract Drawings
- DEP – Ch 91 License
- USACE – Permits
- Property Ownership
- Offshore Structure

**Structure Owner's Name:** Ownership names reflect the presumed owner of publicly owned structures. As this was for public structures only, the ownership was restricted to the community name, the state agency or the federal agency.

**Earliest Structure Record:** The year of the oldest document located for the structure. The information is determined from the document research performed on the structure from local, state and federal agencies. If no documents could be found than this entry is denoted as "Unknown". Where documentation of the structure could be found, the date from the oldest document was utilized.

**Primary Structure / Secondary Structure:** Many of the coastal structures consisted of combined structures which were rated separately. It was typically found that one structure was significantly more predominant (Ex. Bulkhead/Seawall) and was therefore identified as the Primary Structure while a smaller structure might exist in front (ex. Revetment) of it. The type, height and material of each structure are identified separately. The condition of each structure was based on the Primary Structure. Where there was no secondary structure, the fields were left blank.

**Structure Type:** The structure type was categorized into five basic coastal structure categories which were Bulkhead/Seawall, Revetment, Coastal Beach, Coastal Dune, and Jetty/Groin.

**Structure Material:** The identification of the coastal structure’s material of construction was performed and represents the primary material. Stone structures consisted of both mortared and non-mortared conditions.

**Structure Height:** Each type of structure was categorized by its visible height in feet which was broken into four specific ranges which are:

- < 5 feet
- 5 to 10 feet
- 10 to 15 feet
- > 15 feet

**Structure Condition:** A preliminary assessment of the condition for each structure was performed by the field teams. This was by visual observation only and no detailed investigation was performed. The condition assessments were based on a predefined five level rating system that ranged from Rating A for Excellent Condition to Rating F for Critical Condition. A detailed listing of the conditions and their definitions can be seen in Exhibit A.
Priority Rating: In order to account for the need for protection at any one site, a five level priority rating system was established. This allowed for consideration of public infrastructure protection, density of residential housing for development of structure overall importance for coastal protection. The ratings range from Level 1 for no infrastructure or residence protection to Level 5 for critical inshore infrastructure protection and/or high density residential. The detailed listing and definitions for the priority categories can be seen in Exhibit B.

Structure Repair / Reconstruction Cost: A preliminary estimation of construction costs to maintain or repair structures was made based on the preliminary field assessment of the structures. A Repair Cost Matrix was developed based on structure type, condition, height and material and can be seen in Exhibit C. Once each structure’s type, height, and material classifications were determined, the cost per foot for the structure was determined from the Repair Cost Matrix and multiplied by the length of the structure to obtain the estimated repair/restoration cost. The cost matrix repair costs include a 20 percent construction cost contingency as well as 10 percent costs for engineering and permitting.

Structure Length: The length of each structure is provided and utilized in the development of the repair/reconstruction costs. The lengths are given to the nearest foot and taken as the linear distance along the structure, as determined by the GPS location, which takes into account structure angles and curvature.

Structure Elevation: The elevation of structures was determined in feet from existing information where available. The datum used is NAVD 88 and elevations are to the nearest foot. From a previous study much of the south shore coastal structures had elevations defined based on LIDAR mapping data. Where available structure documentation with elevations was found, in areas with no LIDAR data, the information was included within the structure information. Where there was no LIDAR information or existing documentation, the item has been left blank.

LIDAR (Light Detection and Ranging) is technology that is currently being used for high-resolution topographic mapping by mounting a LIDAR sensor, integrated with Global Positioning System (GPS) and inertial measurement unit (IMU) technology, to the bottom of aircraft and measuring the pulse return rate to determine surface elevations.

FEMA Zone and Elevation: For each structure the FEMA Flood Insurance Rate Maps (FIRM) were researched for their Flood Zone designation and their Base Flood Elevation from the most recent FIRM maps for the specific Town. The elevations are provided in feet on the same datum as the FIRM maps (NGVD) with no adjustments or conversions.

Structure Comments: The engineering team provided a brief description and comment on the structure at the time of the field assessments which is provided in support of the condition rating that was given for the structure.

Pictures: At the time of the field assessments, digital photographs were taken to provide a general overview of the structure. The number of pictures was limited to a maximum of six. The first photograph for each structure is shown on the Structure Assessment Form. The list of all photographs is provided on the form.

Town Documents: Town documents represent the structure information that could be found in the Town’s DPW/Engineering Department records. Where particular records could be found, a table of document information was developed and included within the database with limited descriptions.
MA - DCR Documents: MA-DCR documents represent the structure information that could be found within DCR – Waterways office in Hingham. Where particular records could be found, a table of document information was developed and included within the database with limited descriptions.

MA - DEP Chp. 91 Licenses: MA-DEP Chapter 91 license documents represent the structure information that could be found within MA-DEP Chp 91 records in Boston. Where particular records could be found, they were scanned as pdf files and attached to the structure through the GIS database information. In addition, a table of license document information was developed and included within the database with limited descriptions.

USACE Permits: USACE Permits represent the structure information that could be found within the Army Corp of Engineers regulatory office in Concord, MA. Where particular records could be found, they were scanned as pdf files and attached to the structure through the GIS database information. In addition, a table of license document information was developed and included within the database with limited descriptions.

DEVELOPMENT OF REPAIR / RECONSTRUCTION COSTS

A matrix to be used within the database has been developed to assess likely rehabilitation/repair costs to restore the coastal structures to their original design condition. No attempt was made to assess the level of exposure and associated level of protection that might be required to meet current design standards for these structures. These costs are only an estimation to bring these structures back to their original design intent based on 2006 construction costs.

The development of the cost matrix is based on the following:

Structure Condition Ratings.— The condition of the coastal structures was determined in the field by the survey crew which was led by an engineer with waterfront structure assessment and design experience. The definitions of the rating criteria utilized for the assessments are presented elsewhere.

The cost implications for each rating condition are as follows:

• A Rating Structures not requiring any maintenance, repair or rehabilitation cost and would not be expected to experience damage if subject to a major coastal storm event

• B Rating Structures requiring limited or no repair and would be expected to experience only minor damage if subject to a major coastal storm event. The value of these maintenance costs is assumed to be 10 percent of the construction cost.

• C Rating Structures requiring moderate to significant level of repair or reconstruction and would be expected to experience significant damage if subject to a major coastal storm event. The structure is presumed to be effective under a major storm event. The value of the repair costs is assumed to be 50 percent of the construction cost.

• D Rating Structures requiring significant level of rehabilitation or total reconstruction and would be expected to experience significant damage or possibly fail if subject to a major coastal storm event. The value of the repair costs is assumed to be 100 percent of the construction cost.
• **F Rating** Structures requiring complete reconstruction and would expect to provide little or no protection from a major coastal storm event. The value of the repair costs is assumed to be 100 percent of the construction cost plus a cost for removal/disposal of the original structure.

**Height of Structure** – Height of a structure is a major factor in the structure cost and therefore was identified as a significant factor in assessing rehabilitation/repair construction costs. The structures were broken down into four major categories which were:

- `< 5’` Structures that were less than five feet in height
- `5’-10’` Structures five to 10 feet in height
- `10’-15’` Structures over 10 feet to 15 feet in height
- `> 15’` Structures greater than 15 feet in height – assumed 20 feet typical

**Length of Structure** – Length is based on field GPS location with measurements rounded to the nearest foot.

**Bulkhead / Seawall Structures** – These structures are assumed to be constructed out of concrete, steel, stone or wood with each having its own criteria for establishing costs. For each structure type the following was assumed:

- **Concrete Seawalls** – These walls were assumed to be gravity structures with the volume of concrete used based on the bottom width being one-half of the structure height. Costs of construction were based on a per cubic yard estimate that varied from $350 to $630 per cubic yard depending on the structure height. Values for excavation and demolition of existing structure were also included.

- **Stone Seawalls** - These walls were treated the same as concrete seawalls and assumed to be gravity structures with the volume of the structure based on the bottom width being one-half of the structure height. Costs of construction were based on a per cubic yard estimate that varied from $350 to $630 per cubic yard depending on the structure height. Values for excavation and demolition of existing structure were also included.

- **Steel Bulkheads** – Steel bulkheads were presumed to be constructed with steel sheet piling. Tie back systems were presumed for structures 10 feet or greater in height. Shorter walls were assumed to have a cantilever design. The total depth of sheeting was presumed to be two times the exposed height. The cost for construction varied from $40 per square foot to $60 per square foot plus the cost of excavation and demolition.

- **Timber Bulkheads** – Timber bulkheads were presumed to be constructed with timber piles at eight foot on center, horizontal wales and vertical four inch sheathing. The unit costs for installed materials used were $1,500 per pile and $7.50 per bfm.

**Revetment Structures** – Revetment structures were presumed to be constructed of dry placed (no concrete) stone with a two on one slope and a horizontal toe and crown equal to the thickness layer established for each height condition. The total thickness of the revetment layers varied from six to ten feet with the cost of armor and under-layer stone assumed to be $50 per ton and the crushed stone base to be $15 per ton.
Groins and Jetties — Groins and jetties were assumed to be the same materials and construction as the revetment structures but would have two sides and therefore double the quantities.

Coastal Beaches — Costs for restoration of Coastal beaches presumed the placement of beach renourishment sands at a 1-on-20 slope over the existing beach conditions. The cost for deposition of sand assumed relatively close source of material and utilized $20 per cubic yard for the material installed.

Coastal Dunes — Restoration of coastal dunes assumed a cross section of renourished sand with a one-on-four slope on one side of a 25 foot width at the defined dune height. The cost for deposition of sand assumed relatively close source of material and utilized $20 per cubic yard for the material installed.

Contingency — A contingency of 20 percent was added to all costs to reflect the unknowns associated with this level of rehabilitation/repair estimating.

Engineering and Regulatory Approvals — A ten percent increase to the cost matrix prices was assessed to represent the engineering design and regulatory approval requirements for the restoration of these structures.
### EXHIBIT A

#### Structure Condition Table – 5 Level Rating System

<table>
<thead>
<tr>
<th>Preliminary Condition Assessment</th>
<th>Definition Based Upon Perceived Immediacy of Action and Potential to Cause Damage if Not Corrected</th>
<th>Level of Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Excellent</td>
<td>Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm</td>
<td>None</td>
</tr>
<tr>
<td><strong>B</strong> Good</td>
<td>Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure</td>
<td>Minor</td>
</tr>
<tr>
<td><strong>C</strong> Fair</td>
<td>Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>D</strong> Poor</td>
<td>Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.</td>
<td>Major</td>
</tr>
<tr>
<td><strong>F</strong> Critical</td>
<td>Conditions of structure/landform may warrant emergency stabilization as failure may result in potential loss of property and/or life. Landform eroded, loss of integrity Structure exhibits critical levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure provides little or no protection from a major coastal storm. Actions taken to totally reconstruct structure to regain full capacity. Landform stability is severely compromised, rate of erosion/material loss may be increasing, and landform does not provide adequate protection from a major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.</td>
<td>Immediate</td>
</tr>
</tbody>
</table>
### EXHIBIT B

**Priority Rating System - 5 Level Rating System**

<table>
<thead>
<tr>
<th>Preliminary Priority Level Assessment</th>
<th>Level Based Upon Perceived Immediacy of Action and Presence of Potential Risk to Inshore Structures if Not Corrected</th>
<th>Level of Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>None</td>
<td>Long Term Planning Considerations</td>
</tr>
<tr>
<td>II</td>
<td>Inshore Structures Present with Limited potential for Significant Infrastructure Damage</td>
<td>Future Project Consideration</td>
</tr>
<tr>
<td>III</td>
<td>Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (&lt;1 dwelling impacted / 100 feet of shoreline)</td>
<td>Consider for Active Project Improvement Listing</td>
</tr>
<tr>
<td>IV</td>
<td>High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)</td>
<td>Consider for Next Project Construction Listing</td>
</tr>
<tr>
<td>V</td>
<td>Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Conditions of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (&gt;10 dwellings impacted / 100 feet of shoreline)</td>
<td>Consider For Immediate Action Due to Public Safety and Welfare Issues</td>
</tr>
</tbody>
</table>
# SOUTH SHORE COASTAL INFRASTRUCTURE
## INVENTORY AND ASSESSMENT DEMONSTRATION PROJECT

### CZM SOUTH SHORE COASTAL INFRASTRUCTURE INVENTORY AND ASSESSMENT PROJECT

### EXHIBIT C

**REPAIR / REHABILITATION COSTING DATA**

*Cost per linear foot of structure*

<table>
<thead>
<tr>
<th>STRUCTURE TYPE</th>
<th>STRUCTURE MATERIALS</th>
<th>STRUCTURE HEIGHT</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BULKHEAD/SEAWALL</td>
<td>CONCRETE</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$64</td>
<td>$425</td>
<td>$850</td>
<td>$583</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$152</td>
<td>$759</td>
<td>$1,516</td>
<td>$1,782</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$251</td>
<td>$1,254</td>
<td>$2,508</td>
<td>$2,970</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$396</td>
<td>$1,980</td>
<td>$3,980</td>
<td>$4,782</td>
</tr>
<tr>
<td></td>
<td>STEEL</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$54</td>
<td>$273</td>
<td>$540</td>
<td>$680</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$165</td>
<td>$826</td>
<td>$1,850</td>
<td>$1,848</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$251</td>
<td>$1,254</td>
<td>$2,508</td>
<td>$2,772</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$343</td>
<td>$1,716</td>
<td>$3,432</td>
<td>$3,795</td>
</tr>
<tr>
<td></td>
<td>STONE</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$84</td>
<td>$426</td>
<td>$850</td>
<td>$983</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$152</td>
<td>$759</td>
<td>$1,518</td>
<td>$1,782</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$251</td>
<td>$1,254</td>
<td>$2,508</td>
<td>$2,970</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$396</td>
<td>$1,980</td>
<td>$3,980</td>
<td>$4,782</td>
</tr>
<tr>
<td></td>
<td>WOOD</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$86</td>
<td>$431</td>
<td>$882</td>
<td>$954</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$127</td>
<td>$632</td>
<td>$1,265</td>
<td>$1,403</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$161</td>
<td>$804</td>
<td>$1,608</td>
<td>$1,872</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$202</td>
<td>$1,008</td>
<td>$2,017</td>
<td>$2,380</td>
</tr>
<tr>
<td>COASTAL BEACH</td>
<td>BAND</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$26</td>
<td>$132</td>
<td>$264</td>
<td>$264</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$127</td>
<td>$634</td>
<td>$1,267</td>
<td>$1,267</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$224</td>
<td>$1,122</td>
<td>$2,244</td>
<td>$2,244</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$306</td>
<td>$1,980</td>
<td>$3,960</td>
<td>$3,960</td>
</tr>
<tr>
<td>COASTAL DUNE</td>
<td>BAND</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$18</td>
<td>$93</td>
<td>$186</td>
<td>$186</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$46</td>
<td>$238</td>
<td>$476</td>
<td>$476</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$79</td>
<td>$395</td>
<td>$790</td>
<td>$790</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$132</td>
<td>$660</td>
<td>$1,320</td>
<td>$1,320</td>
</tr>
<tr>
<td>REVETMENT</td>
<td>STONE</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$86</td>
<td>$433</td>
<td>$884</td>
<td>$730</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$120</td>
<td>$601</td>
<td>$1,201</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$157</td>
<td>$781</td>
<td>$1,564</td>
<td>$1,696</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$247</td>
<td>$1,234</td>
<td>$2,468</td>
<td>$2,686</td>
</tr>
<tr>
<td>GROIN</td>
<td>STONE</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$132</td>
<td>$664</td>
<td>$1,328</td>
<td>$1,460</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$240</td>
<td>$1,201</td>
<td>$2,402</td>
<td>$2,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 To 15 Feet</td>
<td>$0</td>
<td>$314</td>
<td>$1,564</td>
<td>$3,128</td>
<td>$3,392</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$494</td>
<td>$2,468</td>
<td>$4,937</td>
<td>$5,333</td>
</tr>
</tbody>
</table>

**NOTE:** Repair / Rehabilitation Costs include 10% for engineering and regulatory approvals and 20% construction contingency.
Section II

Nantucket
Section II - Community Findings – Town of Nantucket

COMMUNITY DESCRIPTION

The Town of Nantucket consists of a land area of 47.78 square miles out of a total area of 82.75 square miles and had a population of 9,520 in the 2000 census. The Town is located in Nantucket Sound of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 62.5 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Nantucket, there were 10 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 4 in Section II-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

STRUCTURE TYPE AND QUANTITY - Town of Nantucket

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>2485</td>
</tr>
<tr>
<td>Revetment</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>190</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2357</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td>5032</td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Nantucket’s case there are a total of 7 structures which would require approximately $1.1 million to bring all the coastal structures to “A” Rating. There are no structures in the “D” or “F” classification that are in need of immediate replacement or repair.
**STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Nantucket**

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>6</td>
<td>$830,636</td>
<td>$230,835</td>
<td></td>
<td></td>
<td></td>
<td>$1,061,471</td>
</tr>
<tr>
<td>Revetment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$60,060</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>$890,696</td>
<td>$230,835</td>
<td></td>
<td></td>
<td></td>
<td>$1,121,531</td>
</tr>
</tbody>
</table>

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Nantucket the breakdown of structures by assumed ownership is as follows:

**STRUCTURE OWNERSHIP / REPAIR COST - Town of Nantucket**

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Owned</td>
<td>9</td>
<td>$88,242</td>
<td>$230,835</td>
<td></td>
<td></td>
<td></td>
<td>$319,077</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td>1</td>
<td>$802,454</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$802,454</td>
</tr>
<tr>
<td>Federal Government Owned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>$890,696</td>
<td>$230,835</td>
<td></td>
<td></td>
<td></td>
<td>$1,121,531</td>
</tr>
</tbody>
</table>

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section II-B which contains Structure Assessment Reports for each individual structure found.

**SUMMARY**

The enclosed reports and associated documents reflects the Town of Nantucket’s coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section II - Nantucket

Part B

Structure Assessment Reports
COASTAL STRUCTURE LOCATION PLAN

TOWN OF NANTUCKET
COASTAL INFRASTRUCTURE INVENTORY
AND ASSESSMENT PROJECT
OCTOBER 2007

SCALE: 1" = 150'
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presumed Structure Owner:</td>
<td>Local</td>
</tr>
<tr>
<td>Owner Name:</td>
<td>Nantucket</td>
</tr>
<tr>
<td>Location:</td>
<td>Pocomo Head</td>
</tr>
<tr>
<td>Based On Comment:</td>
<td></td>
</tr>
<tr>
<td>Earliest Structure Record:</td>
<td>1993</td>
</tr>
<tr>
<td>Date:</td>
<td>9/19/2007</td>
</tr>
<tr>
<td>Estimated Reconstruction/Repair Cost:</td>
<td>$44,220.00</td>
</tr>
</tbody>
</table>

| Length: | 1675 Feet |
| Top Elevation: | 8 Feet NGVD |
| FIRM Map Zone: | A5 |
| FIRM Map Elevation: | 8 Feet NGVD |

| Primary Type: | Coastal Beach |
| Primary Material: | Sand |
| Primary Height: | Under 5 Feet |
| Secondary Type: | |
| Secondary Material: | |
| Secondary Height: | |

**Structure Summary:**

Coastal beach at Pocomo Head. The beach has a 1 on 3 slope. There is a sand spit at the tip of the point. The beach is evenly graded.

**Condition**

| Rating | Good |
| Level of Action | Minor |
| Description | Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure. |

**Priority**

| Rating | None |
| Action | Long Term Planning Considerations |
| Description | No Inshore Structures or Residential Dwelling Units Present |

**Structure Images:**

- 048-015-000-043-100-PHO1A.JPG
- 048-015-000-043-100-PHO1B.JPG

**Structure Documents:**

- USACE
- December 1
- Nantucket Harbor
- 048-015-000-043-100-COE1A

**Prepared By:** Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket

Location: Polpis Harbor
Based On Comment: 
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $15,840.00

Length: 600 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A5
FIRM Map Elevation: 8 Feet NGVD

Primary Type: Coastal Beach
Primary Material: Sand
Primary Height: Under 5 Feet
Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
The beach is along the inlet to Polpis Harbor. It is evenly graded with sand dunes covered in dune grass behind.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images: 048-025-000-001-100-PH01A.jpg
Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket

Location: Polpis Harbor Bulkhead
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $28,182.00

Date: 9/19/2007

Length: 175 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: A5
FIRM Map Elevation: 8 Feet NGVD

Primary Type: Bulkhead/ Seawall
Primary Material: Wood
Primary Height: 10 to 15 Feet

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Timber bulkhead in Polpis Harbor 100 yards off shore. The bulkhead prevents the channel from filling in. The bulkhead is supported with timber piles and the planks are 1 foot wide. The bulkhead looks to be fairly new construction.

Condition Rating
B Good

Level of Action Description
Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images:
[048-026-020-002-100-PHO1A.JPG]
[048-026-020-002-100-PHO1B.JPG]

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket
Location: Town Pier
Based On Comment:
Earliest Structure Record: 1976
Estimated Reconstruction/Repair Cost: $65,170.00

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket
Location: Town Pier
Based On Comment:
Earliest Structure Record: 1976
Estimated Reconstruction/Repair Cost: $65,170.00

Length: 190 Feet
Tcp Elevation: Feet NAVD 88
FIRM Map Zone: V8
FIRM Map Elevation: 10 Feet NGVD
Primary Type: Breakwater
Primary Material: Steel
Primary Height: Over 15 Feet
Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Steel wave fence with timber face protecting town pier behind it.

Condition Rating
B Good
Level of Action Description
Minor

Priority Rating
III Moderate Priority
Action Description
Consider for Active Project Improvement Listing

Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (<1 dwelling impacted / 100 feet of shoreline)

Structure Images:
048-042-002-032-100-PHO1A.JPG

Structure Documents:
USACE May 21, 1997 Proposed Piers, Float 048-042-002-032-100-COE1A
USACE April 30, 1997 Plan Accompanying 048-042-002-032-100-COE1B
DEP April 30, 1997 Plan Accompanying 048-042-002-032-100-LIC1A

Prepared By: Bourne Consulting Engineering
**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Petrel Landing</td>
<td>9/19/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
<td>Unknown</td>
<td>$151,800.00</td>
</tr>
</tbody>
</table>

| Length: 200 Feet | Top Elevation: 10 Feet NAVD 88 | FIRM Map Zone: VB | FIRM Map Elevation: 10 Feet NGVD |

<table>
<thead>
<tr>
<th>Primary Type: Bulkhead/ Seawall</th>
<th>Primary Material: Stone</th>
<th>Primary Height: 5 to 10 Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Type:</td>
<td>Secondary Material:</td>
<td>Secondary Height:</td>
</tr>
</tbody>
</table>

**Structure Summary:**
Stone bulkhead with 3 feet by 2 feet by 2 feet stones on average. Stones set at a 1 on 1 slope. There is no visible scour at the toe. Moderate erosion behind the bulkhead. Back filled with sand and gravel. There is moderate stone movement and concrete repair areas.

**Condition Rating**
- **Condition**: C
- **Rating**: Fair
- **Level of Action**: Moderate
- **Description**: Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

**Priority Rating Action Description**
- **Priority**: Low Priority
- **Rating**: Future Project Consideration
- **Action**: Inshore Structures Present with Limited potential for Significant Infrastructure Damage

**Structure Images:**
- 048-042-002-047-100-PHO1A.JPG
- 048-042-002-047-100-PHO1B.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket

Location: Easy Street
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $79,035.00

Length: 125 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V8
FIRM Map Elevation: 10 Feet NGVD

Primary Type: Bulkhead/Seawall
Primary Material: Wood
Primary Height: 5 to 10 Feet

Secondary Type: [Blank]
Secondary Material: [Blank]
Secondary Height: [Blank]

Structure Summary:
Wooden seawall with steel cap. There is no scour at the toe. Minor section loss/deterioration on wood near toe. Behind the structure is a sidewalk and road.

Condition Rating: C
Rating: Fair
Level of Action: Moderate
Description: Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating: II
Action: Low Priority
Description: Future Project Consideration

Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
048-042-003-113-100-PHO1A.JPG
048-042-003-113-100-PHO1B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Nantucket

Location: Children's Beach
Based On Comment:

Earliest Structure Record: 1971
Estimated Reconstruction/Repair Cost: $0.00

Date: 9/19/2007

Length: 82 Feet NAVD 88
Top Elevation: Feet NGVD
FIRM Map Zone: A0
FIRM Map Elevation: 1

Primary Type: Coastal Beach
Primary Material: Sand
Primary Height: 10 to 15 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Beach nourishment of a small beach located near Brant Point. Beach is fine sandy beach with 1 on 4 slope from Mean High Water outshore. No erosion visible.

Condition Rating Level of Action Description
A Excellent None Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.

Priority Rating Action Description
I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images: 048-042-004-029-100-PH01A.JPG

Structure Documents:
USACE June 30, 1977 Plan to Accompany 048-042-004-029-100-COE1A

Prepared By: Bourre Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Children's Beach</td>
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</table>

<table>
<thead>
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<th>presumed Structure Owner:</th>
<th>Based On Comment:</th>
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<tbody>
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<td>Unknown</td>
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</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<tbody>
<tr>
<td>Nantucket</td>
<td>Unknown</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
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</thead>
<tbody>
<tr>
<td>450 Feet</td>
<td>Feet NAVD 88</td>
<td>8</td>
<td>A7 Feet NGVD</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead/ Seawall</td>
<td>Wood</td>
<td>Under 5 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
</tr>
</thead>
</table>

**Structure Summary:**
Wooden seawall behind Children's Beach with Harbor View Way behind it. The wall is 1 foot wide and made up of 12" planks.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
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</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>Low Priority</td>
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</table>

<table>
<thead>
<tr>
<th>Level of Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Priority Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inshore Structures Present with Limited potential for Significant Infrastructure Damage</td>
</tr>
</tbody>
</table>

**Structure Images:**
- 048-042-004-029-200-PHO2A.JPG
- 048-042-004-029-200-PHO2B.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner:
State

Presumed Structure Owner:
State

Owner Name:
Steamship Authority

Location:
Steamship Wharf

Based On Comment:

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost:
$802,454.00

Length: 1360 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A7
FIRM Map Elevation: 8 Feet NGVD

Primary Type: Bulkhead/Seawall
Primary Material: Steel
Primary Height: Over 15 Feet

Secondary Type: Revetment
Secondary Material: Stone
Secondary Height: Over 15 Feet

Structure Summary:
Sheet pile bulkhead with steel cap. Minor corrosion at the tidal zone. The toe is not visible to inspect for scour. At the end of the sheet pile is a small section of placed riprap. The stones are approximately 3 feet by 2 feet by 2 feet and at a 1 on 1 slope. Minor stone movement and settling.

Condition Rating
B Good

Level of Action Description
Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
III Moderate Priority Consider for Active Project Improvement Listing Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (<1 dwelling impacted / 100 feet of shoreline)

Structure Images:
048-042-004-214-100-PHO1A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
**Structure Assessment Form**

**Property Owner:**
- Local

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Nantucket

**Location:**
- Jackson Point Boat Ramp

**Date:**
- 9/19/2007

---

**Length:**
- 175 Feet

**FIRM Map Zone:**
- AE

**FIRM Map Elevation:**
- 8 Feet NGVD

**Primary Type:**
- Bulkhead/Seawall

**Primary Material:**
- Wood

**Primary Height:**
- 5 to 10 Feet

**Secondary Type:**
- Revetment

**Secondary Material:**
- Stone

**Secondary Height:**
- Under 5 Feet

**Earliest Structure Record:**
- 1995

**Estimated Reconstruction/Repair Cost:**
- $0.00

---

**Structure Summary:**
Wooden bulkhead built around public boat ramp appears to be newly constructed. Riprap dumped around bulkhead. The stones average 2 feet by 2 feet in size. There is minor erosion behind. No signs of scour.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Priority Action</th>
<th>Priority Description</th>
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<tbody>
<tr>
<td>A</td>
<td>V</td>
<td>Immediate / Highest Priority</td>
<td>Consider For Immediate Action Due to Public Safety and Welfare Issues</td>
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</table>

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**Structure Images:**
- 048-060-000-9999-100-PHO1A.JPG
- 048-060-000-9999-100-PHO1B.JPG
- 048-060-000-9999-100-PHO1C.JPG
- 048-060-000-9999-100-PHO1D.JPG

**Structure Documents:**
- USACE
- Plan Accompanying
- 048-060-000-9999-100-COE1A
- Nov 20 1997

**Prepared By:** Bourne Consulting Engineering
Section II - Nantucket

Part C

Structure Photographs
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>048-015-000-043-100</td>
<td>048-015-000-043-100-PHD1A.jpg</td>
<td>Boume Consulting Engineering</td>
<td>Nantucket</td>
<td>October 2007</td>
<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
<td></td>
</tr>
<tr>
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<td>DIGITAL IMAGE</td>
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<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
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<td>Structure Condition Photo at Time of Survey</td>
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<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
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<td>Nantucket</td>
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<td>DIGITAL IMAGE</td>
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<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
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<td>1</td>
<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
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</table>
Massachusetts Coastal Infrastructure and Assessment
Section II - Nantucket

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST
  • Copies of License Documents

USACE – PERMIT DOCUMENT LIST
  • Copies of Permit Documents
<table>
<thead>
<tr>
<th>SCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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<tbody>
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<td>048-042-002-032-100</td>
<td>048-042-002-032-100-L/C1A</td>
<td>117</td>
<td>USACE</td>
<td>Nantucket</td>
<td>April 30, 1976</td>
<td>Plan Accompanying Petition of Town of Nantucket to Construct Pile and Timber Pile, Mooring Piles, Sheet Pile Breakwater and Fixed Fists in Nantucket Harbor - Nantucket, MA</td>
<td>2</td>
<td>Town Pile</td>
<td>Breakwater</td>
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</table>
PLAN ACCOMPANYING PETITION OF TOWN OF NANTUCKET TO CONSTRUCT PILE AND TIMBER PIERS, MOORING PILES, SHEET PILE BREAKWATER AND FIXED FLOATS IN NANTUCKET HARBOR NANTUCKET, MASSACHUSETTS MAY 1975
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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<tbody>
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<td>048-015-000-043-100</td>
<td>048-015-000-043-100-COE1A</td>
<td>169302878</td>
<td>USACE</td>
<td>Nantucket</td>
<td>December 13, 1993</td>
<td>9</td>
<td>Pocomo Head</td>
<td>Dredge with Renourishment onto Pocomo Head Beach</td>
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<tr>
<td>048-042-002-032-100</td>
<td>048-042-002-032-100-COE1A</td>
<td>78-342</td>
<td>USACE</td>
<td>Nantucket</td>
<td>May 21, 1975</td>
<td>2</td>
<td>Town Pier</td>
<td>Sheet Pile Breakwater</td>
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<tr>
<td>048-042-002-032-100</td>
<td>048-042-002-032-100-COE1B</td>
<td>199100311</td>
<td>USACE</td>
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<td>May-75</td>
<td>4</td>
<td>Town Pier</td>
<td>Sheet Pile Breakwater</td>
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<td>048-042-004-029-100</td>
<td>048-042-004-029-100-COE1A</td>
<td>72-17</td>
<td>USACE</td>
<td>Nantucket</td>
<td>June 30, 1971</td>
<td>3</td>
<td>Southwest of Brant Point</td>
<td>Nourishment of 116 Cubic Yards Above Mean High Water at Children's Beach</td>
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<td>048-090-000-9999-100</td>
<td>048-090-000-9999-100-COE1A</td>
<td>SE 48-941</td>
<td>USACE</td>
<td>Nantucket</td>
<td>20-Nov-97</td>
<td>2</td>
<td>Hither Creek</td>
<td>Bulkhead and Riprap Surrounding Boat Ramp</td>
</tr>
</tbody>
</table>
DISPOSAL SITE

NANTUCKET HARBOR DREDGING
NANTUCKET, MASSACHUSETTS
NANTUCKET COUNTY

APPLICATION BY: TOWN OF NANTUCKET

FIGURE 6 OF 9  11/1/93
SECTION A-A
HORIZ: 1" = 40'
VERT: 1" = 4'

SECTION B-B
HORIZ: 1" = 40'
VERT: 1" = 4'

SECTION C-C
HORIZ: 1" = 40'
VERT: 1" = 4'

DREDGE SECTIONS
TAUTUCKET HARBOR DREDGING
TAUTUCKET, MASSACHUSETTS
TAUTUCKET COUNTY
APPLICATION BY: TOWN OF
TAUTUCKET

NOTE: DEPTHS IN FEET
BELOW MEAN LOW
WATER

Figure 7 of 9 11/1/93
FLOAT DETAIL

PLAN ACCOMPANYING PETITION OF TOWN OF NANTUCKET
MAY 1975

PHASE 2 IS NOT AUTHORIZED UNDER THE TERMS OF THIS LICENSE.

NOTE: ONLY PHASE 2 AUTHORIZED BY RES. # 117.

APRIL 30, 1976
JOB NO. K-280
Detail Sheet for
Town of Nantucket
NANTUCKET, MASS.

J. Mitchell Brothers, Inc.
Professional Engineers
100 Federal St. Nantucket, Mass.

ROBERT W. FOSTER
Professional Engineer

JOHN L. THOMPSON
Professional Engineer
Section III

Edgartown
Section III – Community Findings – Town of Edgartown

COMMUNITY DESCRIPTION

The Town of Edgartown consists of a land area of 27.01 square miles out of a total area of 34.69 square miles and had a population of 3,779 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 24.9 miles with the remaining shoreline semi-protected by offshore structures or landforms. The town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Edgartown, there were 8 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 8 in Section III-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Revetment</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Edgartown’s case there are a total of 8 structures which would require approximately $ 3.2 million to bring all the coastal structures to “A” Rating. There are no structures in the “D” or “F” classification that are in need of immediate replacement or repair.

III-A-1

Town of Edgartown
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Edgartown

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
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<tr>
<td>Bulkhead / Seawall</td>
<td>3</td>
<td>$73,450</td>
<td>$125,400</td>
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<tr>
<td>Revetment</td>
<td>2</td>
<td>$39,270</td>
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<td>Breakwater</td>
<td></td>
<td></td>
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</tr>
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<td>Groin / Jetty</td>
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<td></td>
<td>$240,200</td>
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<tr>
<td>Coastal Dune</td>
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<tr>
<td>Coastal Beach</td>
<td>2</td>
<td>$2,572,770</td>
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<td></td>
<td>8</td>
<td>$2,685,490</td>
<td>$545,780</td>
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</table>

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Edgartown the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Edgartown

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Town Owned</td>
<td>8</td>
<td>$2,685,490</td>
<td>$545,780</td>
</tr>
<tr>
<td>Commonwealth of Mass.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>8</td>
<td>$2,685,490</td>
<td>$545,780</td>
</tr>
</tbody>
</table>

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section III-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Edgartown’s coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section III - Edgartown

Part B

Structure Assessment Reports
COASTAL STRUCTURE LOCATION PLAN

EDGARTOWN
MARTHA'S VINEYARD
COASTAL INFRASTRUCTURE INVENTORY
AND ASSESSMENT PROJECT
OCTOBER 2007

SCALE: 1" = 150'
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Edgartown
Location: Cape Poge Wildlife Refuge
Based On Comment:
Earliest Structure Record: Unknown
Date: 10/1/2007
Estimated Reconstruction/Repair Cost: $240,200.00

Length: 200 Feet
Top Elevation: 13 Feet NGVD
FIRM Map Zone: VE
FIRM Map Elevation:

Primary Type: Groin Jetty
Primary Material: Stone
Primary Height: 5 to 10 Feet
Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
Set of two dumped stone groins. The stones are 6 feet by 3 feet by 3 feet on average. There is moderate stone movement. There is no visible scour. One groin is almost completely buried.

Condition Rating
C Fair
Level of Action Description
Moderate
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating
I None
Action Description
Long Term Planning Considerations
No Inshore Structures or Residential Dwelling

Structure Images:
020-016-000-001-100-PHO1A.JPG
020-016-000-001-100-PHO1B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Edgartown Lighthouse</td>
<td>10/1/2007</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>Based On Comment:</th>
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</thead>
<tbody>
<tr>
<td>Local</td>
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<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<tbody>
<tr>
<td>Edgartown</td>
<td>Unknown</td>
<td>$39,270.00</td>
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### Structure Summary:
Placed stone revetment with gravel road above that goes out to a lighthouse. In the middle of the structure, there is a culvert. There are no signs of scour at the toe. There is minor erosion at the top. Minor stone movement. Sandy beach is located in front of and on both sides of the revetment. The stones are 3 feet by 2 feet by 2 feet on average.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Level of Action Action Description</th>
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<tbody>
<tr>
<td>B</td>
<td>None</td>
<td>Minor</td>
</tr>
<tr>
<td>Rating</td>
<td>Action Description</td>
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<tr>
<td></td>
<td>No Inshore Structures or Residential Dwelling Units Present</td>
<td></td>
</tr>
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### Structure Images:
[020-019B-000-007-100-PHO1A.JPG]

### Structure Documents:
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<tr>
<th>DEP</th>
<th>April 27, 1994</th>
<th>Plan Accompanying</th>
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<tr>
<td>DEP</td>
<td>June 13, 1994</td>
<td>Plan Accompanying</td>
</tr>
</tbody>
</table>

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
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<th>Date:</th>
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</thead>
<tbody>
<tr>
<td>Local</td>
<td>Daggert Street Ferry Landing</td>
<td>10/1/2007</td>
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<tbody>
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<td>Local</td>
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<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<tr>
<td>Edgartown</td>
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<td>$125,400.00</td>
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<table>
<thead>
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<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
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</thead>
<tbody>
<tr>
<td>100 Feet</td>
<td>Feet NAVD 88</td>
<td>A12</td>
<td>10 Feet NGVD</td>
</tr>
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</table>

Primary Type: | Primary Material: | Primary Height: |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead/ Seawall</td>
<td>Stone</td>
<td>10 to 15 Feet</td>
</tr>
</tbody>
</table>

Secondary Type: | Secondary Material: | Secondary Height: |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Structure Summary:**
Stone bulkhead with concrete mortar. Areas of section loss in mortar and stone settling and rotation. In front of the structure is a pier for the ferry. Above is a concrete cap with moderate cracking.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Priority Action</th>
<th>Priority Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Fair</td>
<td>I None</td>
<td>Long Term Planning Considerations</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life.

**Structure Images:**
[020-020D-000-296-100-PHO1A.JPG]

**Structure Documents:**
[DEP] February 12, Plan Accompanying [020-020D-000-296-100-LIC1A]

Prepared By: Bourne Consulting Engineering
**Structure Assessment Form**

**Property Owner:** Local  

**Presumed Structure Owner:** Local  

**Owner Name:** Edgartown  

**Location:** Memorial Wharf  

**Based On Comment:**  

**Earliest Structure Record:** 1995  

**Estimated Reconstruction/Repair Cost:** $62,700.00  

<table>
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<th>Length: 250 Feet</th>
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<th>FIRM Map Zone: V15</th>
<th>FIRM Map Elevation: Feet NGVD 13</th>
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</thead>
</table>

**Primary Type:** Bulkhead/Seawall  

**Primary Material:** Steel  

**Primary Height:** 10 to 15 Feet  

**Secondary Type:**  

**Secondary Material:**  

**Secondary Height:**  

**Structure Summary:** Sheet pile bulkhead with a timber wharf built around it. Bulkhead has a 1 foot steel cap and is filled with an asphalt parking lot above. Minor corrosion at the tidal zone.

**Condition Rating**  

**Level of Action Description** Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure/landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.

**Priority Rating Action Description** None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

**Structure Images:**  

- [020-020D-000-322-100-PHO1A.JPG](#)  
- [020-020D-000-322-100-PHO1B.JPG](#)

**Structure Documents:**  

- **USACE**  
  - [020-020D-000-322-100-COE1A](#)
  - [July 1995](#)  
- **DEP**  
  - [020-020D-000-322-100-LIC1A](#)  
  - [Plan Accompanying](#)  
  - [February 12, 2007](#)  
  - [020-020D-000-322-100-LIC1B](#)  
  - [Plan Accompanying](#)  
  - [May 23, 1998](#)  
  - [020-020D-000-322-100-LIC1C](#)  
  - [Plan Accompanying](#)  
  - [February 12, 2007](#)  

**Prepared By:** Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

**Property Owner:**
- Local

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Edgartown

**Location:**
- Chappaquiddick Road Ferry Landing

**Based On Comment:**

**Earliest Structure Record:**
- Unknown

**Date:**
- 10/1/2007

**Estimated Reconstruction/Repair Cost:**
- $10,750.00

<table>
<thead>
<tr>
<th>Length</th>
<th>Top Elevation</th>
<th>FIRM Map Zone</th>
<th>FIRM Map Elevation</th>
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</thead>
<tbody>
<tr>
<td>125 Feet</td>
<td>Feet NAVD 88</td>
<td>V15</td>
<td>13 Feet NGVD</td>
</tr>
</tbody>
</table>

**Primary Type:**
- Bulkhead/Seawall

**Primary Material:**
- Wood

**Primary Height:**
- Under 5 Feet

**Secondary Type:**
- Secondary Material

**Secondary Height:**

**Structure Summary:**
Timber bulkhead with asphalt parking lot behind. Timber pier in front for the ferry. There is no visible scour or erosion. Timber shows no sign of damage or deterioration.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Good</td>
<td>Minor</td>
<td>Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landfill is present. Structure / landfill adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.</td>
</tr>
</tbody>
</table>

**Priority**
- None

**Rating**
- Long Term Planning Considerations

**Action**
- No Inshore Structures or Residential Dwelling Units Present

**Description**

**Structure Images:**
- [020-020D-000-337-100-PH01A.jpg]

**Structure Documents:**
- DEP
- May 10, 200
- Chappaquiddick
- [020-020D-000-337-100-LIC1A]

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

**Property Owner:**
Local

**Location:**
Mattakesett Bay Boat Ramp

**Presumed Structure Owner:**
Local

**Owner Name:**
Edgartown

**Date:**
10/1/2007

**Earliest Structure Record:**
1967

**Estimated Reconstruction/Repair Cost:**
$180,180.00

**Length:**
300 Feet

**Top Elevation:**
Feet NAVD 88

**FIRM Map Zone:**
AE

**FIRM Map Elevation:**
9 Feet NGVD

**Primary Type:**
Revetment

**Primary Material:**
Stone

**Primary Height:**
5 to 10 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
Placed stone revetment. The stones are 3 feet by 2 feet by 2 feet on average with concrete mortar. The slope is 1 on 1 and the crest is 8 feet wide. There are signs of concrete repairs. There is minor scour and moderate stone movement.

**Condition Rating Level of Action Description**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Fair</td>
<td>Moderate</td>
<td>Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.</td>
</tr>
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</table>

**Priority Rating Action Description**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Rating</th>
<th>Action</th>
<th>Description</th>
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<tbody>
<tr>
<td>I</td>
<td>None</td>
<td>Long Term Planning Considerations</td>
<td>No Inshore Structures or Residential Dwelling Units Present</td>
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</table>

**Structure Images:**
[020-051-000-039-100-PH01A.JPEG]

**Structure Documents:**
[020-051-000-039-100-COE1A]

Prepared By: Bourne Consulting Engineering
**Structure Assessment Form**

**Property Owner:**
- Local

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Edgartown

**Location:**
- South Beach

**Date:**
- 5/28/2009

**Earliest Structure Record:**
- Unknown

**Estimated Reconstruction/Repair Cost:**
- $735,330.00

**Length:**
- 5790 Feet
  - Top Elevation: 68 Feet NAVD 88
  - FIRM Map Zone: VE
  - FIRM Map Elevation: 20 Feet NGVD

**Primary Type:**
- Coastal Beach

**Primary Material:**
- Sand

**Primary Height:**
- 5 to 10 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
Sandy beach with dunes behind. There is a road and few homes behind the dunes. Beach is well maintained and there is no signs of erosion. Dunes are in good condition. High tide rises to about half the width of the beach.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Priority</th>
<th>Action</th>
<th>Description</th>
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<tbody>
<tr>
<td>B</td>
<td>Good</td>
<td>II</td>
<td>Low Priority</td>
<td>Future Project Consideration</td>
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</table>

- Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Structure Images:**
- 020-052-000-OB3-100-PH01A.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
Barrier Beach that protects the Katama Bay to the north from the Atlantic Ocean to the south of the beach. Sandy beach with dunes behind. There is a breach to the Katama Bay with signs of accretion. Beach is a popular nesting area for many protected rare birds.

Structure Images:
- 020-052-000-083-200-PHO2A.JPG
- 020-052-000-083-200-PHO2B.JPG

Structure Documents:
Section III - Edgartown

Part C

Structure Photographs
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
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<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Description</td>
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<td>020-01B-000-001-100</td>
<td>020-01B-000-001-100-PHQ1B.JPG</td>
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<td>020-01B-000-007-100</td>
<td>020-01B-000-007-100-PHQ1A.JPG</td>
<td>Source Consulting Engineering</td>
<td>Edgartown</td>
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<td>Structure Location</td>
<td>Description</td>
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<td>020-029D-000-298-100</td>
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<td>Source Consulting Engineering</td>
<td>Edgartown</td>
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<td>020-029D-000-03-200-PHQ2A.JPG</td>
<td>Source Consulting Engineering</td>
<td>Edgartown</td>
<td>May 2007</td>
<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Description</td>
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<td>020-029D-000-03-300</td>
<td>020-029D-000-03-300-PHQ2B.JPG</td>
<td>Source Consulting Engineering</td>
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<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Description</td>
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</tbody>
</table>
Section III - Edgartown

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST
  • Copies of License Documents

USACE – PERMIT DOCUMENT LIST
  • Copies of Permit Documents
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
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<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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No MA - DCR Documents for the Town of Edgartown
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
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<td>020-019B-001-000-100-LIC1A</td>
<td>2595</td>
<td>DEP</td>
<td>Edgartown</td>
<td>April 27, 1943</td>
<td>Plan Accompanying Petition of the Town of Edgartown to Construct a Timber Bulkhead Edgartown Harbor-1943</td>
<td>1</td>
<td>Edgartown Harbor</td>
<td>Timber Bulkhead</td>
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<td>020-019B-020-007-100</td>
<td>020-019B-000-007-100-LIC1B</td>
<td>2662</td>
<td>DEP</td>
<td>Edgartown</td>
<td>June 13, 1944</td>
<td>Plan Accompanying Petition of Town of Edgartown to Extend Present Ferry Slip</td>
<td>1</td>
<td>Dock Street</td>
<td>Stone Revelment</td>
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<td>020-020D-000-296-100</td>
<td>020-020D-000-296-100-LIC1A</td>
<td>5403</td>
<td>DEP</td>
<td>Edgartown</td>
<td>February 12, 1996</td>
<td>Plan Accompanying Petition of Town of Edgartown, MA, Wharf Replacement With Steel Sheetpile Bulkhead and Fill</td>
<td>5</td>
<td>Edgartown Harbor, Dock Street</td>
<td>Steel Bulkhead</td>
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<tr>
<td>020-020D-020-322-100</td>
<td>020-020D-000-322-100-LIC1A</td>
<td>5403</td>
<td>DEP</td>
<td>Edgartown</td>
<td>February 12, 1996</td>
<td>Plan Accompanying Petition of Town of Edgartown, MA - Wharf Replacement with Steel Sheetpile Bulkhead and Fill</td>
<td>5</td>
<td>Memorial Wharf</td>
<td>Replace Steel Sheetpile Bulkhead</td>
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<tr>
<td>020-020D-020-322-100</td>
<td>020-020D-000-322-100-LIC1B</td>
<td>1242</td>
<td>DEP</td>
<td>Edgartown</td>
<td>May 23, 1985</td>
<td>Plan Accompanying Petition of the Town of Edgartown to Construct and Maintain Sheet Pile Bulkhead</td>
<td>1</td>
<td>Dock Street</td>
<td>Sheet Pile Bulkhead</td>
</tr>
<tr>
<td>020-020D-020-322-100</td>
<td>020-020D-000-322-100-LIC1C</td>
<td>5403</td>
<td>DEP</td>
<td>Edgartown</td>
<td>February 12, 1996</td>
<td>Plan Accompanying Petition of Town of Edgartown, MA, Wharf Replacement with Steel Sheetpile Bulkhead and Fill</td>
<td>5</td>
<td>Wharf Near Dock Street</td>
<td>Bulkhead</td>
</tr>
<tr>
<td>020-020D-020-337-100</td>
<td>020-020D-000-337-100-LIC1A</td>
<td>9272</td>
<td>DEP</td>
<td>Edgartown</td>
<td>May 10, 2002</td>
<td>Chappaquiddick Ferry Slip for the Town of Edgartown, Martha's Vineyard Massachusetts</td>
<td>2</td>
<td>Edgartown Harbor</td>
<td>Bulkhead/Seawall</td>
</tr>
</tbody>
</table>
PLANNING ACcompanyING PETITION OF
TOWN OF EDGARTOWN, MA
WHARF REPLACEMENT WITH
STEEL SHEETPIECE BULKHEAD AND FILL
TO REMOVE EXISTING TIMBER WALKWAYS, TIMBER PIERS AND
ALL APPURTENANCES, REPLACE WITH APPX. 250LF OF
EPoxy COATED STEEL SHEETPIECE BULKHEAD WITH A REINFORCED
CONCRETE SIDEWALK, AND 8'x96" FLOATING PIER WITH TAMPER
GUIDE PILES, EXTEND EXISTING STORM DRAIN THROUGH NEW
BULKHEAD, INSTALL NEW WATER LINE, NEW SITE LIGHTING,
PLANTERS AND OVERLAY PAVEMENT IN PARKING LOT.

LICENSE PLAN NO. 5403
Approved by Department of Environmental Protection
of Massachusetts

COMMISSIONER
DIVISION DIRECTOR
SECTION CHIEF
1. ELEVATIONS REFER TO MEAN LOW WATER (MLW) DATUM.
2. APPROXIMATELY 320 CU. YDS. OF COMPACTED CRUSHED STONE FILL WILL BE PLACED BEHIND THE PROPOSED STEEL SHEETPILE BULKHEAD.
3. EXCEPT WHERE ELW IS SHOWN ON PLANS, MEAN HIGH WATER LEVEL (MHW) AND EXTREME LOW WATER (ELW) LEVEL ARE ALONG FACE OF EXISTING STONE RETAINING WALLS.
4. FLOOD PLAIN BOUNDARIES BEYOND PROJECT AREA.
5. NO EXISTING OR PROPOSED EASEMENTS.
EXISTING WATERWAY LICENSE

A  LICENSE NO. 3548
  JUNE 28, 1954
  TOWN OF EDGARTOWN

B  LICENSE NO. 680
  MARCH 28, 1928
  ELMER J. BLISS

C  LICENSE NO. 3837
  MAY 7, 1955
  LEO J. CONVERRY et ux

D  LICENSE NO. 1316
  SEPTEMBER 11, 1985
  COAL WHARF TRUST II, 85-W-009

LOCATION MAP
NOT TO SCALE

PLAN ACCOMPANYING PETITION OF
TOWN OF EDGARTOWN, MA
WHARF REPLACEMENT WITH
STEEL SHEETPILE BULKHEAD AND FILL

TO REMOVE EXISTING TIMBER WALKWAYS, TIMBER PIERS AND
ALL APPURTENCES, REPLACE WITH APPROXIMATELY 250LF OF
EPOXY COATED STEEL SHEETPILE BULKHEAD WITH A REINFORCED
CONCRETE SIDEWALK, AND 8" x 8" FLOATING PIER WITH TIMBER
GUIDE PILES, EXTEND EXISTING STORM DRAIN THROUGH NEW
BULKHEAD, INSTALL NEW WATER LINE, NEW SITE LIGHTING,
PLANTERS AND OVERLAY PAVEMENT IN PARKING LOT.

HISTORIC MEAN HIGH WATER SOURCE:
EDGARTOWN VILLAGE WATERFRONT
HISTORIC SHORELINE, EDGARTOWN HARBOR
PLANNING GROUP, 1985. COMPIILATION OF SEVEN
HISTORIC DOCUMENTS.

LICENSE PLAN NO. 5903
Approved by Department of Environmental Protection
of Massachusetts

NOT: JOHN K. SHAW
DIVISION DIRECTOR
SECTION CHIEF
1. Elevations refer to mean low water (MLW) datum.
2. Approximately 320 cu. yds. of compacted crushed stone fill will be placed behind the proposed steel sheetpile bulkhead.
3. Except where ELW is shown on plans, mean high water level (MHW) and extreme low water (ELW) level are along face of existing stone retaining walls.
4. Flood plain boundaries beyond project area.
5. No existing or proposed easements.

License Plan No. 5403
Approved by Department of Environmental Protection
Date: FEB 12, 1996
PLAN ACCOMPANYING PETITION OF
TOWN OF EDGARTOWN, MA
WHARF REPLACEMENT WITH
STEEL SHEETPILE BULKHEAD AND FILL

TO REMOVE EXISTING TIMBER WALKWAYS, TIMBER PIERS AND
ALL APPURTENANCES, REPLACE WITH APPROXIMATELY 200LF OF
EPOXY COATED STEEL SHEETPILE BULKHEAD WITH A REINFORCED
CONCRETE SIDEWALK, AND 8'x96' FLOATING PIER WITH TIMBER
GUIDE PILES, EXTEND EXISTING STORM DRAIN THROUGH NEW
BULKHEAD, INSTALL NEW WATER LINE, NEW SITE LIGHTING,
PLANTERS AND OVERLAY PAVEMENT IN PARKING LOT,

LICENSE PLAN NO. 5403
Approved by Department of Environmental Protection
of Massachusetts

COMMISSIONER
DIVISION DIRECTOR
SECTION CHIEF
PROPOSED PLAN
SOUTHEAST BULKHEAD

LICENSE PLAN NO. 5403
Approved by Department of Environmental Protection
Date: FEB 12 1996
1. Elevations refer to mean low water (MLW) datum.
2. Approximately 320 cu. yds. of compacted crushed stone fill will be placed behind the proposed sheetpiling bulkhead.
3. Except where ELW is shown on plans, mean high water level (MHW) and extreme low water (ELW) levels are along face of existing stone retaining walls.
4. Flood plain boundaries beyond project area.
5. No existing or proposed easements.
CHAPPAQUIDDICK FERRY SLIP

FOR THE

TOWN OF EDGARTOWN
MARThA'S VINEYARD
MASSACHUSETTS

BY

STEPHEN F. BERLUCCHI, P.E.
DUKES COUNTY ENGINEER

2001

LICENSE PLAN NO. 9272
Approved by Department of Environmental Protection
of Massachusetts:

Mitch Zienczuk
Mass. DEP
MAY 10, 2002

SHEET #1 OF 2
CHAPPAQUIDDICK FERRY SLIP PLAN AND SECTIONS

020-020D-000-537-100

OWNER: TOWN OF EDGARTOWN
MAP 20D - LOT 357 & 341

EDGE OF ROAD
CHAPPAQUIDDICK ROAD
LICENSED SLIP AND TIMBER PIER #5499
MARCH 12, 1969

EDGE OF ROAD

UNLICENSED SLIP BUILT APPROX. 1969

OWNER: TOWN OF EDGARTOWN
MAP 30 - LOT 3

SITE PLAN

SECTION "B-B"

EL. = 5.0'
ML.W. = (0.0)
4" TIMBER SHEETING
4" TIMBER FENDERING
12" TIMBER FENDER PILES TYPICAL

EL. = 5.0'
ML.W. = (0.0)
4" TIMBER SHEETING
4" TIMBER FENDERING

ANNUAL DREDGING TO EL. = -4.0' VOL = 33 CY

SECTION "A-A"

EL. = 8.0'
ML.W. = (0.0)
EL. = -4.0'

4" TIMBER BULKHEAD SHEETING

LICENSE PLAN NO. 9272
Approved by Department of Environmental Protection
Date: MAY 10, 2002

SHEET # 2 of 2
SCALE: 1" = 10'
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>020-0200-000-322-100</td>
<td>020-0200-000-322-100-C0E1A</td>
<td>189500559</td>
<td>USACE</td>
<td>Edgartown</td>
<td>July 1996</td>
<td>Town of Edgartown - Proposed Bulwark</td>
<td>3</td>
<td>Memorial Wharf</td>
<td>Steel Sheet Pls Bulwark</td>
</tr>
<tr>
<td>020-051-000-039-100</td>
<td>020-051-000-039-100-C0E1A</td>
<td>04692</td>
<td>USACE</td>
<td>Edgartown</td>
<td>January 1987</td>
<td>Proposed Access Ramp and Facilities - Ketama Bay Edgartown, MA</td>
<td>1</td>
<td>Kalama Point</td>
<td>Stone Revetment</td>
</tr>
</tbody>
</table>
1. Elevations refer to mean low water (MLW) datum.
2. Approximately 320 cu. yds. of compacted crushed stone fill will be placed behind the proposed steel sheetpile bulkhead.
3. Except where ELW is shown on plans, mean high water level (MHW) and extreme low water (ELW) level are along face of existing stone retaining walls.

Purpose:
Replace existing bulkhead
with steel sheetpile and fill

Sections

Proposed Bulkhead

Datum ML = 0.0
V = H = 1.0

Sheet 2 of 3
Date: July 1995
Section IV

Oak Bluffs
Section IV – Community Findings – Town of Oak Bluffs

COMMUNITY DESCRIPTION

The Town of Oak Bluffs consists of a land area of 7.37 square miles out of a total area of 8.7 square miles and had a population of 3,713 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 6.4 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Oak Bluffs, there were 29 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 7 in Section IV-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>STRUCTURE TYPE AND QUANTITY - Town of Oak Bluffs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Structure (1)</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
</tr>
<tr>
<td>Revetment</td>
</tr>
<tr>
<td>Breakwater</td>
</tr>
<tr>
<td>Groin / Jetty</td>
</tr>
<tr>
<td>Coastal Dune</td>
</tr>
<tr>
<td>Coastal Beach</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Oak Bluffs’ case there are a total of 25 structures which would require approximately $11.5 million to bring all the coastal structures to “A” Rating. Most critical will be the structures in the “D” and “F” classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $2.4 million would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Oak Bluffs

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>9</td>
<td></td>
<td>684,156</td>
<td>$5,065,732</td>
<td>$5,739,888</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revetment</td>
<td>8</td>
<td></td>
<td>386,333</td>
<td>154,275</td>
<td>$520,608</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakwater</td>
<td>2</td>
<td></td>
<td>720,600</td>
<td>813,364</td>
<td>$1,533,984</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>7</td>
<td></td>
<td>108,900</td>
<td>390,390</td>
<td>$1,976,766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>3</td>
<td></td>
<td>1,615,860</td>
<td>105,600</td>
<td>$1,721,280</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td></td>
<td>$2,775,069</td>
<td>$6,320,997</td>
<td>$2,396,460</td>
<td>$11,492,526</td>
<td></td>
</tr>
</tbody>
</table>

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Oak Bluffs, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Oak Bluffs

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Owned</td>
<td>24</td>
<td></td>
<td>1,248,654</td>
<td>5,930,607</td>
<td>2,396,460</td>
<td>$9,575,721</td>
<td></td>
</tr>
<tr>
<td>Commonwealth of Mass.</td>
<td>5</td>
<td></td>
<td>1,526,415</td>
<td>390,360</td>
<td>$1,910,805</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td></td>
<td>$2,775,069</td>
<td>$6,320,997</td>
<td>$2,396,460</td>
<td>$11,492,526</td>
<td></td>
</tr>
</tbody>
</table>

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section IV-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Oak Bluffs’ coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.

IV-A-2 Town of Oak Bluffs
Section IV - Oak Bluffs

Part B

Structure Assessment Reports
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Town: Oak Bluffs
Structure ID: 053-002-000-003-100
Key: community-map-block-parcel-structure

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs
Location: East Chop
Date: 10/2/2007
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $30,030.00

Length: 250 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V9
FIRM Map Elevation: 16 Feet NGVD

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet
Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
Placed stone revetment with a 1 on 2 slope. The stones are 4 feet by 2 feet by 2 feet on average. There is no visible erosion or scour. Cobble beach is located in front and coastal bank is behind the structure.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-002-000-003-100-PHO1A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
**Property Owner:**
Local

**Presumed Structure Owner:**
Local

**Owner Name:**
Oak Bluffs

**Location:**
Highland Drive

**Based On Comment:**

**Earliest Structure Record:**
Unknown

**Estimated Reconstruction/Repair Cost:**
$321,816.00

**Length:**
200 Feet

**Top Elevation:**
Feet NAVD 88

**FIRM Map Zone:**
V14

**FIRM Map Elevation:**
13 Feet NGVD

**Primary Type:**
Bulkhead/ Seawall

**Primary Material:**
Wood

**Primary Height:**
Over 15 Feet

**Secondary Type:**
Revetment

**Secondary Material:**
Stone

**Secondary Height:**
5 to 10 Feet

**Structure Summary:**
Timber bulkhead with dumped riprap at the toe. The stones are approximately 3 feet by 2 feet by 2 feet. There is minor erosion and scour at the toe. There is moderate stone movement.

**Condition Rating**
C

**Level of Action Description**
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

**Priority Rating**
I

**Action Description**
None

**Long Term Planning Considerations**
No Inshore Structures or Residential Dwelling Units Present

**Prepared By:**
Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Eastville Point</td>
</tr>
</tbody>
</table>

| Presumed Structure Owner: | Date: |
| Local | 10/2/2007 |

| Owner Name: | Earliest Structure Record: | Estimated Reconstruction/Repair Cost: |
| Oak Bluffs | Unknown | $224,400.00 |

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Feet</td>
<td>Feet NAVD 88</td>
<td>V9</td>
<td>14 Feet NGVD</td>
</tr>
</tbody>
</table>

| Primary Type: | Primary Material: | Primary Height: |
| Coastal Beach | Sand | 10 to 15 Feet |

| Secondary Type: | Secondary Material: | Secondary Height: |
| | | |

**Structure Summary:**
Sandy beach with an approximately 1 in 20 slope. The beach is stepped and graded uniformly.

**Condition Rating**
- B: Good

**Level of Action Description**
- Minor
  - Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Priority Rating Action Description**
- I: None
  - No Inshore Structures or Residential Dwelling Units Present

**Structure Images:**
- 053-006-000-017-100-PH01A.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

**Property Owner:**
- Local

**Location:**
- Eastville Point

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Oak Bluffs

**Date:**
- 10/2/2007

**Earliest Structure Record:**
- Unknown

**Estimated Reconstruction/Repair Cost:**
- $720,600.00

<table>
<thead>
<tr>
<th>Length</th>
<th>Top Elevation</th>
<th>FIRM Map Zone</th>
<th>FIRM Map Elevation</th>
<th>Primary Type</th>
<th>Primary Material</th>
<th>Primary Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 Feet</td>
<td>Feet NAVD 88</td>
<td>V9</td>
<td>14 Feet NGVD</td>
<td>Breakwater</td>
<td>Stone</td>
<td>5 to 10 Feet</td>
</tr>
</tbody>
</table>

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
Stone jetty at the inlet to Lagoon Pond. Minor to moderate stone movement and minor scour. Behind is coastal beach and parking area.

**Condition Rating**
- C

**Level of Action**
- Moderate

**Description**
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

**Priority Rating Action Description**
- I
  - None
  - Long Term Planning Considerations
  - No Inshore Structures or Residential Dwelling Units Present

**Structure Images:**
-

**Structure Documents:**
- [653-006-000-017-200-PHO2A.JPG]

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: LOCAL
Presumed Structure Owner: LOCAL
Owner Name: Oak Bluffs

Location: Eastville Point
Based On Comment: 
Earliest Structure Record: Unknown

Date: 10/2/2007
Estimated Reconstruction/Repair Cost: $31,625.00

Length: 25 Feet
Top Elevation: 14 Feet NGVD
FIRM Map Zone: V9
FIRM Map Elevation: 

Primary Type: Groin/Jetty
Primary Material: Wood
Primary Height: 5 to 10 Feet
Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Timber groin with moderate to severe deterioration. Groin extends out past mean low water. There is minor scour visible.

Condition Rating
Priority Rating
Level of Action Description
Action Description

Structure Images: 053-006-000-017-300-PHO3A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

**Town:** Oak Bluffs  
**Structure ID:** 053-006-000-017-400  
**Key:** community-map-block-parcel-structure  
**Date:** 10/2/2007

### Property Owner:
**Local**

### Presumed Structure Owner:
**Local**

### Owner Name:
Oak Bluffs

### Location:
Eastville Point

### Based On Comment:

### Earliest Structure Record:
Unknown

### Estimated Reconstruction/Repair Cost:
$154,275.00

<table>
<thead>
<tr>
<th>Length</th>
<th>Top Elevation</th>
<th>FIRM Map Zone</th>
<th>FIRM Map Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>Feet</td>
<td>Feet NAVD 88</td>
<td>A11</td>
</tr>
<tr>
<td></td>
<td>Feet NGVD</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

### Primary Type:
Revetment

### Primary Material:
Stone

### Primary Height:
Over 15 Feet

### Secondary Type:

### Secondary Material:

### Secondary Height:

### Structure Summary:
Dumped stone at bridge abutment. Moderate stone movement. Stones are approximately 200 pounds on average.

### Condition Rating
**C**  
**Fair**

### Level of Action Description
Moderate  
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

### Priority Rating
**II**  
Low Priority  
Future Project Consideration

### Action Description
Inshore Structures Present with Limited potential for Significant Infrastructure Damage

### Structure Images:
053-006-000-017-400-PHO4A.JPG

### Structure Documents:

---

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Lake Avenue
Based On Comment: 
Earliest Structure Record: Unknown

Date: 10/2/2007
Estimated Reconstruction/Repair Cost: $1,716,000.00

Length: 1000 Feet NAVD 88
Top Elevation: Feet NGVD
FIRM Map Zone: A10
FIRM Map Elevation: 9

Primary Type: Bulkhead/ Seawall
Primary Material: Steel
Primary Height: Over 15 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Steel sheet pile bulkhead with concrete cap. The cap is 2 feet wide. There is minor cracking on the cap. Moderate corrosion on the sheet pile. There is a road and historical building behind the structure.

Condition Rating
C Fair

Level of Action Description
Moderate
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating Action Description
V Immediate / Highest Priority
Consider For Immediate Action Due to Public Safety and Welfare Issues
Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Condition of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (>10 dwellings impacted / 100 feet of shoreline )

Structure Images: [053-008-000-139-100-PHO1A.JPG]

Structure Documents:

<table>
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<tr>
<th>USACE</th>
<th>August 1954</th>
<th>Proposed Bulkhead, Plans Accompanying</th>
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<tr>
<td>USACE</td>
<td>December 3</td>
<td>Proposed Timber, Plan Accompanying</td>
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<tr>
<td>MA-DKR</td>
<td>July 1954</td>
<td>Proposed Bulkhead, Plan Accompanying</td>
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<td>MA-DKR</td>
<td>September 1</td>
<td>Proposed Harbor, Plan Accompanying</td>
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<tr>
<td>DEP</td>
<td>October 19,</td>
<td>053-008-000-139-100-COE1A</td>
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<td>DEP</td>
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Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Oak Bluffs Harbor
Earliest Structure Record: Unknown

Date: 10/2/2007
Estimated Reconstruction/Repair Cost: $1,477,476.00

Length: 615 Feet NAVD 88
Top Elevation: 9 Feet NGVD
FIRM Map Zone: A10
FIRM Map Elevation: Unknown

Primary Type: Groin/ Jetty
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Dumped stone jetty at the entrance to Oak Bluffs Harbor. Stones range in size, but are on average 3 feet by 1.5 feet by 1.5 feet. Many smaller stones. There is an old concrete jetty visible but deteriorating in the middle of the structure.

Condition Rating
Level of Action Description
Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm. Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.

Priority Rating Action Description
II Low Priority Future Project Consideration Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
053-008-000-294-100-PHO1A.JPG
053-008-000-294-100-PHO1B.JPG
053-008-000-294-100-PHO1C.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
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<tr>
<td>Local</td>
<td>Circuit Avenue Extension</td>
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<table>
<thead>
<tr>
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<th>Earliest Structure Record:</th>
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<tr>
<td>Oak Bluffs</td>
<td>1970</td>
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<tbody>
<tr>
<td>600 Feet</td>
<td>Feet NAVD 88</td>
<td>A10</td>
<td>9 Feet NGVD</td>
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<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
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<tbody>
<tr>
<td>Bulkhead/ Seawall</td>
<td>Steel</td>
<td>Over 15 Feet</td>
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<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
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Structure Summary:
New construction steel bulkhead with concrete cap and timber fender piles. Behind the structure is a board walk, parking lot and houses.

<table>
<thead>
<tr>
<th>Condition Rating Level of Action Description</th>
<th>Priority Rating Action Description</th>
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</thead>
<tbody>
<tr>
<td>A Excellent None Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.</td>
<td>IV High Priority Consider for Next Project Construction Listing High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)</td>
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Structure Images:
053-008-000-296-100-PHO1A.JPG

Structure Documents:
| USACE | Proposed Bulkhead | 053-008-000-296-100-COE1A |
| USACE | Proposed Harbor | 053-008-000-296-100-COE1B |
| MA-DCR | Steel Sheet Piling | 053-008-000-296-100-DCR1A |
| DEP | Plans Accompanying | 053-008-000-296-100-LIC1A |

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Circuit Avenue Extension
Based On Comment:

Earliest Structure Record: 1970
Estimated Reconstruction/Repair Cost: $943,800.00

Date: 10/2/2007

Length: 550 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A10
FIRM Map Elevation: Feet NGVD

Primary Type: Bulkhead/ Seawall
Primary Material: Steel
Primary Height: Over 15 Feet

Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
Steel sheet pile bulkhead with concrete cap. The cap is 2 feet wide. There is minor cracking on the cap. There is moderate corrosion on the sheet pile.

Condition Rating
Level of Action Description Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating
Action Description IV
High Priority
Consider for Next Project Construction Listing
High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)

Structure Images:
053-008-000-296-200-PHO2A.jpg

Structure Documents:
| USACE | September 1 | Proposed Bulkhead | 053-008-000-296-200-COE2A |
| USACE | March 1970 | Proposed Harbor | 053-008-000-296-200-COE2B |
| MA-DCR | February 19 | Steel Sheet Piling | 053-008-000-296-200-DCR2A |
| DEP | November 3 | Plan Accompanying | 053-008-000-296-200-LIC2A |

Prepared By: Bourne Consulting Engineering
### CZM Coastal Infrastructure Inventory and Assessment

#### Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
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<tbody>
<tr>
<td>Local</td>
<td>Seaview Avenue</td>
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| Presumed Structure Owner: |
| Local |

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<td>1300</td>
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<td>v9</td>
<td>22 Feet NGVD</td>
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<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
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<tbody>
<tr>
<td>Bulkhead, Seawall</td>
<td>Concrete</td>
<td>5 to 10 Feet</td>
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<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
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</thead>
<tbody>
<tr>
<td>Revetment</td>
<td>Stone</td>
<td>Under 5 Feet</td>
</tr>
</tbody>
</table>

#### Structure Summary:

Cast in place seawall with recurved face. There are minor cracks. The riprap is 4 feet by 3 feet by 2 feet on average and is scattered with areas of section loss.

| Condition Rating Level of Action Description |
|---------------------------------------------|------------------------------------------|
| B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure. |

| Priority Rating Action Description |
|------------------------------------|--------------------------------------------------|
| V Immediate / Highest Priority Consider For Immediate Action Due to Public Safety and Welfare Issues Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Condition of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (~10 dwellings impacted / 100 feet of shoreline ) |

#### Structure Images:

053-009-000-036-100-PH01A.JPG

#### Structure Documents:

<table>
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<tr>
<th>Structure Documents:</th>
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<tr>
<td>MA-DCR May 1925 Proposed Concrete 053-009-000-036-100-DCR1A</td>
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<tr>
<td>MA-DCR March 1946 Proposed Riprap 053-009-000-036-100-DCR1B</td>
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<tr>
<td>MA-DCR January 1986 Proposed Shore 053-009-000-036-100-DCR1C</td>
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<tr>
<td>MA-DCR August 1987 Proposed Shore 053-009-000-036-100-DCR1D</td>
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Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Oak Bluffs

Location: Seaview Avenue

Date: 10/2/2007

Presumed Structure Owner: Oak Bluffs

Based On Comment: Unknown

Owner Name: 

Earliest Structure Record: Unknown

Estimated Reconstruction/Repair Cost: $111,078.00

Length: 450 Feet NAVD 88

FIRM Map Zone: V9

FIRM Map Elevation: 22 Feet NGVD

Primary Type: Revetment

Primary Material: Stone

Primary Height: Over 15 Feet

Secondary Type: 

Secondary Material: 

Secondary Height: 

Structure Summary:
Dumped stone riprap on coastal bank. The stones are approximately 3 feet by 2 feet by 2 feet in size. There is minor stone movement. Behind the structure is a road, building and steamship ferry.

Condition Rating
Level of Action Description
B Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
V Immediate / Highest Priority Consider For Immediate Action Due to Public Safety and Welfare Issues Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Condition of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (>10 dwellings impacted / 100 feet of shoreline)

Structure Images: 053-009-000-037-100-PHO1A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Seaview Avenue Extension
Based On Comment:
Earliest Structure Record: 1940

Length: 700 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V9
FIRM Map Elevation: 22 Feet NGVD

Primary Type: Bulkhead/Seawall
Primary Material: Concrete

Secondary Type: Revetment
Secondary Material: Stone

Primary Height: 5 to 10 Feet
Secondary Height: 5 to 10 Feet

Structure Summary:
Cast in place seawall with recurved wall. The toe of the wall and the top of the wall have dumped riprap. Stone size is 4 feet by 2 feet by 2 feet on average. Behind is a road and houses.

Condition Rating
Level of Action Description
B Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure/landform is adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.

Priority Rating Action Description
IV High Priority Consider for Next Project Construction Listing High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted/100 feet of shoreline)

Structure Images:
053-009-000-058-100-PHO1A.JPG

Structure Documents:
MA-DCR March 1940 Proposed Repairs to 053-009-000-058-100-DCR1A

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**  
**Structure Assessment Form**

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<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
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<tr>
<td>Local</td>
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<td>200 Feet</td>
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<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
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<tbody>
<tr>
<td>Bulkhead/Seawall</td>
<td>Concrete</td>
<td>10 to 15 Feet</td>
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<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
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</thead>
<tbody>
<tr>
<td>Revetment</td>
<td>Stone</td>
<td>10 to 15 Feet</td>
</tr>
</tbody>
</table>

**Structure Summary:**
New construction cast in place concrete seawall with recurved wall. At the toe of the wall is dumped stone ranging in size, but average size is 3 feet by 2 feet by 2 feet.

**Condition Rating: A**  
**Level of Action: None**  
**Description:** Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.

**Priority Rating: IV**  
**Action Description:** High Priority  
Consider for Next Project Construction Listing  
High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)

---

**Structure Images:**  
053-009-000-058-200-PH02A.JPG

**Structure Documents:**  
DEP May 21, 200 Plans Accompanying 053-009-000-058-200-LIC2A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner:
Local

Presumed Structure Owner:
Local

Owner Name:
Oak Bluffs

Location:
Oak Bluffs Harbor

Date:
10/2/2007

Earliest Structure Record:
1951

Estimated Reconstruction/Repair Cost:
$813,384.00

Length: 260 Feet
Top Elevation: 22 Feet NGVD
FIRM Map Zone: V9
FIRM Map Elevation: 22

Primary Type: Breakwater
Primary Material: Stone
Primary Height: 10 to 15 Feet

Secondary Type: 
Secondary Material: 
Secondary Height:

Structure Summary:
Breakwater at entrance of Oak Bluffs Harbor. The stones are dumped and average 10 feet by 3 feet by 3 feet in size. Mild stone movement and section loss.

Condition Rating Level of Action Description
D Poor Major Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm. Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.

Priority Rating Action Description
III Moderate Priority Consider for Active Project Improvement Listing Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (<1 dwelling impacted / 100 feet of shoreline)

Structure Images:
053-009-000-058-300-PHO3A.jpg

Structure Documents:
MA-DCR September 1 Proposed Harbor 053-009-000-058-300-DCR3A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Seaview Avenue

Date: 10/2/2007

Based On Comment: 

Earliest Structure Record: 1925

Estimated Reconstruction/Repair Cost: $2,074,116.00

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<td></td>
<td>Feet NGVD</td>
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FIRM Map Zone: V9
FIRM Map Elevation: 22

Primary Type: Bulkhead/ Seawall
Primary Material: Concrete
Primary Height: 5 to 10 Feet

Secondary Type: Revetment
Secondary Material: Stone
Secondary Height: Under 5 Feet

Structure Summary:
Cast in place seawall with dumped stone at the toe. The wall has moderate cracking and spalling and minor scour at the toe. The riprap is scattered and dumped. The stones are 3 feet by 2 feet by 1 foot on average. Behind the structures is a road and buildings.

Condition Rating Level of Action Description
C Fair Moderate Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating Action Description
V Immediate / Highest Priority Consider For Immediate Action Due to Public Safety and Welfare Issues Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Condition of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (>10 dwellings impacted / 100 feet of shoreline)

Structure Images: [053-010-000-001-100-PHO1A.JPG]

Structure Documents:

<table>
<thead>
<tr>
<th>Structure Documents</th>
<th>Date</th>
<th>Proposed Concrete</th>
<th>Proposed Riprap</th>
<th>Proposed Shore</th>
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<tbody>
<tr>
<td>MA-DCR</td>
<td>May 1925</td>
<td>053-010-000-001-100-DCR1A</td>
<td>053-010-000-001-100-DCR1B</td>
<td>053-010-000-001-100-DCR1E</td>
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<td>MA-DCR</td>
<td>May 1934</td>
<td>053-010-000-001-100-DCR1A</td>
<td>053-010-000-001-100-DCR1B</td>
<td>053-010-000-001-100-DCR1D</td>
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<td>MA-DCR</td>
<td>December 1</td>
<td>053-010-000-001-100-DCR1A</td>
<td>053-010-000-001-100-DCR1B</td>
<td>053-010-000-001-100-DCR1E</td>
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<td>MA-DCR</td>
<td>March 1946</td>
<td>053-010-000-001-100-DCR1A</td>
<td>053-010-000-001-100-DCR1B</td>
<td>053-010-000-001-100-DCR1D</td>
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<td>MA-DCR</td>
<td>January 196</td>
<td>053-010-000-001-100-DCR1A</td>
<td>053-010-000-001-100-DCR1B</td>
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<td>MA-DCR</td>
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<td>053-010-000-001-100-DCR1B</td>
<td>053-010-000-001-100-DCR1E</td>
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Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local

Presumed Structure Owner: Local

Owner Name: Oak Bluffs

Location: Seaview Avenue

Based On Comment:

Earliest Structure Record: Unknown

Estimated Reconstruction/Repair Cost: $105,600.00

Date: 10/2/2007

---

Length: 400 Feet NAVD 88

Top Elevation: 22 Feet NGVD

FIRM Map Zone: V9

FIRM Map Elevation: 22 Feet NGVD

---

Primary Type: Coastal Beach

Primary Material: Sand

Primary Height: Under 5 Feet

Secondary Type: Secondary Material:

Secondary Height:

Structure Summary:
Sandy beach which appears to have been recently nourished. The beach is uniformly graded.

Condition Rating: D

Level of Action Description: Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm. Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.

Priority Rating: III

Action Description: Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (<1 dwelling impacted / 100 feet of shoreline)

Structure Images:

[053-010-000-001-200-PHO2A.JPG]

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: 
Local

Presumed Structure Owner: 
Local

Owner Name: 
Oak Bluffs

Location: 
Seaview Avenue

Based On Comment: 

Earliest Structure Record: 
1937

Estimated Reconstruction/Repair Cost: 
$66,000.00

Town: Oak Bluffs
Structure ID: 053-010-000-001-300
Key: community-map-block-parcel-structure

Length: 500 Feet Top Elevation: 88 Feet NAVD 88 FIRM Map Zone: V9 FIRM Map Elevation: 22 Feet NGVD

Primary Type: Groin/ Jetty Primary Material: Stone Primary Height: Under 5 Feet
Secondary Type: Secondary Material: Secondary Height:

Structure Summary:
Placed stone groin with stones that are 3 feet by 2 feet by 1 foot on average. There is no visible scour. There is minor stone movement.

Condition Rating
B Good

Level of Action Description
Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-010-000-001-300-PHO3A.JPG

Structure Documents:
MA-DCR July 1937 Proposed Stone Jetty 053-010-000-001-300-DCR3A
MA-DCR March 1946 Proposed Riprap 053-010-000-001-300-DCR3B

Prepared By: Bourne Consulting Engineering
# CZM Coastal Infrastructure Inventory and Assessment

## Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Seaview Avenue</td>
<td>10/2/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
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<tbody>
<tr>
<td>Local</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak Bluffs</td>
<td>Unknown</td>
<td>$0.00</td>
</tr>
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<table>
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<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
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</thead>
<tbody>
<tr>
<td>300 Feet</td>
<td>Feet NAVD 88</td>
<td>V9</td>
<td>22 Feet NGVD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revetment</td>
<td>Stone</td>
<td>5 to 10 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
</tr>
</thead>
</table>

### Structure Summary:
Placed stone revetment with 1 on 1 slope on inshore and outshore. The crest is one stone width wide. The stones are 4 feet by 3 feet by 2 feet on average.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>None</td>
<td>Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.</td>
</tr>
</tbody>
</table>

### Structure Images:
- 053-010-000-135-100-PH01A.JPG

### Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Seaview Avenue
Based On Comment:

Earliest Structure Record: 1925
Estimated Reconstruction/Repair Cost: $210,672.00

Date: 10/1/2007

Length: 1400 Feet
Top Elevation: 1400 Feet NAVD 88
FIRM Map Zone: V9
FIRM Map Elevation: 22 Feet NGVD

Primary Type: Bulkhead/Seawall
Primary Material: Concrete
Primary Height: Under 5 Feet

Secondary Type: Revetment
Secondary Material: Stone
Secondary Height: Under 5 Feet

Structure Summary:
Placed stone riprap with stones that are 3 feet by 2 feet by 2 feet on average. The crest is one stone wide. The concrete wall is 4 feet high by 2 feet wide. Road and houses are behind the structures. The wall has a sloped face of 1 on 0.5.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
IV High Priority Consider for Next Project Construction Listing High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)

Structure Images:
053-010-000-135-200-PHO2A.JPG
053-010-000-135-200-PHO2B.JPG

Structure Documents:
MA-DCR May 1925 Proposed Concrete 053-010-000-135-200-DCR2A
MA-DCR February 19 Proposed Shore 053-010-000-135-200-DCR2B
MA-DCR March 1946 Proposed Riprap 053-010-000-135-200-DCR2C
MA-DCR January 196 Proposed Shore 053-010-000-135-200-DCR2D
MA-DCR August 1987 Proposed Shore 053-010-000-135-200-DCR2E
DEP August 20, 1 Plan Accompanying 053-010-000-135-200-LIC2A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Seaview Avenue
Based On Comment:

Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $16,500.00

Date: 10/2/2007

Length: 125 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V9
FIRM Map Elevation: 22 Feet NGVD

Primary Type: Groin/Jetty
Primary Material: Stone
Primary Height: Under 5 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Dumped stone groin. There is moderate stone movement. The groins extend past mean low water. There is no visible scour.

Condition Rating
B Good

Level of Action Description
Minor
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
1 None
Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-010-000-135-300-PH03A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner:
Local

Presumed Structure Owner:
Local

Owner Name:
Oak Bluffs

Location:
Seaview Avenue

Date:
10/2/2007

Based On Comment:

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost:
$26,400.00

Length: 200 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: V9

FIRM Map Elevation: 22 Feet NGVD

Primary Type: Groin/ Jetty

Primary Material: Stone

Primary Height: Under 5 Feet

Secondary Type: 

Secondary Material: 

Secondary Height: 

Structure Summary:
Dumped stone groin. There is moderate stone movement. The groins extend past mean low water. There is no visible scour.

Condition Rating
B

Priority Rating
I

Level of Action
Minor

Action Description
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Description

Structure Images:
053-010-000-135-400-PHO4A.jpg

Structure Documents:

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Joseph Sylvia State Beach</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Date:</th>
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<tbody>
<tr>
<td>State</td>
<td>10/2/2007</td>
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</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Based On Comment:</th>
</tr>
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<tbody>
<tr>
<td>MA-DCR</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<tbody>
<tr>
<td>1954</td>
<td>$1,391,280.00</td>
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<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
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<tbody>
<tr>
<td>6200 Feet</td>
<td>Feet NAVD 88</td>
<td>V14</td>
<td>14 Feet NGVD</td>
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</tbody>
</table>

Primary Type: **Coastal Beach**
Primary Material: **Sand**
Primary Height: **10 to 15 Feet**

Structure Summary:
Sandy beach with dunes behind. The beach is uniformly graded and filled. The slope is approximately 1 on 20.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Level of Action Description</th>
<th>Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good</td>
<td>None</td>
<td>Minor</td>
<td>Long Term Planning Considerations</td>
</tr>
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</table>

Structure Images:
- 053-032-000-001-100-PH01A.JPEG

Structure Documents:
- USACE: March 1954, Proposed Stone: 053-032-000-001-100-COE1A
- DEP: October 9, Plans Accompanying: 053-032-000-001-100-LIC1A

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Joseph Sylvia State Park</td>
<td>10/2/2007</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<tbody>
<tr>
<td>Oak Bluffs</td>
<td>1977</td>
<td>$390,325.00</td>
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<tbody>
<tr>
<td>325 Feet</td>
<td>Feet NAVD 88</td>
<td>V14</td>
<td>14 Feet NGVD</td>
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</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groin/ Jetty</td>
<td>Stone</td>
<td>5 to 10 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Structure Summary:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set of four dumped stone groins. The stones are 3 feet by 2 feet by 2 feet on average. Minor to mild stone movement. There is minor scour. The groin extends out to mean low water.</td>
</tr>
</tbody>
</table>

### Condition Rating
- **Condition**: C
- **Rating**: Fair
- **Level of Action**: Moderate

**Description**: Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life.

### Priority Rating
- **Priority**: I
- **Rating**: None

**Action Description**: Long Term Planning Considerations
- No Inshore Structures or Residential Dwelling Units Present

### Structure Images:
- [053-032-000-001-200-PHO2A.JPG](#)

### Structure Documents:
- [MA-DCR](#)
- [June 1977](#)
- [Proposed Harbor](#)
- [053-032-000-001-200-DCR2A](#)

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: State
Owner Name: Oak Bluffs
Location: Joseph Sylvia State Park
Based On Comment: 
Earliest Structure Record: 1977
Estimated Reconstruction/Repair Cost: $0.00

<table>
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<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Feet</td>
<td>Feet NAVD 88</td>
<td>V14 Feet</td>
<td>14 Feet NGVD</td>
</tr>
</tbody>
</table>

Primary Type: Groin/Jetty
Primary Material: Wood
Primary Height: Under 5 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
The set of timber groins appear to be newly constructed. There is no visible scour. The groins extend out to mean low water.

Condition Rating Level of Action Description
A Excellent None Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.

<table>
<thead>
<tr>
<th>Priority Rating Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present</td>
</tr>
</tbody>
</table>

Structure Images:
053-032-000-001-300-PHO3A.JPG
053-032-000-001-300-PHO3B.JPG

Structure Documents:
MA-DCR June 1977 Proposed Harbor

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner:
State

Presumed Structure Owner:
State

Owner Name:
MA-DCR

Location:
Edgartown-Oak Bluffs Road

Date:
10/2/2007

Based On Comment:

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost:
$96,096.00

Length:
800 Feet

Top Elevation:
FEET NAVD 88

FIRM Map Zone:
V14

FIRM Map Elevation:
14 Feet NGVD

Primary Type:
Revetment

Primary Material:
Stone

Primary Height:
5 to 10 Feet

Secondary Type:

Secondary Material:

Secondary Height:

Structure Summary:
Placed stone revetment with stones 3 feet by 2 feet by 2 feet on average. The crest is one stone width wide. There is no visible stone movement or scour. Protects the shoreline of the inlet to Sengekontacket Pond.

Condition Rating
B Good

Level of Action Description
Minor

Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None

Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-032-000-001-400-PHO4A.JPG
053-032-000-001-400-PHO4B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner:
State

Presumed Structure Owner:

Owner Name:
MA-DCR

Location:
Inlet to Sengekontacket Pond

Based On Comment:

Earliest Structure Record:
1938

Estimated Reconstruction/Repair Cost:
$39,039.00

Length: 325 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V14
FIRM Map Elevation: Feet NGVD 14

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
Placed stone revetment with stones averaging 3 feet by 2 feet by 2 feet in size. The crest is one stone wide. There is no visible stone movement or scour. Protects shoreline of inlet to Sengekontacket Pond.

Condition Rating
B

Level of Action Description
Minor
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating
I

Action Description
None
Long Term Planning Considerations

No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-032-000-001-500-PHOSA.jpg
053-032-000-001-500-PHOSB.jpg

Structure Documents:
MA-DCR
October 193
Proposed Riprap
053-032-000-001-500-DCR5A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Beach Road Bridge
Based On Comment:

Earliest Structure Record: 1961
Estimated Reconstruction/Repair Cost: $60,060.00

Length: 500 Feet
Top Elevation: NAVD 88 Feet
FIRM Map Zone: A12
FIRM Map Elevation: 10 Feet NGVD

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Placed stone revetment with stones 3 feet by 2 feet by 2 feet on average set at a 1 on 2 slope. Behind is a small parking area. Above is a bridge for the inlet to the Sengekontacket Pond.

Condition Rating
B
Good
Minor

Description
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landfill is present. Structure / landfill adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating
I
None

Level of Action Action Description
Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
053-032-000-002-100-PHO1A.JPG

Structure Documents:
<table>
<thead>
<tr>
<th>Structure Documents</th>
<th>Date</th>
<th>Action</th>
<th>ID</th>
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<tbody>
<tr>
<td>USACE</td>
<td>April 1961</td>
<td>Proposed Excavation</td>
<td>053-032-000-002-100-COE1A</td>
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<tr>
<td>USACE</td>
<td>April 1961</td>
<td>Proposed Excavation</td>
<td>053-032-000-002-100-COE1B</td>
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<tr>
<td>MA-DCR</td>
<td>October 193</td>
<td>Proposed Excavation</td>
<td>053-032-000-002-100-DCR1A</td>
</tr>
</tbody>
</table>

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Oak Bluffs

Location: Beach Road Bridge
Based On Comment:

Earliest Structure Record: 1961
Estimated Reconstruction/Repair Cost: $30,030.00

Length: 250 Feet
Top Elevation: 10 Feet NGVD
FIRM Map Zone: A12
FIRM Map Elevation: 10

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Placed stone revetment with stones that are approximately 3 feet by 2 feet by 2 feet in size. The stones are set at a 1 on 2 slope. Above the revetment is the bridge for the inlet to the Sengekontacket Pond.

Condition Rating
Level of Action Description
B Good Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landmark is present. Structure/landform is adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.

Priority Rating Action Description
I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images:
[053-032-000-002-200-PHO2A.JPG]

Structure Documents:

<table>
<thead>
<tr>
<th>Agency</th>
<th>Date</th>
<th>Action</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>USACE</td>
<td>April 1961</td>
<td>Proposed Excavation</td>
<td>053-032-000-002-200-COE2A</td>
</tr>
<tr>
<td>USACE</td>
<td>April 1961</td>
<td>Proposed Excavation</td>
<td>063-032-000-002-200-COE2B</td>
</tr>
<tr>
<td>MA-DCR</td>
<td>October 193</td>
<td>Proposed Excavation</td>
<td>053-032-000-002-200-DCR2A</td>
</tr>
</tbody>
</table>

Prepared By: Bourne Consulting Engineering
Section IV - Oak Bluffs

Part C

Structure Photographs
Section IV - Oak Bluffs

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST

- Copies of License Documents

USACE – PERMIT DOCUMENT LIST

- Copies of Permit Documents
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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</table>

No Town Documents for the Town of Oak Bluffs.xls
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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<tbody>
<tr>
<td>053-008-000-139-100</td>
<td>053-008-000-139-100-CDR1A</td>
<td>1416</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>July 1954</td>
<td>Proposed Bulkhead and Dredging - Oak Bluffs Harbor - Oak Bluffs, MA - DPHW of MA Division of Waterways</td>
<td>4</td>
<td>Lake Avenue</td>
<td>Bulkhead</td>
</tr>
<tr>
<td>053-008-000-138-100</td>
<td>053-008-000-138-100-CDR1B</td>
<td>1645</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>September 1958</td>
<td>Proposed Harbor Improvements - Timber Bulkhead and Excavation Oak Bluffs Harbor - Oak Bluffs - DPHW of MA Division of Waterways</td>
<td>5</td>
<td>Lake Avenue</td>
<td>Bulkhead</td>
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<tr>
<td>053-008-000-296-100</td>
<td>053-008-000-296-100-CDR1A</td>
<td>2692</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>February 1970</td>
<td>Steel Sheet Pile Bulkhead - DPHW of MA Division of Waterways</td>
<td>8</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
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<tr>
<td>053-008-000-296-200</td>
<td>053-008-000-296-200-CDR2A</td>
<td>2692</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>February 1970</td>
<td>Steel Sheet Pile Bulkhead - DPHW of MA Division of Waterways</td>
<td>8</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
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<tr>
<td>053-008-000-035-100</td>
<td>053-008-000-035-100-CDR1A</td>
<td>116</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>May 1925</td>
<td>Proposed Concrete Seawall and Timber Jetties - Oak Bluffs - Mattapoisett Island</td>
<td>1</td>
<td>Seaview Avenue</td>
<td>Concrete Seawall</td>
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<td>053-008-000-035-100</td>
<td>053-008-000-035-100-CDR1B</td>
<td>882</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>March 1946</td>
<td>Proposed Riprap Shore Protection - Seaview Avenue - Oak Bluffs - DPHW of MA Division of Waterways</td>
<td>1</td>
<td>Seaview Avenue</td>
<td>Riprap</td>
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<tr>
<td>053-008-000-035-100</td>
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<td>2494</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>January 1946</td>
<td>Proposed Shore Protection - Concrete Seawall and Rock Fill - Seaview Avenue - Oak Bluffs - DPHW of MA Division of Waterways</td>
<td>1</td>
<td>Seaview Avenue</td>
<td>Concrete Seawall and Rock Fill</td>
</tr>
<tr>
<td>053-008-000-035-100</td>
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<td>3131</td>
<td>MA-OCR</td>
<td>Oak Bluffs</td>
<td>August 1967</td>
<td>Proposed Shore Protection - Nanucket Sound - Oak Bluffs - DPHW of MA Division of Waterways</td>
<td>2</td>
<td>Seaview Avenue</td>
<td>Seawall and Stone Mound</td>
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<tr>
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<td>March 1947</td>
<td>Proposed Repair to Concrete Seawall at Oak Bluffs - North of Steamboat Wharf - DPHW of MA Division of Waterways</td>
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<td>September 1951</td>
<td>Proposed Harbor Improvements - Oak Bluffs - Oak Bluffs Bulkhead and Timber Platform - DPHW of MA Division of Waterways</td>
<td>5</td>
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<td>116</td>
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<td>May 1925</td>
<td>Proposed Concrete Seawall and Timber Jetties - Oak Bluffs - Mattapoisett Island</td>
<td>1</td>
<td>Seaview Avenue</td>
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<td>May 1934</td>
<td>Proposed Concrete Seawall - Oak Bluffs - Mattapoisett Island</td>
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<td>December 1945</td>
<td>Proposed Riprap Protection for Seawalls - Oak Bluffs - DPHW of MA Division of Waterways</td>
<td>1</td>
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<td>Proposed Concrete Seawall and Timber Jetties - Oak Bluffs - Mattapoisett Island</td>
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<td>February 1938</td>
<td>Proposed Shore Protection - Oak Bluffs Shore South of Town Wharf - DPHW of MA Division of Waterways</td>
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<td>Proposed Harbor Improvements - Jetty Extension and Maintenance Dredging - Songkrotuktuk Pond and Nanucket Sound - Sagamore and Oak Bluffs - DPHW of MA Division of Waterways</td>
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<td>Joseph Silva Beach Road</td>
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<td>Oak Bluffs</td>
<td>Edgartown Road</td>
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- **Riprap**
- **Riprap and Jettis**
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<th>Contract Drawing Number</th>
<th>Entity</th>
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<td>DEP</td>
<td>Oak Bluffs</td>
<td>October 19, 1984</td>
<td>Plans Accompanying Petition of Town of Oak Bluffs to Construct and Maintain Fill, Steel Sheet Pile Bulkhead, Timber Mooring Piles and Extension of Existing Storm Drainage Outfall within Oak Bluffs harbor Along Lake Avenue</td>
<td>1</td>
<td>Lake Avenue</td>
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<td>053-008-000-139-100</td>
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<td>1326</td>
<td>DEP</td>
<td>Oak Bluffs</td>
<td>N/A</td>
<td>Plans Accompanying Petition of Town of Oak Bluffs, MA - To Construct and Maintain Steel Sheetpile Bulkhead Replacement, Timber Mooring Piles, Fill and Extension of Existing Storm Drainage Outfall Within Oak Bluffs Harbor Along Lake Avenue</td>
<td>1</td>
<td>Lake Avenue</td>
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<td>Oak Bluffs</td>
<td>October 19, 1984</td>
<td>Plans Accompanying Petition of Town of Oak Bluffs, MA to Construct and Maintain Fill, Steel Sheet Pile Bulkhead Timber Mooring Piles and Extension of Existing Storm Drainage Outfall Within Oak Bluffs Harbor Along Lake Ave.</td>
<td>1</td>
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<td>11757</td>
<td>DEP</td>
<td>Oak Bluffs</td>
<td>May 21, 2007</td>
<td>Plans Accompanying Petition of Town of Oak Bluffs For Bulkhead Expansion at Town Landing, Oak Bluffs, MA In Oak Bluffs Harbor</td>
<td>4</td>
<td>Lake Anthony</td>
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<td>3049</td>
<td>DEP</td>
<td>Oak Bluffs</td>
<td>November 30, 1993</td>
<td>Plans Accompanying Petition of Town of Oak Bluffs, MA - Wharf Replacement with Bulkhead and Fill Oak Bluffs Harbor, Oak Bluffs, MA</td>
<td>4</td>
<td>Circuit Avenue</td>
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<td>DEP</td>
<td>Oak Bluffs</td>
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<td>Plans Accompanying Petition of Town of Oak Bluffs for Bulkhead Expansion at Own Landing, Oak Bluffs, MA in Oak Bluffs Little Harbor</td>
<td>4</td>
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<td>1563</td>
<td>DEP</td>
<td>Oak Bluffs</td>
<td>August 20, 1997</td>
<td>Plans Accompanying Petition of Department of Environmental Management Division of Waterways to Construct a Stone Mound and Maintain Existing Seawalls and Revetment in Nantucket Sound</td>
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<td>Nantucket Sound</td>
<td>Seawalls and Revetment</td>
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<td>October 9, 1996</td>
<td>Plans Accompanying Petition of the MHD for Waterways License</td>
<td>8</td>
<td>Beach Road Inlets</td>
<td>Beach Renourishment</td>
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</tbody>
</table>
ADJACENT PROPERTY OWNERS

1. TOWN OF OAK BLUFFS
2. DOUGLAS ABDENOUR
   BOX 58, OAK BLUFFS, MA 02557
3. TOWN OF OAK BLUFFS
4. ARTHUR BEN DAVID
   BOX 1507, OAK BLUFFS, MA 02557
5. CHARLES L. BARDELIS
   26 ISLAND COMMUTER CORP.
   DILLINGHAM AVE., FALMOUTH, MA 02540
6. KENNETH A. ROSE
   BOX 1147, OAK BLUFFS, MA 02557
7. VALMORE E. & LORRAINE B. BERGERON
   BOX 1386, OAK BLUFFS, MA 02557
8. TOWN OF OAK BLUFFS

NOTES:
1. ELEVATIONS REFER TO MEAN LOW WATER (MLW) DATUM
2. APPROXIMATELY 400 CY. YDS. OF COMPACTED FILL & 50 CY. YDS. OF CRUSHED STONE FOR BEHIND THE PROPOSED BULKHEAD WILL BE TRUCKED ONTO THE SITE.

LICENSE PLAN NO. 1152

Approved by Department of Environmental Quality Engineering
of Massachusetts October 19, 1984

John J. O'Shea
Chief Engineer
Division Director
ADJACENT PROPERTY OWNERS
1. TOWN OF OAK BLUFFS
2. DOUGLAS ABDELNOUR
   BOX 56, OAK BLUFFS, MA 02557
3. TOWN OF OAK BLUFFS
4. ARTHUR BEN DAVID
   BOX 1397, OAK BLUFFS, MA 02557
5. CHARLES L. BARDELLIS
   C/O ISLAND COMMUTER CORP.
   DILLINGHAM AVE., FALMOUTH, MA 02540
6. KENNETH A. ROSE
   BOX 1747, OAK BLUFFS, MA 02557
7. VALMORE E. & LORRAINE B. BERGERON
   BOX 1386, OAK BLUFFS, MA 02557
8. TOWN OF OAK BLUFFS

NOTES:
1. ELEVATIONS REFER TO MEAN LOW WATER (MLW) DATUM
2. APPROXIMATELY 400 CUBIC YDS. OF COMPACTED FILL & 800 CYLDS. OF
   CRUSHED STONE FOR BEHIND THE PROPOSED BULKHEAD WILL BE
   TRUCKED ONTO THE SITE.

PLAN ACCOMPANYING PETITION OF TOWN OF OAK BLUFFS, MA.

TO CONSTRUCT AND MAINTAIN FILL, STEEL SHEET PILE
BULKHEAD, TIMBER MOORING PILES & EXTENSION OF
EXISTING STORM DRAINAGE OUTFALLS WITHIN OAK BLUFFS
HARBOR ALONG LAKE AVE.
LOCUS PLAN

SCALE: 1" = 2000'

PROPOSED BULKHEAD EXPANSION (SEE SHEET 3)

HARBORMASTER'S OFFICE
MLW AND MHW AT BULKHEAD
COASTAL BANK (BULKHEAD)

EXISTING BULKHEAD

TOWN LANDING

COASTAL BEACH

VINEYARD SOUND (ATLANTIC OCEAN)

100-YR FLOOD +21.0
HTL +2.2
MHW +1.7
MLW 0.0
NGVD -0.95

SITE PLAN
SHEET 1 OF 4

LICENSE PLAN NO. 11757
Approved by Department of Environmental Protection of Massachusetts MAY 21 2007

LANS ACCOMPANYING PETITION OF TOWN OF OAK BLUFFS FOR BULKHEAD EXPANSION AT OWN LANDING, OAK BLUFFS, MA IN OAK BLUFFS HARBOR (a.k.a. LAKE ANTHONY). PREPARED BY BOURNE CONSULTING ENGINEERING, FRANKLIN, MA.
PROPOSED CONCRETE CAP AND STEEL BULKHEAD

PROPOSED BULKHEAD EXPANSION LAND UNDER THE OCEAN ALTERED = .950 S.F. (GRADE TO MEET EXISTING EL. +6±)

STA 5+80

EXTEND EXISTING 24" RCP OUTFALL THROUGH PROPOSED BULKHEAD.
INSTALL ENVIRONMENTAL HOODS IN CATCHBASINS.

RELOCATE EXISTING STONES TO FACE OF PROPOSED BULKHEAD. MATCH EXISTING JETTY SLOPES.

LICENSE PLAN NO. 11757
Approved by Department of Environmental Protection
MAY 21 2007
SCALE: 1" = 20'-0"

NOTES:
1. SEE NOTES ON SHEET 4.
TOP OF CAP
EL: +7.0

TIE ROD
EL: +2.0
MLW EL: 0.0

EXISTING MUDLINE
EL: -8' TO -3

INSTALL SHEETING
TIP EL: -23.0

NOTE:
1. TOPOGRAPHIC DATA SHOWN HEREON FOR THE TOWN LANDING ON COLLECTED ON APRIL 26, 2006. BY BOURNE CONSULTING ENGINE AND CAN ONLY REFLECT CONDITIONS AS THEY EXISTED DURING 1 OF THE SURVEY.

2. EXISTING CONDITIONS BASED UPON A FEBRUARY 25, 2000 PLAN SOURCI ENGINEERING GROUP ENTITLED "EXISTING CONDITIONS AN DREDGING INDEX SITE PLAN FOR OAK BLUFFS HARBOR".

3. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEA WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT PLANE.

STEEL BULKHEAD EXPANSION
SECTION FROM STA 5+36 TO 6+33

SCALE: 1/8" = 1'-0"
EXISTING TYPICAL SECTION

NOTES:
1. ELEVATIONS REFER TO MEAN LOW WATER (MLW) DATUM.
2. APPROXIMATELY 2000 CU. YDS. OF COMPACTED CRUSHED STONE FILL & 800 CU. YDS. COMPACTED GRAVEL FILL WILL BE PLACED BEHIND THE PROPOSED STEEL SHEETPILE BULKHEAD.
3. STEEL SHEETPILES TO BE EPOXY COATED.
4. MEAN HIGH WATER LEVEL (MHW) TO EXTREME LOW WATER (ELW) LEVEL ALONG VERTICAL FACE OF EXISTING 4" TIMBER SHEETING.
5. HISTORIC MEAN LOW WATER SHOWN BASED ON A SURVEY BY SCHOFIELD BARBARI & HOEHN, INC. IN JANUARY, 1993.
6. HISTORIC MEAN HIGH WATER INFORMATION NOT AVAILABLE.
7. FLOODPLAIN BOUNDARIES BEYOND PROJECT AREA

LICENSE PLAN NO. 3549
Approved by Department of Environmental Protection
Date: NOV 30 1993

MAY, 1993
ABUTTERS:

MAP 8 PARCEL 293 — APPLICANT PROPERTY

MAP 8 PARCEL 294 — APPLICANT

MAP 8 PARCEL 296 — APPLICANT

MAP 8 PARCEL 288
TERRENCE P. MCCARTHY
PO BOX 1511
OAK BLUFFS, MA 02557

LANS ACCOMPANYING PETITION OF TOWN OF OAK BLUFFS FOR BULKHEAD EXPANSION AT TOWN LANDING, OAK BLUFFS, MA IN OAK BLUFFS HARBOR (a.k.a. LAKE ANTHONY).

PREPARED BY: BOURNE CONSULTING ENGINEERING, FRANKLIN, MA.

LICENSE PLAN NO. 11757
Approved by Department of Environmental Protection of Massachusetts MAY 21 2007

MITCH FIERCONE
PROPOSED CONCRETE CAP AND STEEL BULKHEAD

PROPOSED BULKHEAD EXPANSION LAND UNDER THE OCEAN ALTERED = 950 S.F.
(GRADE TO MEET EXISTING EL. +6±)

STA 5+80

EXTEND EXISTING 24" RCP OUTFALL THROUGH PROPOSED BULKHEAD.
INSTALL ENVIRONMENTAL HOODS IN CATCHBASINS.

RELOCATE EXISTING STONES TO FACE OF PROPOSED BULKHEAD. MATCH EXISTING JETTY SLOPES.

EXISTING BULKHEAD
EXISTING GRADE EL. +6±

PROPOSED CONCRETE DEADMAN AND TIE RODS

LIMIT OF EXCAVATION

EXISTING CONCRETE RETAINING WALL

LICENSE PLAN NO. H757
Approved by Department of Environmental Protection
Date: MAY 21, 2007

SCALE: 1" = 20'-0"

NOTES:
1. SEE NOTES ON SHEET 4.

PROPOSED BULKHEAD EXPANSION
SHEET 3 OF 4
STEEL BULKHEAD EXPANSION
SECTION FROM STA 5+36 TO 6+33

1. TOPOGRAPHIC DATA SHOWN HEREIN FOR THE TOWN LANDING ON COLLECTED ON APRIL 26, 2006 BY BOURNE CONSULTING ENGINEER AND CAN ONLY REFLECT CONDITIONS AS THEY EXISTED DURING 1 OF THE SURVEY.

2. EXISTING CONDITIONS BASED UPON A FEBRUARY 25, 2000 PLAN SQUATRI ENGINEERING GROUP ENTITLED "EXISTING CONDITIONS AN DREDGING INDEX SITE PLAN FOR OAK BLUFFS HARBOR".

3. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEA WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT PLANE.
LEGEND:

- U.P.C 7/4 Existing utility pole with guy wire and street light
- E Existing overhead utility line

NOTES:
Elevations are in feet and tenths and refer to the plane of mean low water.

Existing stone rip-rap, baseline STA. 3+50 to 17+50 to be supplemented with new stone and stone removed between baseline STA. 0+80 to 3+50.

Proposed work limit baseline STA. 0+50 to 17+50.

No licenses exist for any existing structures within the proposed work limit.

Butters:
North Woods Hole, Martha's Vineyard Steamship Auth.
P.O. Box 284
Woods Hole, MA 02543

South Commonwealth of Mass.
Dept. of Conservation
100 Nashua Street
Boston, MA 02114

A TRUE COPY—ATTTEST

[Signature]

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
Commonwealth of Massachusetts

86W-208

PLAN ACCOMPANYING PETITION OF DEPARTMENT OF ENVIRONMENTAL MANAGEMENT DIVISION OF WATERWAYS TO CONSTRUCT A STONE MOUND & MAINTAIN EXISTING SEAWALL & REVETMENT IN NANTUCKET SOUND OAK BLUFFS, MASS.

[Date]

DRAKAN ENGINEERING COMPANY
CIVIL ENGINEERS & SURVEYORS

LICENSE PLAN NO. 1663
Approved by Department of Environmental Quality Engineering of Massachusetts

COMMISSIONER
DIVISION DIRECTOR
SECTION CHIEF

[Signature]
SECTION "A-A"
SURVEY & STA. 3.50 TO G+00
SCALE: 1/4" = 1'-0"

SECTION "B-B"
SURVEY & STA. G+00 TO 12+04
SCALE: 1/4" = 1'-0"

NOTE:
195 CY of ARMOR STONE & 77 CY of CRUSHED STONE TO BE PLACED SEAWARD OF MEAN HIGH WATER.

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

CIVIL

CENSE PLAN NO. 1663

86W-208
ELEVATION
(TYPICAL FOR ALL PROPOSED GROINS)
SCALE 1" = 30'

NOTE: 1. ALL WOOD MATERIAL SHALL BE SOUTHERN PINE GRADE #1 DENSE OR EQUAL, PRESSURE TREATED.

2. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE AASHTO M164 (ASTM A325) HIGH STRENGTH (ALL MATERIAL SHALL BE GALVANIZED).

3. MEAN HIGH WATER (MHW) = EL. 1.7
   MEAN LOW WATER (MLW) = EL. 0.0

Plans Accompanying Petition of the Massachusetts Highway Department for Waterways License

Sheet 2 of 8
August 1996
Plans Accompanying Petition of the Massachusetts Highway Department for Waterways License
Scale 1" = 100'
Sheet 3 of 8  August 1996

LICENSE PLAN NO. 6006
Approved by Department of Environmental Protection
Date: OCT 09 1996
Plans Accompanying Petition of the Massachusetts Highway Department for
Waterways License
Scale 1" = 100'
Sheet 4 of 8
August 1996
PROPOSED BORROW AREA #1
1,000 C.Y. AVAILABLE TO ELEVATION -5.0
AREA = 720,000 S.F.

HOR. SCALE IN FEET
0  200  500

Plans Accompanying Petition of the Massachusetts Highway Department for Waterways License

Sheet 7 of 8  August 1996

LICENSE PLAN NO. 6006
Approved by Department of Environmental Protection
Date: OCT ° 1996
PROPOSED BORROW AREA #2
2,500 C.Y. AVAILABLE TO ELEV. -3.0
AREA = 147,814 S.F.

SENKONTACKET POND

PROPOSED BORROW AREA #2
1000 C.Y. AVAILABLE IN CHANNEL
(EAST OF ROAD TO ELEVATION -6.0
AREA = (300' X 40') = 12,000 S.F.

TOTAL BORROW MATERIAL IN AREA NO. 2 = 3,500 CY. ±
TOTAL BORROW AREA = 159,814 S.F.

HOR. SCALE IN FEET

Plants: Accompanying Petition of the Massachusetts Highway Department

LICENSE PLAN NO. 6086

Approved by Department of Environmental Protection

OCT 09 1996
<table>
<thead>
<tr>
<th>SCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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<tbody>
<tr>
<td>053-008-000-139-100</td>
<td>053-008-000-139-100-CDE1A</td>
<td>54-217</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>August 1954</td>
<td>Proposed Bulkhead, Dredging and Timber Platform Extension - Oak Bluffs Harbor - Oak Bluffs, MA</td>
<td>2</td>
<td>Lake Avenue</td>
<td>Timber Bulkhead</td>
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<td>053-008-000-139-100</td>
<td>053-008-000-139-100-CDE1B</td>
<td>58-21</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>December 1957</td>
<td>Proposed Timber Bulkhead and Dredging - Oak Bluffs Harbor - Oak Bluffs, MA</td>
<td>2</td>
<td>Lake Avenue</td>
<td>Bulkhead</td>
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<td>053-008-000-139-100</td>
<td>053-008-000-139-100-COE1C</td>
<td>85-2</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>December 31, 1961</td>
<td>Proposed Bulkhead Replacement in Oak Bluffs Harbor and Culvert Replacement in Sunset Lake</td>
<td>1</td>
<td>Lake Avenue</td>
<td>Bulkhead</td>
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<td>053-008-000-256-100</td>
<td>053-008-000-256-100-CDE1A</td>
<td>02895</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>September 1951</td>
<td>Proposed Bulkhead and Dredging - Oak Bluffs Harbor - Oak Bluffs, MA</td>
<td>2</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
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<tr>
<td>053-008-000-256-100</td>
<td>053-008-000-256-100-CDE1B</td>
<td>04811</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>March 1970</td>
<td>Proposed Harbor Improvements - Dredging and Steel Sheet Piling Bulkhead - Oak Bluffs Harbor, Oak Bluffs, MA</td>
<td>1</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
</tr>
<tr>
<td>053-008-000-256-200</td>
<td>053-008-000-256-200-CDE2A</td>
<td>02895</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>September 1951</td>
<td>Proposed Bulkhead and Dredging - Oak Bluffs Harbor - Oak Bluffs, MA</td>
<td>2</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
</tr>
<tr>
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<td>Oak Bluffs</td>
<td>March 1970</td>
<td>Proposed Harbor Improvements - Dredging and Steel Sheet Piling Bulkhead - Oak Bluffs Harbor, Oak Bluffs, MA</td>
<td>1</td>
<td>Circuit Avenue</td>
<td>Bulkhead</td>
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<tr>
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<td>053-032-000-001-100-CDE1A</td>
<td>54-86</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>March 1954</td>
<td>Proposed Stone Groins - Nantucket Sound Vicinity of Sergekontacket Pond - Oak Bluffs, MA</td>
<td>1</td>
<td>Nantucket Sound - Sergekontacket Pond</td>
<td>Groins</td>
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<tr>
<td>053-032-000-002-100</td>
<td>053-032-000-002-100-CDE1A</td>
<td>61-249</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>April 1961</td>
<td>Proposed Excavation and Jetties - South Inlet - Sergekontacket Pond - Edgartown and Oak Bluffs, MA</td>
<td>2</td>
<td>Beach Road Bridge</td>
<td>Jetties</td>
</tr>
<tr>
<td>053-032-000-002-100</td>
<td>053-032-000-002-100-CDE1B</td>
<td>61-259</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>April 1961</td>
<td>Proposed Excavation and Jetties - North Inlet - Sergekontacket Pond - Oak Bluffs, MA</td>
<td>1</td>
<td>Beach Road Bridge</td>
<td>Jetties</td>
</tr>
<tr>
<td>063-032-000-002-200</td>
<td>063-032-000-002-200-CDE2A</td>
<td>61-249</td>
<td>USACE</td>
<td>Oak Bluffs</td>
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<tr>
<td>063-032-000-002-200</td>
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<td>61-259</td>
<td>USACE</td>
<td>Oak Bluffs</td>
<td>April 1961</td>
<td>Proposed Excavation and Jetties - North Inlet - Sergekontacket Pond - Oak Bluffs, Massachusetts</td>
<td>1</td>
<td>Beach Road Bridge</td>
<td>Jetties</td>
</tr>
</tbody>
</table>
**NOTE**

All dimensions are in feet and tenths below the PLANS OF NEAR LOW WATER MARK FIGURES SHOW ELEVATIONS ABOVE THE SAME PLANE. LOCATION OF PROPOSED WORK SHOWN IN RED. METHOD OF DREDGING IS Optional AND MATERIAL REMOVED APPROX. 1500 C.Y. USED AS BACKFILL FOR BULKHEAD ANY SURPLUS TO BE DUMPED AND ROUGH GRADED ALONG EDGE OF SUNSET LAKE AS DIRECTED BY THE ENGINEER. FOR ANCHOR RAILS AND THE ROOF UNDERGROUND AND NOT INDICATED ON THIS PLAN SEE SECTIONS ON NEXT SHEET.

**PROPOSED BULKHEAD, DREDGING, & TIMBER PLATFORM EXTENSION**

**OAK BLUFFS HARBOR**

OAK BLUFFS, MASS.

APPLICATION BY

DEPARTMENT **PUBLIC WORKS** MASSACHUSETTS

DIVISION **WATERWAYS**

AUGUST 1954

Robert D. MacKinnon

DISTRICT WATERWAYS ENGINEER

ACC. 03276-A
NOTE
SOUNDINGS ARE IN FEET AND TENTHS BELOW
PLANE OF MEAN LOW WATER. MINUS FIGURES
SHOW ELEVATIONS ABOVE THE SAME PLANE.
PROPOSED DREDGING IS IN TWO LOCATIONS.
AMOUNTING TO 10,500 CY. THIS SHEET AND
1,100 CY. SHEET 2. DREDGED MATERIAL TO BE DIS-
POSED OF ON BEACH AT EAST CHOP BEACH
CLUB PROPERTY, ABOVE MEAN HIGH WATER.
ALL TIMBER CONSTRUCTION, HARDWARE, ETC. TO
BE IN ACCORDANCE WITH CURRENT STANDARD
USAGE.
LOCATION OF PROPOSED WORK SHOWN IN RED.

PROPOSED
TIMBER BULKHEAD AND DREDGING
OAK BLUFFS HARBOR
OAK BLUFFS-MASS.
APPLICATION TO
DEPARTMENT OF PUBLIC WORKS, MASSACHUSETTS
DIVISION OF WATERWAYS
DECEMBER 1957

Robert R. MacKinnon
Chief, Waterways Engineer
NOTE

SOUNDINGS ARE IN FEET AND TENTHS AND SHOW DEPTHS BELOW PLANE OF MEAN LOW WATER, MINUS FIGURES SHOW ELEVATIONS ABOVE THE SAME PLANE.

DREDGED MATERIAL, APPROX. 1000 C.Y. TO BE DISPOSED OF WITH OTHER SUCH MATERIAL 10,500 C.Y. (SHEET 1) ON PROPERTY OF EAST CHOP BEACH CLUB, NO. WEST OF CHANNEL AREA.

LOCATION PROPOSED WORK SHOWN IN RED.

ALL TIMBER CONSTRUCTION, HARDWARE, ETC. TO BE IN ACCORDANCE WITH CURRENT STANDARD USAGE.

PROPOSED

TIMBER BULKHEAD & DREDGING

OAK BLUFFS HARBOR

OAK BLUFFS, MASS.

APPLICATION BY

DEPARTMENT OF PUBLIC WORKS, MASSACHUSETTS

DIVISION OF WATERWAYS

DECEMBER 1957

Robert B. MacKinnon
1. ELEVATIONS REFER TO MEAN LOW WATER (MLW) DATUM.
2. APPROXIMATELY 2000 CYL. YDS. OF COMPACTED FILL & 440 CYL. YDS. OF CRUSHED STONE FOR BERM BEHIND THE PROPOSED BULKHEAD WILL BE TRUCKED ONTO THE SITE.
3. APPROXIMATELY 150 YDS. OF RIP RAP & STONE BEDDING TO BE PLACED AT THE SUNSET LAKE ENTRANCE OF THE CULVERT.
4. STEEL SHEET PILING TO BE EPOXY COATED
5. TIMBER PILES TO BE CCA TREATED

PROPOSED BULKHEAD REPLACEMENT IN OAK BLUFFS HARBOR
& CULVERT REPLACEMENT IN SUNSET LAKE

PLAN ACCOMPANYING PETITION OF TOWN OF OAK BLUFFS, MA

TO CONSTRUCT AND MAINTAIN STEEL SHEET PILE BULKHEAD REPLACEMENT, TIMBER MOORING PILES, FILL, AND EXTENSION OF EXISTING STORM DRAINAGE OUTFALLS WITHIN OAK BLUFFS HARBOR ALONG LAKE AVE. & REPLACEMENT OF CULVERT FROM SUNSET LAKE TO OAK BLUFFS HARBOR.

AT OAK BLUFFS HARBOR
COUNTY OF DUKES, MARTHA'S VINEYARD
STATE OF MASSACHUSETTS

APPLICATION BY: TOWN OF OAK BLUFFS
NOTE

Area shown in red to be dredged to a depth of 10 feet at mean low water.
Amount of material to be removed, approximately 30,000 cubic yards.
Sounding are in feet and tides and soundings below the plane of mean low water minus figures shown elevations above the same plane.
Method of removal is optional. If removed by scows, it shall be dumped at sea in Nantucket Sound about 2 statute miles east of the entrance to Oak Bluffs Harbor on established mowing ground. Such disposal to be subject to approval of the U.S. Engineers. If removed by the hydraulic method, the material is to be disposed of above mean high water in locations approved by the Engineer.

PROPOSED BULKHEAND & DREDGING OAK BLUFFS HARBOR
OAK BLUFFS, MASS.
APPLICATION BY
DEPARTMENT OF PUBLICWORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS
SEPTEMBER 1951

District Waterways Engineer

Acc. 02B75 A
Planned harbor improvements:
Dredging and steel sheetpiling bulkhead.

**Oak Bluffs Harbor, Oak Bluffs, Mass.**

Application by Department of Public Works of Massachusetts Division of Waterways, March 1970.

-signed John L. Hetherington, Deputy Chief Engineer for Waterways

**Notes:**
- Location of proposed work shown in red.
- Elevations are in feet and diving and grading lines shown on all plans.
- All lines, grading, and diving lines are to be performed as per plans.
- Dredged material shall be spread above the high water line, as shown on the location plan.
NOTE

AREA SHOWN IN RED TO BE DREDGED TO A DEPTH OF 10 FEET AT MEAN LOW WATER. AMOUNT OF MATERIAL TO BE REMOVED APPROXIMATELY 30,000 CUBIC YARDS. SOUNDOUGHS ARE IN FEET AND TENTHS AND SHOW DEPTHS BELOW THE PLANE OF MEAN LOW WATER. MINUS FIGURES SHOW ELEVATIONS ABOVE THE SAME PLANE.

METHOD OF REMOVAL IS OPTIONAL. IF REMOVED BY SOUGHS IT SHALL BE DUMPED AT SEA IN NANTUCKET SOUND ABOUT TWO STATUTE MILES EAST OF THE ENTRANCE TO OAK B LUFFS HARBOR ON ESTABLISHED DUMPING GROUND, SUCH DISPOSAL TO BE SUBJECT TO APPROVAL OF THE U.S. ENGINEERS. IF REMOVED BY THE HYDRAULIC METHOD, THE MATERIAL IS TO BE DISPOSED OF ABOVE MEAN HIGH WATER IN LOCATIONS APPROVED BY THE ENGINEER.

PROPOSED BULKHEAD & DREDGING OAK BLUFFS HARBOR OAK BLUFFS, MASS.

APPLICATION BY

DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS DIVISION OF WATERWAYS

SEPTEMBER 1951

DISTRICT WATERWAYS ENGINEER

ACC. 02895 A
PROPOSED BULKHEAD, DREDGING & TIMBER PLATFORM

OAK BLUFFS HARBOR
OAK BLUFFS, MASS.

APPLICATION BY
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS
SEPTEMBER 1951
PROPOSED STONE GROINS
NANTUCKET SOUND
VICINITY--SENGETKONTACKET POND
OAK BLUFFS--MASS.
APPLICATION BY
DEPARTMENT OF PUBLIC WORKS
MASSACHUSETTS
DIVISION OF WATERWAYS
MARCH 1954

NOTE
ELEVATIONS ARE IN FEET AND TENTHS
ABOVE THE PLANE OF MEAN LOW WATER.
MINUS FIGURES SHOW DEPTHS BELOW GAMB.
WORK TO BE DONE SHOWN IN RED.

DISTRICT WATERWAYS ENGINEER.
NOTE:

ELEVATIONS ARE IN FEET AND HYPOTHETICAL
HEIGHT TO THE PLANE OF MEAN LOW
WATER MARKS. FIGURES DENOTE DEPTHS
BELOW THE SAME PLANE.

LOCATION OF PROPOSED WORK SHOWN
IN DOTTED LINES. ELEVATIONS SHOWN ARE
FROM MEAN LOW WATER MARK TO
PLANE OF PROPOSED WORK.
NOTE:

ELEVATIONS ARE IN FEET AND REFER TO THE PLANE OF MEAN LOW WATER MINUS FIGURES DENOTE DEPTHS BELOW THE SAME PLANE.
LOCATION OF PROPOSED WORK SHOWN IN RED.
DREDGED MATERIAL APPROX. 43,000 CY
IN M. DIAMETER OR LESS IN THE DRAWING AREAS.

PROPOSED EXCAVATION AND JETTIES
SOUTH INLET
SENGEKONTACKET POND
EDGARTOWN AND OAK BLUFFS MASS.
APPLICATION BY
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS
APRIL 1961

Robert A. MacAulay
CHIEF WATERWAYS ENGINEER
**PROFILE OF JETTIES**

**PROPOSED EXCAVATION OF JETTIES NORTH INLET**

**SENKEKONTACKET POND**

**OAK BLUFFS, MASSACHUSETTS**

**APPLICATION BY DEPARTMENT OF PUBLIC WORKS, MASSACHUSETTS**

**DIVISION OF WATERWAYS**

**APRIL 1961**

*Robert P. MacInnes*

CHIEF WATERWAYS ENGINEER

---

**NOTE:**

Elevations are in feet and tenths and refer to the plane of mean low water. Main figures denote depths below the same plane. Location of proposed work shown in red. Excavated material approx. 8,500 C.Y. to be disposed of along shore adjacent to excavated areas.
NOTE:
ELEVATIONS ARE IN FEET AND FEET AND 
REFER TO THE PLANE OF MEAN LOW 
WATER MINUS FIGURES DENOTE DEPTHS 
BELOW THE SAME PLANE. 
LOCATION OF PROPOSED WORK SHOWN 
IN RED. 
DRIED MATERIAL APPROX. 45,000 C.Y. 
TO AN UNREO OF DRIVING HIGHLAND 
AND THE 1 DRAWING AREAS.

PROPOSED EXCAVATION AND JETTIES
SOUTH INLET 
SENGEKONTACKET POND
EASTERN, AND OAK BRIEFS, MASS.
APPLICATION BY 
DEPARTMENT OF PUBLIC WORKS & MASSACHUSETTS 
DIVISION 2 WATERWAYS 
APRIL 1961

Robert A. Melzer
U.S. C P. WATERWAYS ENGINEER
SECTION "A-A"

PROPOSED RECONSTRUCTED JETTY NO. 1

PLAN

PROFILE OF JETTIES

PROPOSED EXCAVATION AND JETTIES

SENGEKONТАCKET POND

OAK BLUFFS, MASSACHUSETTS

APPLICATION BY DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS

DIVISION OF WATERWAYS

APRIL 1961

CHIEF WATERWAYS ENGINEER
Section V

Tisbury
Section V – Community Findings – Town of Tisbury

COMMUNITY DESCRIPTION

The Town of Tisbury, including the Village of Vineyard Haven, consists of a land area of 6.56 square miles out of a total area of 8.05 square miles and had a population of 3,755 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 7.0 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Tisbury, there were 10 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 through Sheet 2 in Section V-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>STRUCTURE TYPE AND QUANTITY - Town of Tisbury</th>
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<tbody>
<tr>
<td><strong>Primary Structure (1)</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
</tr>
<tr>
<td>Revetment</td>
</tr>
<tr>
<td>Breakwater</td>
</tr>
<tr>
<td>Groin / Jetty</td>
</tr>
<tr>
<td>Coastal Dune</td>
</tr>
<tr>
<td>Coastal Beach</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Tisbury’s case there are a total of 9 structures which would require approximately $4.2 million to bring all the coastal structures to “A” Rating. There are no structures in the “D” or “F” classification that are in need of immediate replacement or repair.
Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Tisbury, the breakdown of structures by assumed ownership is as follows:

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section V-B which contains Structure Assessment Reports for each individual structure found.

**SUMMARY**

The enclosed reports and associated documents reflects the Town of Tisbury’s coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section V - Tisbury

Part B

Structure Assessment Reports
COASTAL STRUCTURE LOCATION PLAN

TISBURY

MARtha'S VINEYARD

COASTAL INFRASTRUCTURE INVENTORY

AND ASSESSMENT PROJECT

OCTOBER 2007

SCALE: 1" = 150'
**Structure Assessment Form**

**Property Owner:**
- Unknown

**Presumed Structure Owner:**
- Unknown

**Owner Name:**
- Unknown

**Location:**
- Osprey Lane

**Date:**
- 10/3/2007

**Town:**
- Tisbury

**Structure ID:**
- 074-006-000-012-100

**Key:** community-map-block-parcel-structure

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<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
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<tbody>
<tr>
<td>200 Feet</td>
<td>Feet NAVD 88</td>
<td>A11</td>
<td>10 Feet NGVD</td>
</tr>
</tbody>
</table>

**Primary Type:**
- Groin/ Jetty

**Primary Material:**
- Stone

**Primary Height:**
- 10 to 15 Feet

**Secondary Type:**
-  

**Secondary Material:**
-  

**Secondary Height:**
-  

**Earliest Structure Record:**
- 1940

**Estimated Reconstruction/Repair Cost:**
- $62,800.00

**Structure Summary:**
Placed stone groin forming a channel with the detached breakwater in front of it. The stones are approximately 4 feet by 3 feet by 2 feet in size. There are signs of stone movement. There is a beach adjacent to the groin.

**Condition Rating**
- B
- Good

**Level of Action Description**
- Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Priority Rating Action Description**
- I
- None
- Long Term Planning Considerations
- No Inshore Structures or Residential Dwelling Units Present

**Structure Images:**
- 074-006-000-012-100-FHO1A.JPG

**Structure Documents:**
- MA-DCR August 1940 Proposed Stone 074-006-000-012-100-DCR1A

**Prepared By:**
- Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Tisbury

Location: Vineyard Haven Harbor
Based On Comment:
Earliest Structure Record: Unknown

Date: 10/3/2007
Estimated Reconstruction/Repair Cost: $592,800.00

Length: 1200 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: V4
FIRM Map Elevation: 11 Feet NGVD

Primary Type: Breakwater
Primary Material: Stone
Primary Height: Over 15 Feet

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Detached breakwater protecting Vineyard Haven Harbor is composed of placed stones. Minor stone movement and shifting. Stones are 8 feet by 3 feet by 3 feet on average. The structure has a dog leg in the construction at the inshore end of it.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
V Immediate / Highest Priority Consider For Immediate Action Due to Public Safety and Welfare Issues Critical Inshore Structures Present with Potential for Infrastructure Damage and/or High Density Residential Dwellings Condition of structure may warrant emergency stabilization as failure may result in potential loss of property and/or life. (>10 dwellings impacted / 100 feet of shoreline)

Structure Images:
074-006-000-016-100-PHO1A.JPG
074-006-000-016-100-PHO1B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
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<th>Property Owner:</th>
<th>Location:</th>
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<tr>
<td>State</td>
<td>Steamship Wharf</td>
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<th>Presumed Structure Owner:</th>
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<tbody>
<tr>
<td>State</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steamship Authority</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<tr>
<td>10 Feet NGVD</td>
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<table>
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<td>Bulkhead/Seawall</td>
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<table>
<thead>
<tr>
<th>Secondary Height:</th>
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<tbody>
<tr>
<td></td>
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</table>

**Structure Summary:**
Sheet pile bulkhead with a concrete cap. In front of the bulkhead is a pier for the ferry. Behind the bulkhead is parking and buildings. The sheet pile has moderate corrosion.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Action Description</th>
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<tbody>
<tr>
<td>C</td>
<td>High Priority</td>
<td>Consider for Next Project Construction Listing</td>
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<tr>
<td>Fair</td>
<td></td>
<td>High Value Inshore Structures with Potential for Infrastructure Damage and/or Moderate Density Residential Dwellings (1-10 dwellings impacted / 100 feet of shoreline)</td>
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**Structure Images:**
- [074-007-000-001-100-PHO1A.JPG](074-007-000-001-100-PHO1A.JPG)
- [074-007-000-001-100-PHO1B.JPG](074-007-000-001-100-PHO1B.JPG)

**Structure Documents:**
- [DEP](DEP)
  - March 21, 19
  - Plan Accompanying
  - [074-007-000-001-100-LIC1A](074-007-000-001-100-LIC1A)

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

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<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
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<tr>
<td>Local</td>
<td>Beach Road</td>
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<table>
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<table>
<thead>
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<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
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<td>1952</td>
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<td>Feet</td>
<td>Feet NAVD 88</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Feet NGVD</td>
<td></td>
<td></td>
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</tbody>
</table>

**Primary Type:** Bulkhead/Seawall  
**Primary Material:** Concrete  
**Primary Height:** 5 to 10 Feet

**Secondary Type:** Revetment  
**Secondary Material:** Stone  
**Secondary Height:** 5 to 10 Feet

**Structure Summary:** Cast in place stone wall with recurred face. Moderate spalling and cracking. Dumped riprap at the toe. The stones are 3 feet by 2 feet by 2 feet on average. There is no visible scour. Behind the structure is Beach Road.

**Condition Rating**  
**Level of Action Description**  
Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

**Priority Rating**  
**Future Project Consideration Description**  
Inshore Structures Present with Limited potential for Significant Infrastructure Damage

**Structure Images:**
- 074-010-000-002-100-PHO1A.JPG  
- 074-010-000-002-100-PHO1B.JPG

**Structure Documents:**
- MA-DCR  
- June 1952  
- Proposed Seawall  
- 074-010-000-002-100-DCR1A

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

**Property Owner:**
- Local

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Tisbury

**Location:**
- Beach Road

**Date:**
- 10/2/2007

**Estimated Reconstruction/Repair Cost:**
- $33,000.00

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<td>250 Feet</td>
<td>Feet NAVD 88</td>
<td>A11</td>
<td>10 Feet NGVD</td>
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</table>

**Primary Type:**
- Groin/ Jetty

**Primary Material:**
- Stone

**Primary Height:**
- Under 5 Feet

**Secondary Type:**
- Secondary Material:
- Secondary Height:

**Structure Summary:**
Set of five dumped stone groins. There is minor stone movement. There is no visible scour.

### Condition Rating
- **Condition**: B
- **Rating**: Good

### Level of Action Description
- **Description**: Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

### Priority Rating Action Description
- **Priority**: I
- **Rating**: None
- **Action**: Long Term Planning Considerations
- **Description**: No Inshore Structures or Residential Dwelling Units Present

### Structure Images:
- [074-010-000-002-200-PHO2A.JPG]

### Structure Documents:

---

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Tisbury
Location: Lagoon Pond
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $72,072.00

Length: 600 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V13
FIRM Map Elevation: Feet NGVD 10

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet
Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Dumped stone riprap with stone size 12 inches down. The structure protects the slope of a road directly behind it.

Condition Rating Description
B Good Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None Long Term Planning Considerations

None No Inshore Structures or Residential Dwelling Units Present

Structure Images:
074-010-000-004-100-PHO1A.JPG

Structure Documents:
MA-DCR September 1 Boston Harbor Island 006-010-706-99999-100-DCR1B
MA-DCR June 1989 Pier Improvements - 006-010-706-99999-100-DCR1C
MA-DCR 1972 Map C - 1972 Master 006-010-706-99999-100-DCR1D
MA-DCR January 1999 Boston Harbor Island 006-010-706-99999-100-DCR1E
MA-DCR 2/4/1997 Boston Harbor 006-010-706-99999-100-DCR1F
MA-DCR July 1979 Boston Harbor Island 006-010-706-99999-100-DCR1G

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Tisbury

Location: Lagoon Harbor Park
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $255,255.00

Date: 10/2/2007

Length: 425 Feet NAVD 88
Top Elevation: 10 Feet NGVD
FIRM Map Zone: V13
FIRM Map Elevation: 10

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Dumped stone revetment at about a 1 on 3 slope. The stones average 2 feet by 1 foot by 1 foot in size. There is no visible scour. The concrete is grouting at the top of the slope. There is a boat ramp in the structure.

Condition Rating
C Fair
Level of Action Description
Moderate Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating Action Description
1 None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images: 074-010-000-004-200-PHO2A.JPG
Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Tisbury

Location: Herring Creek
Based On Comment:

Earliest Structure Record: 1969
Estimated Reconstruction/Repair Cost: $33,660.00

Length: 150 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V14
FIRM Map Elevation: 13 Feet NGVD

Primary Type: Coastal Beach
Primary Material: Sand
Primary Height: 10 to 15 Feet

Secondary Type: Secondary Material: Secondary Height:

Structure Summary:
Beach has medium sand. The slope of the beach is approximately 1 on 100. The profile of the beach is even and uniform.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
1 None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images:
074-032-000-001-100-PHO1A.JPG

Structure Documents:
USACE July 1969 Proposed Dredging 074-032-000-001-100-COE1A
USACE October 195 Proposed Stone 074-032-000-001-100-COE1B
MA-DCR July 1946 Proposed Channel 074-032-000-001-100-DCR1A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Tisbury
Location: Lake Tashmoo
Based On Comment: 
Earliest Structure Record: 1951
Estimated Reconstruction/Repair Cost: $0.00

Length: 425 Feet NAVD 88
Top Elevation: 13 Feet NGVD
FIRM Map Zone: V14
FIRM Map Elevation: 1951

Primary Type: Groin/ Jetty
Primary Material: Stone
Primary Height: 10 to 15 Feet
Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Placed stone groin on the east side of the inlet of Lake Tashmoo. The stones are 3 feet by 2 feet by 2 feet on average with a crest that is one stone length wide. There is a beach and parking area behind the groin.

Condition Rating
Excellent

Level of Action Description
Like new condition. Structure expected to withstand major coastal storm without damage. Stable landform (beach, dune or bank). Adequate system exists to provide protection from major coastal storm.

Priority Rating Action Description
I None Long Term Planning Considerations

Structure Images:
074-032-000-001-200-PHO2A.JPG
074-032-000-001-200-PHO2B.JPG

Structure Documents:
USACE Proposed stone October 1955 074-032-000-001-200-COE2A
MA-DCR Proposed Channel July 1946 074-032-000-001-200-DCR2A
MA-DCR Proposed Shore November 1 074-032-000-001-200-DCR2B

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Town: Tisbury
Structure ID: 074-032-000-001-300
Key: community-map-block-parcel-structure

Property Owner:
Local

Presumed Structure Owner:
Local

Owner Name:
Tisbury

Location: Lake Tashmoo

Based On Comment:

Earliest Structure Record:
1951

Estimated Reconstruction/Repair Cost:
$117,750.00

Date:
10/2/2007

Length: 375 Feet

Feet NAVD 88

Top Elevation: FIRM Map Zone: V14

FIRM Map Elevation: 13 Feet NGVD

Primary Type: Groin/ Jetty

Primary Material: Stone

Primary Height: 10 to 15 Feet

Secondary Type:

Secondary Material:

Secondary Height:

Condition Rating
B Good

Priority Rating
None

Level of Action Description
Minor

Action Description
Long Term Planning Considerations

Structure Summary:
Placed stone groin on the west side of the inlet of Lake Tashmoo. The stones are approximately 3 feet by 2 feet by 2 feet in size. The crest of the groin is one stone length wide. There is a beach behind the groin.

Structure Images:
074-032-000-001-300-PHO3A.JPG
074-032-000-001-300-PHO3B.JPG

Structure Documents:
USACE October 195 Proposed Stone 074-032-000-001-300-COE3A

Prepared By: Bourne Consulting Engineering
Section V - Tisbury

Part C

Structure Photographs
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<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
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Section V - Tisbury

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST

- Copies of License Documents

USACE – PERMIT DOCUMENT LIST

- Copies of Permit Documents
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
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No Town Documents for the Town of Tisbury.xls
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<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
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<td>DEP</td>
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<td>March 21, 1990</td>
<td>Plan Accompanying Petition of New Bedford Woods For Martha's Vineyard and Nantucket Steamship Authority To Remove 8 dolphins - Build Timber Bulkhead Addition to Existing Pier - 9 New Dolphins and Place Fill in Vineyard Haven Harbor</td>
<td>2</td>
<td>Vinyard Haven Herbor</td>
<td>Bulkhead</td>
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PLAN ACCOMPANYING PETITION OF
NEW BEDFORD WOODS HOLE
MARThAS VINoYARD & NANTUCKET
STEAMSHIP AUTHORITY
TO REMOVE 6 DOLPHINS, BUILD TIMBER BULKHEAD
ADDITION TO EXISTING PIER 9 NEW DOLPHINS
AND PLACE FILL IN
VINEYARD HAVEN HARBOR
VINEYARD HAVEN-TISBURY
FEBRUARY-1950

NO 3220
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MARCH 21, 1950

[Signatures]
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<th>Municipality</th>
<th>Date</th>
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<td>074-032-000-001-100</td>
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<td>70-73</td>
<td>USACE</td>
<td>Tisbury</td>
<td>July 1969</td>
<td>Proposed Dredging Vineyard Sound to Lake Tashmoo - Tisbury, MA</td>
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<td>Lake Tashmoo Inlet</td>
<td>Beach Reinforcement</td>
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<td>074-032-000-001-100-COE1B</td>
<td>02900</td>
<td>USACE</td>
<td>Tisbury</td>
<td>October 1961</td>
<td>Proposed Stone Jetties and Dredging in Vineyard Sound and Lake Tashmoo - Tisbury, Mass.</td>
<td>2</td>
<td>Lake Tashmoo Inlet</td>
<td>Jetties and Dredge Disposal on Beach</td>
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<td>Tisbury</td>
<td>October 1961</td>
<td>Proposed stone Jetties and Dredging in Vineyard Sound and Lake Tashmoo - Tisbury, Mass.</td>
<td>2</td>
<td>Lake Tashmoo Inlet</td>
<td>Jetties and Dredge Disposal on Beach</td>
</tr>
<tr>
<td>074-032-000-001-200</td>
<td>074-032-000-001-300-COE3A</td>
<td>02900</td>
<td>USACE</td>
<td>Tisbury</td>
<td>October 1961</td>
<td>Proposed Stone Jetties and Dredging in Vineyard Sound and Lake Tashmoo - Tisbury, Mass.</td>
<td>2</td>
<td>Lake Tashmoo Inlet</td>
<td>Jetties and Dredge Disposal on Beach</td>
</tr>
</tbody>
</table>
NOTE
PROPOSED DREDGING & JETTIES SHOWN IN RED
SOUNDINGS ARE IN FEET & TENTHS AND SHOW DEPTHS
BELOW THE PLANE OF MEAN LOW WATER. MINUS FIGURES
SHOW ELEVATIONS ABOVE THE SAME PLANE.
MATERIAL IS TO BE DREDGED BY THE HYDRAULIC METHOD
AND IS TO BE DISPOSED OF ON THE VINEYARD SOUND SHORE,
AS INDICATED ON THIS PLAN. QUANTITY TO BE
DREDGED IS APPROXIMATELY 23,000 CUBIC YARDS,
TO A DEPTH OF 5 FEET AT MEAN LOW WATER.
**Property Owners**

2. Grace E. Allen, Hotel Shelton New York Ave., N.Y.
3. Raymond C. Fuller, 21 Roosevelt Ave., Wakefield, Mass.
4. Same
5. Lydie Hyde Est, Anne T. Gugler Jr. 101 Park Ave., N.Y.C.
6. Lucie M. McCall, 8703 Shaker Blvd., Cleveland, Ohio

**Proposed Stone Jetties & Dredging**

In Vineyard Sound & Lake Tashmoo

Tisbury, Mass.

Application by

**Department of Public Works of Massachusetts Division of Waterways**

October 1951

[National Waterways Engineer]

ACC.02300-B
NOTE

PROPOSED DREDGING & JETTIES SHOWN IN RED
SOUNDINGS ARE IN FEET & TENTHS AND SHOW DEPTHS
BELOW THE PLANE OF MEAN LOW WATER. MINUS FIGURES
SHOW ELEVATIONS ABOVE THE SAME PLANE.

MATERIAL IS TO BE DREDGED BY THE HYDRAULIC METHOD
AND IS TO BE DISPOSED OF ON THE VINEYARD SOUND SHORE,
AS INDICATED ON THIS PLAN. QUANTITY TO BE
DREDGED IS APPROXIMATELY 23,000 CUBIC YARDS
TO A DEPTH OF 5 FEET AT MEAN LOW WATER.

PROPOSED STONE JETTIES & DREDGING
IN VINEYARD SOUND & LAKE TASHMOO
TISBURY, MASS.
APPLICATION BY
DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS
OCTOBER 1931

ACC.02300-A
PROPERTY OWNERS

PARCEL NO.  NAME & ADDRESS
1  Joseph B. Russell, Cumberland Poreside, Portland, Me.
2  Grace E. Allen, Hotel Shelton, 49th & Lexington Ave., NYC.
3  Raymond C. Fuller, 21 Morrison Ave., Wakefield, Mass.
4  Same
5  Lydia Hyde Est., Anne T. Gugler, Tr. 101 Park Ave., NYC.
6  Lucia M. Bottle, 13705 Shaker Blvd., Cleveland, O.

PROPOSED STONE JETTIES & DREDGING
IN VINEYARD SOUND & LAKE TASHMOO
TISBURY, MASS.

APPLICATION BY
DEPARTMENT OF PUBLIC WORKS, MASSACHUSETTS
DIVISION OF WATERWAYS
OCTOBER 1951

[Signature]
DISTRICT WATERWAYS ENGINEER

ACC.02300-B
NOTE

PROPOSED DREDGING & JETTIES SHOWN IN RED SOUNDINGS ARE IN FEET & TENTHS AND SHOW DEPTHS BELOW THE PLANE OF MEAN LOW WATER. MINUS FIGURES SHOW ELEVATIONS ABOVE THE SAME PLANE. MATERIAL IS TO BE DREDGED BY THE HYDRAULIC METHOD AND IS TO BE DISPOSED OF ON THE VINEYARD SOUND SHORE, AS INDICATED ON THIS PLAN. QUANTITY TO BE DREDGED IS APPROXIMATELY 23,000 CUBIC YARDS TO A DEPTH OF 5 FEET AT MEAN LOW WATER.

PROPOSED STONE JETTIES & DREDGING IN VINEYARD SOUND & LAKE TASHMOO
TISBURY, MASS.
APPLICATION BY DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS DIVISION OF WATERWAYS
OCTOBER 1951

ACC.02300-A
JETTY NO. 1

JETTY NO. 2

PROFILE OF PROPOSED JETTIES

SCALE IN FEET

HOR. 1" = 40' 1" = 20'

1" = 10'

TYPICAL SECTION-PROPOSED JETTY

PROPERTY OWNERS

PARCEL NO.  NAME & ADDRESS

2. Grace E. Allen, Hotel Shelton, 49th, 4 Lexington Ave., N.Y.C.
3. Raymond C. Fuller, 21 Morrison Ave., Wakefield, Mass.
4. Same
5. Lydia Hyde Est, Anne T. Gugler Tr, 101 Park Ave., N.Y.C.
6. Lucile M. McBride, 1705 Shaker Blvd, Cleveland, O.

PROPOSED STONE JETTIES & DREDGING IN VINEYARD SOUND & LAKE TASHMOO
TISBURY, MASS.

APPLICATION BY

DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS
DIVISION OF WATERWAYS

OCTOBER 1931

E. M. M. M. C. M. W. E. E. W. E.
Section VI

West Tisbury
Section VI – Community Findings – Town of West Tisbury

COMMUNITY DESCRIPTION

The Town of West Tisbury consists of a land area of 25.03 square miles out of a total area of 33.68 square miles and had a population of 2,467 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 7.8 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. According to the West Tisbury Conservation Commission, none of the structures along the Town’s coast are publicly owned and/or maintained. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

SUMMARY

Though there were no publicly owned structures at the time of investigation, the project database can be updated as needed for future construction. The Town of West Tisbury’s coastal structure information will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.
Section VI - West Tisbury

Part B

Structure Assessment Reports

No Publicly Owned/Maintained Structures in the Town of West Tisbury
Section VI - West Tisbury

Part C

Structure Photographs

No Publicly Owned/Maintained Structures in the Town of West Tisbury
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contact/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
</table>

No Field Photographs for the Town of West Tisbury
Section VI - West Tisbury

Part D

Structure Documents

No Publicly Owned/Maintained Structures in the Town of West Tisbury
No MA - DEP Ch. 91 Documents for the Town of West Tisbury

| BCE Structure No | Document No | Contract/ Drawing Number | Entity | Municipality | Date | Title | Sheets | Location | Description |
|------------------|-------------|----------------------------|--------|--------------|------|-------|--------|----------|-------------|-------------|


No USACE - Permit Documents for the Town of West Tisbury

<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
</table>


Section VII

Aquinnah
Section VII – Community Findings – Town of Aquinnah

COMMUNITY DESCRIPTION

The Town of Aquinnah consists of a land area of 5.37 square miles out of a total area of 40.78 square miles and had a population of 344 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 8.6 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Aquinnah, there were 2 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheet 1 in Section VII-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revetment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Aquinnah’s case there are a total of 2 structures which would require approximately $ 626,150 to bring all the coastal structures to “A” Rating. Most critical will be the structures in the “D” and “F” classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 500,550 would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Aquinnah

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revetment</td>
<td>1</td>
<td></td>
<td>$500,544</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td></td>
<td>$125,600</td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 $- $125,600 $ - $500,544 $ - $628,144

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Aquinnah the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Aquinnah

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Town Owned</td>
<td>2</td>
<td></td>
<td>$125,600</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Government Owned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 $- $125,600 $ - $500,544 $ - $628,144

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section VII-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Aquinnah's coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section VII - Aquinnah

Part B

Structure Assessment Reports
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Menemsha Inlet</td>
<td>10/3/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>1949</td>
<td>$125,600.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length: 400 Feet</th>
<th>Top Elevation: 12 Feet NAVD 88</th>
<th>FIRM Map Zone: VE</th>
<th>FIRM Map Elevation: 12 Feet NGVD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Primary Type: Groin/ Jetty</th>
<th>Primary Material: Stone</th>
<th>Primary Height: 10 to 15 Feet</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
</tr>
</thead>
</table>

**Structure Summary:**
Placed stone jetty on the east side of the Menemsha Inlet. The stones are 4 feet by 3 feet by 3 feet on average. Minor signs of stone movement.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good</td>
<td>II Low Priority Inshore Structures Present with Limited potential for Significant Infrastructure Damage</td>
</tr>
</tbody>
</table>

**Description:**
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure/landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.

**Structure Images:**
[027-003-000-003-100-PH01A.JPG]

**Structure Documents:**

<table>
<thead>
<tr>
<th>Structure Documents</th>
<th>Proposed Repairs to</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-DCR</td>
<td>027-003-000-003-100-DCR1A</td>
</tr>
</tbody>
</table>

**Prepared By:** Bourne Consulting Engineering
# CZM Coastal Infrastructure Inventory and Assessment

## Structure Assessment Form

**Property Owner:** Local

**Location:** Menemsha Inlet

**Date:** 10/3/2007

**Town:** Aquinnah

**Presumed Structure Owner:** Local

**Based On Comment:**

**Owner Name:** Aquinnah

**Earliest Structure Record:** Unknown

**Estimated Reconstruction/Repair Cost:** $500,544.00

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>320 Feet</td>
<td>11 Feet NGVD 88</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9</td>
<td>11</td>
</tr>
</tbody>
</table>

**Primary Type:** Revetment

**Primary Material:** Stone

**Primary Height:** 10 to 15 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

<table>
<thead>
<tr>
<th>Structure Summary:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed stone revetment with stones at a 1 on 2 slope. There is a large amount of stone movement and settling. There is moderate stone loss and erosion behind the revetment. There is a dirt road behind the revetment.</td>
</tr>
</tbody>
</table>

## Condition Rating

- **Condition Rating:** Poor
- **Level of Action Description:** Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm. Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.

## Priority Rating Action Description

- **Priority Rating:** None
- **Action Description:** Long Term Planning Considerations

---

**Structure Images:**

027-007-000-007-100-PHO1A.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
Section VII - Aquinnah

Part C

Structure Photographs
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>027-003-000-003-100</td>
<td>027-003-000-003-100-FH1A.JPG</td>
<td>Bourne Consulting Engineering</td>
<td>Aquinnah</td>
<td>October 2007</td>
<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
<td></td>
</tr>
<tr>
<td>027-007-001-007-100</td>
<td>027-007-001-007-100-FH1A.JPG</td>
<td>Bourne Consulting Engineering</td>
<td>Aquinnah</td>
<td>October 2007</td>
<td>DIGITAL IMAGE</td>
<td>1</td>
<td>Structure Location</td>
<td>Structure Condition Photo at Time of Survey</td>
<td></td>
</tr>
</tbody>
</table>
Section VII - Aquinnah

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST
  • Copies of License Documents

USACE – PERMIT DOCUMENT LIST
  • Copies of Permit Documents
No Town Documents for the Town of Aquinnah

<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Tilt</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>027-003-000-003-100</td>
<td>027-003-000-003-100-DCR1A</td>
<td>1084</td>
<td>MA-DCR</td>
<td>Aquinnah</td>
<td>May 1949</td>
<td>Proposed Repairs to Stone Jettes - Menemsha Inlet - Chilmark and Gay Head - DPNW of MA Division of Waterways</td>
<td>1</td>
<td>Menemsha Inlet</td>
<td>Stone Jettes</td>
</tr>
<tr>
<td>BCE Structure No</td>
<td>Document No</td>
<td>Contract/ Drawing Number</td>
<td>Entity</td>
<td>Municipality</td>
<td>Date</td>
<td>Title</td>
<td>Shots</td>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>--------------------------</td>
<td>--------</td>
<td>--------------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>----------</td>
<td>-------------</td>
</tr>
</tbody>
</table>

No MA - DEP Ch. 91 Documents for the Town of Aquinnah
Section VIII

Chilmark
Section VIII – Community Findings – Town of Chilmark

COMMUNITY DESCRIPTION

The Town of Chilmark consists of a land area of 19.14 square miles out of a total area of 34.7 square miles and had a population of 843 in the 2000 census. The Town is located on Martha’s Vineyard of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 14.7 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Chilmark, there were 8 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheet 1 to Sheet 2 in Section VIII-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Revetment</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>8</strong></td>
<td><strong>6</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Chilmark’s case there are a total of 8 structures which would require approximately $786,726 to bring all the coastal structures to “A” Rating. There are no structures in the “D” or “F” classification that are in need of immediate replacement or repair.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Chilmark

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Bulkhead / Seawall</td>
<td>3</td>
<td>$ 289,610</td>
<td></td>
</tr>
<tr>
<td>Revetment</td>
<td>3</td>
<td>$ 15,708 $ 314,028</td>
<td></td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td>$ 147,580</td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td>$ 19,800</td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>$ 472,698 $ 314,028</td>
<td></td>
</tr>
</tbody>
</table>

$ 786,726

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Chilmark, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Chilmark

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Town Owned</td>
<td>8</td>
<td>$ 472,698 $ 314,028</td>
<td></td>
</tr>
<tr>
<td>Commonwealth of Mass.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Govt. Owned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>$ 472,698 $ 314,028</td>
<td></td>
</tr>
</tbody>
</table>

$ 786,726

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section VIII-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Chilmark’s coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section VIII - Chilmark

Part B

Structure Assessment Reports
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Menemsha Creek</td>
<td>10/3/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilmark</td>
<td>$68,640.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earliest Structure Record:</th>
<th>Length: 200 Feet Top Elevation: 10 Feet NAVD 88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>FIRM Map Zone: A9 FIRM Map Elevation: 10 Feet NGVD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead/Seawall</td>
<td>Steel</td>
<td>Over 15 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
</tr>
</thead>
</table>

**Structure Summary:**
Sheep pile bulkhead with steel cap. There is minor corrosion at the tidal zone. Above is parking and storage for fishing gear. Attached is floats for fishing vessels.

**Condition Rating**
- B: Good

**Priority Rating**
- I: None

**Level of Action Description**
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landfill is present. Structure / landfill adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Structure Images:**
- [012-021-000-002-100-PHO1A.JPG](#)
- [012-021-000-002-100-PHO1B.JPG](#)

**Structure Documents:**
- [MA-DCR](#) February 19, Proposed Bulkhead [012-021-000-002-100-DCR1A](#)
- [DEP](#) November 3, Plan Accompanying [012-021-000-002-100-LIC1A](#)

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Chilmark
Location: Menemsha Creek
Date: 10/3/2007
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $60,060.00

Length: 100 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A9
FIRM Map Elevation: 11 Feet NGVD
Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet
Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Dumped stone revetment below timber bridge connected to a bulkhead. The stones are 3 feet by 2 feet by 2 feet on average. There is moderate stone movement and shifting.

Condition Rating
Level of Action Description Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide addition material for full protection and extended life.

Priority Rating Action Description
None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images: Structure Documents:
012-021-000-002-200-PH02A.JPG

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

**Property Owner:** Local

**Presumed Structure Owner:** Local

**Owner Name:** Chilmark

**Location:** Menemsha Creek

**Based On Comment:**

**Earliest Structure Record:** Unknown

**Estimated Reconstruction/Repair Cost:** $235,920.00

**Date:** 10/3/2007

### Structure Dimensions

- **Length:** 600 Feet
- **Top Elevation:** NAVD 88
- **FIRM Map Zone:** A9
- **FIRM Map Elevation:** 10 Feet NGVD

### Primary Structure Details

- **Primary Type:** Bulkhead/Seawall
- **Primary Material:** Steel
- **Primary Height:** Over 15 Feet

### Secondary Structure Details

- **Secondary Type:**
- **Secondary Material:**
- **Secondary Height:**

### Structure Summary:

Sheet pile bulkhead with steel cap. There is minor corrosion at the tidal zone. Above is a parking lot. Attached is a fixed pier.

### Condition Rating

- **Condition Rating:**
  - **Rating:** Good
  - **Level of Action:** Minor
  - **Description:** Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure/landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.

### Priority Rating

- **Priority Rating:**
  - **Action Rating:** None
  - **Description:** Long Term Planning Considerations
    - No Inshore Structures or Residential Dwelling Units Present

### Structure Images:

- 012-021-000-005-100-PHO1A.JPG
- 012-021-000-005-100-PHO1B.JPG

### Structure Documents:

- USACE: May 2, 1974
- Proposed Groins and Proposed Bulkhead
- MA-DCR: February 19
- Plan Accompanying
- DEP: August 11, 1
- Plan Accompanying
- DEP: August 11, 1
- Plan Accompanying

---

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

<table>
<thead>
<tr>
<th>Structure Assessment Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property Owner:</strong> Local</td>
</tr>
<tr>
<td><strong>Presumed Structure Owner:</strong> Local</td>
</tr>
<tr>
<td><strong>Owner Name:</strong> Chilmark</td>
</tr>
<tr>
<td><strong>Location:</strong> Menemsha Beach</td>
</tr>
<tr>
<td><strong>Based On Comment:</strong></td>
</tr>
<tr>
<td><strong>Earliest Structure Record:</strong> Unknown</td>
</tr>
<tr>
<td><strong>Date:</strong> 10/3/2007</td>
</tr>
<tr>
<td><strong>Estimated Reconstruction/Repair Cost:</strong> $19,800.00</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Length:</strong> 150 Feet</th>
<th><strong>Top Elevation:</strong> 12 Feet NGVD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRM Map Zone:</strong> V9</td>
<td><strong>FIRM Map Elevation:</strong></td>
</tr>
<tr>
<td><strong>Primary Type:</strong> Groin/ Jetty</td>
<td></td>
</tr>
<tr>
<td><strong>Primary Material:</strong> Stone</td>
<td></td>
</tr>
<tr>
<td><strong>Primary Height:</strong> Under 5 Feet</td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Type:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Material:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Secondary Height:</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Structure Summary:**
The set of placed stone groins has minor stone movement. There is no visible scour. The stones are 3 feet by 2 feet by 2 feet with a crest of one stone width wide.

<table>
<thead>
<tr>
<th><strong>Condition Rating</strong></th>
<th><strong>Priority Rating</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good</td>
<td>None</td>
</tr>
</tbody>
</table>

**Level of Action Description:** Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Structure Images:**
- 012-021-000-009-100-PHO1A.JPG
- 012-021-000-009-100-PHO1B.JPG
- 012-021-000-009-100-PHO1C.JPG

**Structure Documents:**
- USACE | May 2, 1974 | Proposed Groins and 012-021-000-009-100-COE1A

Prepared By: Bourne Consulting Engineering
Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Chilmark

Location: Menemsha Beach
Based On Comment: 
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $15,050.00

Length: 175 Feet
Primary Type: Bulkhead/Seawall
Primary Material: Wood
Primary Height: Under 5 Feet
FIRM Map Zone: V9
FIRM Map Elevation: 12 Feet NGVD
Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
Timber bulkhead with timber piers between a parking lot and the beach. The bulkhead is approximately 2 feet higher than grade of the beach. There is no visible scour or erosion.

Condition Rating
B Good
Level of Action Description
Minor
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating
I None
Action Description
Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images: 012-021-000-009-200-PHO2A.JPG
Structure Documents: MA-DCR February 19 Proposed Bulkhead 012-021-000-009-200-DCR2A

Prepared By: Bourne Consulting Engineering
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Menemsha Inlet</td>
<td>10/3/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilmark</td>
<td>Unknown</td>
<td>$147,580.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>470 Feet</td>
<td>Feet NAVD 88</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>V9</td>
<td>12 Feet NGVD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakwater</td>
<td>Stone</td>
<td>10 to 15 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
<th>Secondary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Structure Summary:**
Placed stone jetty on the west side of Menemsha Inlet. The stones are 4 feet by 3 feet by 3 feet on average. There are minor signs of stone movement. The structure also protects the boats and building behind it.

**Condition Rating**
- **B**
  - Good

**Level of Action Description**
- Minor
  - Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

**Priority Rating Action Description**
- **II**
  - Low Priority
  - Future Project Consideration
  - Inshore Structures Present with Limited potential for Significant Infrastructure Damage

**Structure Images:**
- [012-021-000-009-300-PHO3A.JPG](#)
- [012-021-000-009-300-PHO3B.JPG](#)

**Structure Documents:**
- [MA-DCR](#)
  - May 1949
  - Proposed Repairs to
  - [012-021-000-009-300-DCR3A](#)

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment
### Structure Assessment Form

**Property Owner:**
- Local

**Presumed Structure Owner:**
- Local

**Owner Name:**
- Chilmark

**Location:**
- Basin Road

**Date:**
- 10/3/2007

**Latest Structure Record:**
- Unknown

**Estimated Reconstruction/Repair Cost:**
- $15,708.00

**Length:** 100 Feet

**Top Elevation:**
- 9 Feet NGVD

**FIRM Map Zone:**
- A6

**Primary Type:**
- Revetment

**Primary Material:**
- Stone

**Primary Height:**
- 10 to 15 Feet

**Secondary Type:**
- Secondary Material:

**Secondary Height:**

### Structure Summary:
Dumped riprap at the abutments of the bridge on Basin Road. The stones are 2 feet by 1 foot by 1 foot on average.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Level of Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good</td>
<td>Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure/landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent/limit future deterioration and extend life of structure.</td>
</tr>
</tbody>
</table>

### Priority Rating Action Description
- Priority Rating: I
- Action Description: None
- Long Term Planning Considerations: No Inshore Structures or Residential Dwelling Units Present

### Structure Images:
- [012-027-000-142-100-PHO1A.JPG](#)

### Structure Documents:
- DEP
- December 1
- Plan Accompanying
- [012-027-000-142-100-LIC1A](#)

Prepared By: Bourne Consulting Engineering
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

<table>
<thead>
<tr>
<th>Property Owner:</th>
<th>Location:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Squibnocket Beach</td>
<td>10/3/2007</td>
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</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>$253,968.00</td>
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<table>
<thead>
<tr>
<th>Owner Name:</th>
<th>Earliest Structure Record:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilmark</td>
<td>Unknown</td>
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</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>325 Feet</td>
<td>Feet NAVD 88</td>
<td></td>
<td>Feet NGVD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revetment</td>
<td>Stone</td>
<td>10 to 15 Feet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Type:</th>
<th>Secondary Material:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Structure Summary:

Placed stone revetment set at a 1 on 1.5 slope. The stone size is 5 feet by 5 feet by 3 feet on average. There is moderate stone movement and visible under-layers. In front is a sandy beach. There is no visible scour. There is minor to moderate erosion behind.

### Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Fair</td>
<td>Moderate</td>
<td>Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Priority</th>
<th>Rating</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>None</td>
<td>Long Term Planning Considerations</td>
<td>No Inshore Structures or Residential Dwelling Units Present</td>
</tr>
</tbody>
</table>

### Structure Images:

- 012-035-000-030-100-PHO1A.JPG

### Structure Documents:

Prepared By: Bourne Consulting Engineering
Section VIII - Chilmark

Part C

Structure Photographs
Section VIII - Chilmark

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST

- Copies of License Documents

USACE – PERMIT DOCUMENT LIST

- Copies of Permit Documents
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>012-021-000-002-100</td>
<td>012-021-000-002-100-DCR1A</td>
<td>2622</td>
<td>MA-DCR</td>
<td>Chilmark</td>
<td>February 1969</td>
<td>Proposed Bulkhead and Related Facilities - Menemsha Basin - DPW of MA Division of Waterways</td>
<td>6</td>
<td>Menemsha Basin</td>
<td>Bulkhead</td>
</tr>
<tr>
<td>012-021-000-005-100</td>
<td>012-021-000-005-100-DCR1A</td>
<td>2622</td>
<td>MA-DCR</td>
<td>Chilmark</td>
<td>February 1968</td>
<td>Proposed Bulkhead and Related Facilities - Menemsha Basin - DPW of MA Division of Waterways</td>
<td>6</td>
<td>Menemsha Basin</td>
<td>Bulkhead</td>
</tr>
<tr>
<td>012-021-000-009-300</td>
<td>012-021-000-009-300-DCR3A</td>
<td>1094</td>
<td>MA-DCR</td>
<td>Chilmark</td>
<td>May 1949</td>
<td>Proposed Repair to Stone Jetties - Menemsha Inlet - Chilmark and Gay Head - DPW of MA Division of Waterways</td>
<td>1</td>
<td>Menemsha Inlet</td>
<td>Stone Jetties</td>
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<tr>
<td>BCE Structure No</td>
<td>Document No</td>
<td>Contract Drawing Number</td>
<td>Entity</td>
<td>Municipality</td>
<td>Date</td>
<td>Title</td>
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<tr>
<td>012-021-000-002-100</td>
<td>012-021-000-002-100-LIC1A</td>
<td>7266</td>
<td>DEP</td>
<td>Chilmark</td>
<td>November 3, 1998</td>
<td>Plan Accompanying Petition of The Town of Chilmark to Build and Maintain a Timber Pile Pier and Wharf and Dredge In Menemsha Creek, Chilmark, Mass.</td>
<td>8</td>
<td>Menemsha Creek</td>
<td>Bulkhead/Seawall</td>
</tr>
<tr>
<td>012-021-003-005-100</td>
<td>012-021-003-005-100-LIC1A</td>
<td>1642</td>
<td>DEP</td>
<td>Chilmark</td>
<td>August 11, 1987</td>
<td>Plan Accompanying Petition of the Commonwealth of Massachusetts DEM to Reconstruct and Maintain Steel Bulkhead, Timber Walkway, and Fender Piles in Menemsha Basin</td>
<td>2</td>
<td>Menemsha Basin Inlet</td>
<td>Steel Bulkhead</td>
</tr>
<tr>
<td>012-021-003-005-100</td>
<td>012-021-003-005-100-LIC1B</td>
<td>1642</td>
<td>DEP</td>
<td>Chilmark</td>
<td>August 11, 1987</td>
<td>Plan Accompanying Petition of The Comm. Of Massachusetts Dept. of Environmental Management to Reconstruct and Maintain Steel Bulkhead, Timber Walkway, and Fender Piles in Menemsha Basin</td>
<td>2</td>
<td>Menemsha Basin</td>
<td>Steel Bulkhead</td>
</tr>
<tr>
<td>012-027-003-142-100</td>
<td>012-027-000-142-100-LIC1A</td>
<td>6117</td>
<td>DEP</td>
<td>Chilmark</td>
<td>December 10, 1996</td>
<td>Plan Accompanying petition of the Town of Chilmark to Dredge and Maintain a Portion of Menemsha Basin In the Town of Chilmark, Mass.</td>
<td>2</td>
<td>Basin Road Bridge</td>
<td>Riprap</td>
</tr>
</tbody>
</table>
CROSS SECTION OF PROPOSED TIMBER WHARF

PROPOSED TIMBER WHARF

1" = 4'

10' TO 12" PILES

2" DECKING

3"X10" STRINGERS + BENTS

EXISTING CARWAY

MHW EL = 2.7'

MLW EL = 0.0'

HTL EL = 3.4'

PROFILE OF PROPOSED TIMBER WHARF

1" = 4'

10'

MHW EL = 2.7'

HTL EL = 3.4'

MLW EL = 0.0'

LICENSE PLAN NO. 7268

Approved by Department of Environmental Protection

Date: NOV 03 1998

PLAN ACCOMPANYING PETITION OF THE TOWN OF CHILMARK

SHEET 3 OF 8

JOB NO. 1130
CROSS SECTION OF PROPOSED PIER 1" = 4'

12" OAK FENDER PILES

12' x 12' BLOCKING BETWEEN FENDER PILES FOR LATERAL SUPPORT

HTL EL = +3.4
MLW EL = +2.7'
MLW EL = 0.0'

PROPOSED DREDGING TO EL = -8.0'

3 1/2" x 9 1/2" DECKING

12" x 12" STRINGERS AND BENTS ALL CCA PRESSURE TREATED

2" MINIMUM PAVEMENT MATERIAL

1/2" STEEL PLATE CF

STEEL ANGLE

EXISTING WOOD SHEATH

ZP-38 SHEET PILING TO BE DRIVEN TO A DEPTH OF 38' BELOW MLW 45' LENGTHS REQUIRED

ALL VOIDS BETWEEN THE OLD WOOD SHEATH AND THE NEW STEEL BULKHEAD ARE TO BE FILLED WITH PEASTON

ALL SUPPORT PILES TO BE CCA PRESSURE TREATED 12" DIA.

LICENSE PLAN NO. 7268

O1A-021-000-002-160

019-021-000-002-160

THIS PLAN IS NOT FOR CONSTRUCTION
THIS PLAN IS FOR PERMIT PURPOSES ONLY

COMMONWEALTH OF MASSACHUSETTS
KENT A. HEALY
PROFESSIONAL ENGINEER
NO. 28499
CIVIL

PROFESSIONAL ENGINEER
NO. 28499
CIVIL

NOV 03 1998
PIER PROFILE  1" = 4'

PROPOSED DECK EL = 6.8'

12" x 12" CAP
12" x 12" BLOCKING

MHW EL = 2.7'

HTL EL = 3.4'

MLW EL = 0.0'

6' MIN.

12" x 12" STRINGERS
12" x 12" BENTS
12" CCA PRESSURE TREATED SUPPORT PILES

12" OAK FENDER PILES

LICENSE PLAN NO.  F268
Approved by Department of Environmental Protection
Date:  NOV 03 1998

THIS PLAN IS NOT FOR CONSTRUCTION
PROPOSED TIMBER PIER
EL = +6.8'

EXISTING FILL PIER

PROPOSED STEEL BULKHEAD

PROPOSED DREDGING

4 TO 1 SLOPE

SECTION A-A
1" = 10'

HTL EL = 3.4'

MHW EL = +2.7'

MLW EL = 0.0'

PROPOSED EL = -8.0'

PROPOSED TIMBER PIER

EL = +6.8'

EXISTING FILL PIER

HTL EL = +3.4'

MHW EL = +2.7'

MLW EL = 0.0'

PROPOSED DREDGING

4 TO 1 SLOPE

SECTION B-B
1" = 10'

± 1,200 CU YDS DREDGING PROPOSED

LICENSE PLAN NO. 7268
Approved by Department of Environmental Protection
Date: NOV 03 1998

PLAN ACCOMPANYING PETITION OF
THE TOWN OF CHILMARK
SHEET 7 OF 8
JOB NO. 1130
CROSS SECTION OF PROPOSED CLUSTER PILING
1" = 4'

12" DIA CENTER PILE
EL = 13.0'

6 OUTER PILING 12" DIA

EL = 10.0'

3'

10'

MLW EL = 0.0'

MHW EL = 2.7'

PILINGS TO BE THROUGH BOLTED AND WIRE WRAPPED

LICENSE PLAN NO. 7268
Approved by Department of Environmental Protection
Date: NOV 03 1998

PLAN ACCOMPANYING PETITION OF THE TOWN OF CHILMARK

SHEET 8 OF 8
LICENSE PLAN No. 1642
Approved by Department of Environmental Quality Engineering
Date: August 11, 1987
86 W-206
NOTES:
Elevations and soundings are in feet and tenths and refer to the Datum of Mean Low Water.
This plan was prepared for licensee purposes only, not for construction.
Mean High Water, Mean Low Water, and Extreme Low Water are along existing bulkhead.

ROBERT C.
VERKADE
No. 29781
PROFESSIONAL ENGINEER
10/15/96

PLAN ACCOMPANYING PETITION OF THE COMM. OF MASSACHUSETTS DEPT. OF ENVIRONMENTAL MANAGEMENT TO RECONSTRUCT & MAINTAIN STEEL BULKHEAD, TIMBER WALKWAY, AND FENDER PILES IN MENEMSHA BASIN

TIBBETTS ENGINEERING CORP. NEW BEDFORD, MA.
LICENSE PLAN NO. 1642
Approved by Department of Environmental Quality Engineering of Massachusetts
COMMISSIONER
DIVISION DIRECTOR
SECTION CHIEF
LICENSE PLAN NO. 1642
Approved by Department of Environmental Quality Engineering
Date: August 11, 1987

PLAN ACCOMPANYING PETITION OF
THE COMM. OF MASSACHUSETTS
DEPT. OF ENVIRONMENTAL MANAGEMENT
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>912-021-000-005-100</td>
<td>012-021-000-005-103-COE1A</td>
<td>74-187</td>
<td>USACE</td>
<td>Chilmark</td>
<td>May 2, 1974</td>
<td>Proposed Groins and Bulkhead at Menemsha Basin - Chilmark, Dukes County, Mass.</td>
<td>4</td>
<td>Menemsha Basin Inlet</td>
<td>Groins and Bulkhead</td>
</tr>
<tr>
<td>912-021-000-009-100</td>
<td>012-021-000-009-100-COE1A</td>
<td>74-187</td>
<td>USACI</td>
<td>Chilmark</td>
<td>May 2, 1974</td>
<td>Proposed Groins and Bulkhead at Menemsha Basin - Chilmark, Dukes County, Mass.</td>
<td>4</td>
<td>Menemsha Basin Inlet</td>
<td>Groins and Bulkhead</td>
</tr>
</tbody>
</table>
MENEMSHA BASIN
CHILMARK
SHEET 3 OF 4
CONT NO 7788
AGS NO 02502
PROPOSED BULKHEAD DETAILS

MENEMSHA BASIN
CHILMARK
SHEET 4/5A
CONTRACT NO. 7784
AG&M NO. 504988
Section IX

Gosnold
Section IX – Community Findings – Town of Gosnold

COMMUNITY DESCRIPTION

The Town of Gosnold consists of a land area of 13.34 square miles out of a total area of 132.24 square miles and had a population of 86 in the 2000 census. The Town is located off the Cape of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline that is directly exposed to open ocean waves is 56.6 miles with the remaining shoreline semi-protected by offshore structures or landforms. The Town is protected from major coastal storms by both natural and man-made shoreline structures that require maintenance to insure the long term protection of its coastline. The man-made and publicly owned structures that protect the Town were investigated for their ability to provide adequate protection from major coastal storms. Structures have been identified as publicly owned, including coastal dunes and beaches, based on evidence of investment of public funds made to create/enhance/maintain these structures. The assessment did not include floating or pile supported structures as they are assumed not to provide any significant coastal protection from major storm events.

STRUCTURE INVENTORY

Within the Town of Gosnold, there were 7 structures which had public or unknown ownership which provide significant coastal protection. The location of the structures can be seen in Sheets 1 in Section IX-B of this report. The structures were categorized by their type and by their structural condition based on a preliminary field assessment. The distribution of structures by type and condition can be seen in the following table:

<table>
<thead>
<tr>
<th>Primary Structure (ft)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>F</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>1</td>
<td>A</td>
<td></td>
<td>135</td>
</tr>
<tr>
<td>Revetment</td>
<td>3</td>
<td>B, C, D</td>
<td></td>
<td>835</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>3</td>
<td>C, D</td>
<td>F</td>
<td>900</td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>4, 2, 1</td>
<td>F</td>
<td>1870</td>
</tr>
</tbody>
</table>

Within the above table, the total length of each type of structure is also provided. The structures are listed by the type which is providing the primary coastal protection. Many sites have multiple structure types at the same location (i.e. revetment in front of seawall). These secondary structures, although not identified within these tables, are included in the development of repair/rehabilitation costs.

The development of repair costs has been included by structure type and by condition. In the Town of Gosnold’s case there are a total of 7 structures which would require approximately $ 903,725 to bring all the coastal structures to “A” Rating. Most critical will be the structures in the “D” and “F” classifications as those are assumed to undergo some level of damage or failure during the next major coastal storm event. To reconstruct these structures, identified in the preliminary survey as being in poor condition, an estimated $ 398,400 would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Gosnold

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>1</td>
<td></td>
<td>$20,493</td>
<td></td>
<td></td>
<td></td>
<td>$20,493</td>
</tr>
<tr>
<td>Revetment</td>
<td>3</td>
<td>$111,388</td>
<td></td>
<td>$60,060</td>
<td></td>
<td></td>
<td>$171,451</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>3</td>
<td>$157,000</td>
<td></td>
<td>$156,400</td>
<td></td>
<td>$398,376</td>
<td>$711,779</td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Coastal Beach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7</strong></td>
<td><strong>$288,881</strong></td>
<td><strong>$216,460</strong></td>
<td><strong>$398,376</strong></td>
<td></td>
<td></td>
<td><strong>$903,723</strong></td>
</tr>
</tbody>
</table>

Based on the limited research within the scope of this project research, the presumed ownership of the structures was established on an initial basis and would be subject to more intense review in future tasks. Structures identified as being owned privately were excluded from further consideration. Although ownership of the land on which the structure was located was a factor, the structure ownership was treated as a separate issue from land ownership. For the Town of Gosnold, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Gosnold

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>Total Structures</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Owned</td>
<td>7</td>
<td>$288,881</td>
<td>$216,450</td>
<td>$398,376</td>
<td></td>
<td></td>
<td>$903,707</td>
</tr>
<tr>
<td>Commonwealth of Mass.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7</strong></td>
<td><strong>$288,881</strong></td>
<td><strong>$216,450</strong></td>
<td><strong>$398,376</strong></td>
<td></td>
<td></td>
<td><strong>$903,707</strong></td>
</tr>
</tbody>
</table>

The identification of presumed ownership was not based on the investigation of legal documents but relied on property ownership and from construction and regulatory documents that were found. A more detailed investigation of legal documents and agreements would be required where structure ownership is disputed. A more detailed identification of structure type, length, condition and location can be found in Section IX-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Gosnold’s coastal structure information that will eventually be input into a state-wide GIS database and will be accessible through MassGIS. This data, when compiled state-wide, will be critical in the development of both short term and long term planning for maintaining and improving Massachusetts coastal protection.

This database will also provide relatively quick access to identify available documentation for these structures as well as the ability to be updated as coastal structure improvements are made.
Section IX - Gosnold

Part B

Structure Assessment Reports
**CZM Coastal Infrastructure Inventory and Assessment**

**Structure Assessment Form**

**Property Owner:**
Local

**Presumed Structure Owner:**
Local

**Owner Name:**
Gosnold

**Location:**
Town Pier

**Date:**
9/26/2007

**Based On Comment:**

**Earliest Structure Record:**
Unknown

**Estimated Reconstruction/Repair Cost:**
$156,400.00

**Length:**
100 Feet

**Top Elevation:**
Feet NAVD 88

**FIRM Map Zone:**
A12

**FIRM Map Elevation:**
12 Feet NGVD

**Primary Type:**
Groin/ Jetty

**Primary Material:**
Stone

**Primary Height:**
10 to 15 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
Groin extending out from the Town Pier. Signs of stone movement and section loss. The stones are approximately 3 feet by 2 feet by 2 feet in size.

**Condition Rating**
C

**Level of Action Description**
Moderate

**Priority Rating Action Description**
Low Priority Future Project Consideration Inshore Structures Present with Limited potential for Significant Infrastructure Damage

**Structure Images:**
029-001-000-018-100-PHO1A.JPG
029-001-000-018-100-PHO1B.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Gosnold

Location: Town Pier
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $20,493.00

Town: Gosnold
Structure ID: 029-001-000-018-200
Key: community-map-block-parcel-structure

Length: 135 Feet
Top Elevation: 12 Feet NGVD
FIRM Map Zone: A12
FIRM Map Elevation: 12

Primary Type: Bulkhead/Seawall
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
Placed stone on a 1:1 slope. There is no visible scour. There is minor erosion at the top. Above the seawall is access to piers and Harbor Master’s office. The stones are 2 feet by 2 feet by 2 feet on average.

Condition Rating
B Good

Level of Action Description
Minor
Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
III Moderate Priority Consider for Active Project Improvement Listing
Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (≤1 dwelling impacted / 100 feet of shoreline)

Structure Images:
029-001-000-018-200-PHO2A.JPG
029-001-000-018-200-PHO2B.JPG

Structure Documents:
USACE November 1 Proposed Dock 029-001-000-018-200-COE2A
MA-DCR February 19 Proposed Hurricane 029-001-000-018-200-DCR2A

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner:
Local

Presumed Structure Owner:
Local

Owner Name:
Gosnold

Location:
Town Pier

Based On Comment:

Earliest Structure Record:
Unknown

Date:
9/26/2007

Estimated Reconstruction/Repair Cost:
$60,060.00

Length: 100 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: A12

FIRM Map Elevation: Feet NGVD

Primary Type: Revetment

Primary Material: Stone

Primary Height: 5 to 10 Feet

Secondary Type: 

Secondary Material: 

Secondary Height:

Structure Summary:
Dumped stone riprap with various stone sizes. Most are 12 inches down. Behind is parking lot. Many areas of section loss.

Condition Rating Level of Action Description
C Fair Moderate Structure is sound but may exhibit minor deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure adequate to withstand major coastal storm with little to moderate damage. Actions taken to reinforce structure to provide full protection from major coastal storm and for extending life of structure. Moderate wind or wave damage to landform exists. Landform may not be sufficient to fully protect shoreline during a major coastal storm. Actions taken to provide additional material for full protection and extended life.

Priority Rating Action Description
1 None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images:
029-001-000-018-300-PHO3A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local

Presumed Structure Owner: Local

Owner Name: Gosnold

Location: Cuttyhunk North Jetty

Based On Comment: 

Earliest Structure Record: Unknown

Estimated Reconstruction/Repair Cost: $157,000.00

Date: 9/26/2007

Length: 500 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: V14

FIRM Map Elevation: 14 Feet NGVD

Primary Type: Groin/ Jetty

Primary Material: Stone

Primary Height: 10 to 15 Feet

Secondary Type: 

Secondary Material: 

Secondary Height: 

Structure Summary:
Dumped stone mound jetty at the entrance of Cuttyhunk Pond. There is minor stone movement. There is no visible scour. On both sides is a sandy beach. The stones are 4 feet by 2 feet by 2 feet on average.

Condition Rating: B

Level of Action Description: Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating: 1

Action Description: Long Term Planning Considerations

Structure Images:

029-067-000-004-100-PHO1A.JPG

029-067-000-004-100-PHO1B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
## Structure Assessment Form

### Property Owner:
Local

### Presumed Structure Owner:
Local

### Owner Name:
Gosnold

### Location:
Guttyhunk South Jetty

### Based On Comment:

### Earliest Structure Record:
Unknown

### Estimated Reconstruction/Repair Cost:
$398,376.00

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 Feet</td>
<td>Feet NAVD 88</td>
<td>V14</td>
<td>14 Feet NGVD</td>
</tr>
</tbody>
</table>

### Primary Type:
Groin/ Jetty

### Primary Material:
Stone

### Primary Height:
Under 5 Feet

### Secondary Type:

### Secondary Material:

### Secondary Height:

### Structure Summary:
Dumped stone jetty with moderate to heavy stone movement and section loss. Stones are 3 feet by 2 feet by 2 feet on average.

### Condition
D

### Rating
Poor

### Level of Action
Major

### Description
Structure exhibits advanced levels of deterioration, section loss, cracking, spalling, undermining, and/or scour. Structure has strong risk of significant damage and possible failure during a major coastal storm. Structure should be monitored until repairs/reconstruction can be initiated. Actions taken to reconstruct structure to regain full capacity to resist a major coastal storm. Landform eroded, stability threatened. Landform not adequate to provide protection during major coastal storm. Actions taken to recreate landform to adequate limits for full protection from a major coastal storm.

### Priority
I

### Rating
None

### Action
Long Term Planning Considerations

### Description
No Inshore Structures or Residential Dwelling Units Present

### Structure Images:
- 029-095-000-002-100-PHO1A.JPG
- 029-095-000-002-100-PHO1B.JPG

### Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Gosnold

Location: Cuttyhunk Harbor
Based On Comment:
Earliest Structure Record: Unknown

Date: 9/26/2007
Estimated Reconstruction/Repair Cost: $98,175.00

Length: 625 Feet, Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: V14
FIRM Map Elevation: 14 Feet NGVD

Primary Type: Revetment
Primary Material: Stone
Primary Height: 10 to 15 Feet

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Dumped stone revetment with stones that average 3 feet by 2 feet by 2 feet in size. The stones are cut very angularly. In front of the structure is a cobble beach. There is no visible scour. There is minor stone movement.

Condition Rating Level of Action Description
B Good Minor Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
I None Long Term Planning Considerations No Inshore Structures or Residential Dwelling Units Present

Structure Images:
029-095-000-002-200-PHO2A.JPG
029-095-000-002-200-PHO2B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Gosnold

Location: Blue Herring Drive
Based On Comment:

Earliest Structure Record: Unknown

Length: 110 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A12
FIRM Map Elevation: 12 Feet NGVD

Primary Type: Revetment
Primary Material: Stone
Primary Height: 5 to 10 Feet

Secondary Type: Structure Summary:
Secondary Material: Placed stone dike with stones that average 4 feet by 2 feet by 2 feet in size. The crest is one stone length wide. There is minor stone movement and scour. Most of the structure is overgrown with dune grass.
Secondary Height: 

Condition Rating
Level of Action Description Structure observed to exhibit very minor problems, superficial in nature. Minor erosion to landform is present. Structure / landform adequate to provide protection from a major coastal storm with no damage. Actions taken to prevent / limit future deterioration and extend life of structure.

Priority Rating Action Description
1 None
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
029-095-000-007-100-PHO1A.JPG
029-095-000-007-100-PHO1B.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
Section IX - Gosnold

Part C

Structure Photographs
<table>
<thead>
<tr>
<th>BCE Structure No.</th>
<th>Document No</th>
<th>Contract/ Drawing Number</th>
<th>Entity</th>
<th>Municipality</th>
<th>Date</th>
<th>Title</th>
<th>Sheets</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>029-001-000-018-100</td>
<td>029-001-000-018-100-P01A.jpg</td>
<td>Bourne Consulting Engineering</td>
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Section IX - Gosnold

Part D

Structure Documents

TOWN DOCUMENT LIST

MA DCR - DOCUMENT LIST

MA DEP – Ch 91 DOCUMENT LIST
  • Copies of License Documents

USACE – PERMIT DOCUMENT LIST
  • Copies of Permit Documents
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No MA - DEP Ch. 91 Documents for the Town of Gosnold

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LOCATION: BOSTON, MA
DATE OF RESEARCH: JULY 2007
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