Massachusetts Coastal Infrastructure  
Inventory and Assessment Project  
Coastal Hazards Commission

South Coastal

Swansea  
Somerset  
Westport  
Dartmouth

July 6, 2009

Prepared for:
Massachusetts Department of Conservation and Recreation  
Hingham, Massachusetts

Presented by:
Bourne Consulting Engineering  
Franklin, Massachusetts
TABLE OF CONTENTS

Section I – Coastal Hazards Infrastructure and Assessment Program

INTRODUCTION
PURPOSE
DEVELOPMENT OF MassGIS DATABASE ATTRIBUTES
DEVELOPMENT OF REPAIR / RECONSTRUCTION COSTS

Section II – Swansea

Part A - Community Findings

• COMMUNITY DESCRIPTION

• STRUCTURE INVENTORY

• SUMMARY OF FINDINGS

Part B - Structure Assessment Reports

Part C - Structure Photographs

Part D - Structure Documents

• TOWN DOCUMENT LIST
  o Document Table

• MA DCR – DOCUMENT LIST
  o Document Table

• MA DEP – CH 91 DOCUMENT LIST
  o Document Table
  o Copies of License Documents

• USACE – PERMIT DOCUMENT LIST
  o Document Table
  o Copies of Permit Documents
Section III – Somerset

Part A - Community Findings

• COMMUNITY DESCRIPTION

• STRUCTURE INVENTORY

• SUMMARY OF FINDINGS

Part B - Structure Assessment Reports

Part C - Structure Photographs

Part D - Structure Documents

• TOWN DOCUMENT LIST
  ○ Document Table

• MA DCR – DOCUMENT LIST
  ○ Document Table

• MA DEP – CH 91 DOCUMENT LIST
  ○ Document Table
  ○ Copies of License Documents

• USACE – PERMIT DOCUMENT LIST
  ○ Document Table
  ○ Copies of Permit Documents

Section IV – Westport

Part A - Community Findings

• COMMUNITY DESCRIPTION

• STRUCTURE INVENTORY

• SUMMARY OF FINDINGS

Part B - Structure Assessment Reports
South Coastal

Part C - Structure Photographs

Part D - Structure Documents

- TOWN DOCUMENT LIST
  - Document Table
- MA DCR – DOCUMENT LIST
  - Document Table
- MA DEP – CH 91 DOCUMENT LIST
  - Document Table
  - Copies of License Documents
- USACE – PERMIT DOCUMENT LIST
  - Document Table
  - Copies of Permit Documents

Section V – Dartmouth

Part A - Community Findings

- COMMUNITY DESCRIPTION
- STRUCTURE INVENTORY
- SUMMARY OF FINDINGS

Part B - Structure Assessment Reports

Part C - Structure Photographs

Part D - Structure Documents

- TOWN DOCUMENT LIST
  - Document Table
- MA DCR – DOCUMENT LIST
  - Document Table
- MA DEP – CH 91 DOCUMENT LIST
  - Document Table
  - Copies of License Documents
South Coastal

- USACE - PERMIT DOCUMENT LIST
  - Document Table
  - Copies of Permit Documents
Section I

Coastal Hazards Infrastructure and Assessment Program

INTRODUCTION

PURPOSE

DEVELOPMENT OF MassGIS DATABASE ATTRIBUTES

DEVELOPMENT OF REPAIR / RECONSTRUCTION COSTS
Section 1 – 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.

South Coastal
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
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:** Ownerships 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 determine 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>A 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>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>
<td>Minor</td>
</tr>
<tr>
<td>C 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>D 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>F 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 Low Priority</td>
<td>Inshore Structures Present with Limited potential for Significant Infrastructure Damage</td>
<td>Future Project Consideration</td>
</tr>
<tr>
<td>III Moderate Priority</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 High Priority</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 Immediate / Highest Priority</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>
### Exhibit C

**Repair / Rehabilitation Costing Data**

Cost per linear foot of structure

<table>
<thead>
<tr>
<th>Structure Type</th>
<th>Structure Materials</th>
<th>Height</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulkhead/Seawall</strong></td>
<td>ConcretE</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$84</td>
<td>$425</td>
<td>$650</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>$3,900</td>
<td>$4,752</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$54</td>
<td>$273</td>
<td>$546</td>
<td>$690</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$165</td>
<td>$825</td>
<td>$1,650</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>$425</td>
<td>$860</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>$3,900</td>
<td>$4,752</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$86</td>
<td>$431</td>
<td>$892</td>
<td>$994</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 To 10 Feet</td>
<td>$0</td>
<td>$127</td>
<td>$632</td>
<td>$1,205</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><strong>Coastal Beach</strong></td>
<td>Sand</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$26</td>
<td>$132</td>
<td>$264</td>
<td>$284</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>$1,287</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>$2,444</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Over 15 Feet</td>
<td>$0</td>
<td>$396</td>
<td>$1,980</td>
<td>$3,960</td>
<td>$3,990</td>
</tr>
<tr>
<td><strong>Coastal Dune</strong></td>
<td>BambE</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>$48</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>$793</td>
<td>$793</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><strong>Revetment</strong></td>
<td>Stone</td>
<td>Under 5 Feet</td>
<td>$0</td>
<td>$66</td>
<td>$333</td>
<td>$654</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>$2,666</td>
</tr>
<tr>
<td><strong>Groin</strong></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>$3,382</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

Swansea
Section II – Community Findings – Town of Swansea

COMMUNITY DESCRIPTION

The Town of Swansea consists of a land area of 23.07 square miles out of a total area of 25.54 square miles and had a population of 15,901 in the 2000 census. The Town is located on the south coast 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 4.7 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 Swansea, 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 through Sheet 3 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:

<table>
<thead>
<tr>
<th>Primary Structure (1)</th>
<th>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>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Revetment</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>1</td>
<td>4</td>
<td>1</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 Swansea’s case there are a total of 6 structures which would require approximately $ 797,860 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 $ 220,000 would be required to upgrade the Town’s coastal protection.
### STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Swansea

<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></td>
<td></td>
<td></td>
<td></td>
<td>$220,110</td>
</tr>
<tr>
<td>Revetment</td>
<td>5</td>
<td></td>
<td>$362,855</td>
<td></td>
<td>$214,896</td>
<td></td>
<td>$577,751</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>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td></td>
<td>$362,855</td>
<td></td>
<td>$214,896</td>
<td>$220,110</td>
<td>$797,861</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 Swansea the breakdown of structures by assumed ownership is as follows:

### STRUCTURE OWNERSHIP / REPAIR COST - Town of Swansea

<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></td>
<td>$362,855</td>
<td></td>
<td>$214,896</td>
<td>$220,110</td>
<td>$797,861</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>7</td>
<td></td>
<td>$362,855</td>
<td></td>
<td>$214,896</td>
<td>$220,110</td>
<td>$797,861</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 Swansea’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 - Swansea

Part B

Structure Assessment Reports
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Town: Swansea
Structure ID: 072-045-000-076-100
Key: community-map-block-parcel-structure

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Swansea

Location: Ocean Grove Beach
Based On Comment:

Earliest Structure Record: 1993
Estimated Reconstruction/Repair Cost: $214,896.00

Date: 7/5/2007

Length: 275 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: V17
FIRM Map Elevation: 21 Feet NGVD

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

Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
The dumped riprap has a slope of 1 on 1. The stones are approximately 3 feet by 2 feet by 2 feet in size. There is crushed stone at the crest. There is a building behind the revetment, and the town beach is adjacent and in front of the structure. There is moderate erosion at the top. There is some stone movement. No visible scour.

Condition Rating
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
Low Priority
Future Project Consideration

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

Structure Images:
072-045-000-076-100-PHO1A.JPG

Structure Documents:
DEP March 9, 1999 Plan Accompanying 072-045-000-076-100-LJC1A

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>Ocean Grove Beach</td>
<td>5/12/2009</td>
</tr>
<tr>
<td>Presumed Structure Owner:</td>
<td>Based On Comment:</td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner Name:</td>
<td>Earliest Structure Record:</td>
<td>Estimated Reconstruction/Repair Cost:</td>
</tr>
<tr>
<td>Swansea</td>
<td>2000</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>
</tr>
</thead>
<tbody>
<tr>
<td>2000 Feet</td>
<td>21 Feet NGVD</td>
<td>V17</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Type:</th>
<th>Primary Material:</th>
<th>Primary Height:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Beach</td>
<td>Sand</td>
<td>Under 5 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:

Sandy beach with some areas of 1 foot diameter cobbles, that shows signs of recent beach nourishment. Behind is a parking lot and houses. There is no sign of erosion or storm damage.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</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>

<table>
<thead>
<tr>
<th>Priority</th>
<th>Rating</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>Moderate Priority</td>
<td>Consider for Active Project Improvement Listing</td>
<td>Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (&lt;1 dwelling impacted / 100 feet of shoreline)</td>
</tr>
</tbody>
</table>

### Structure Images:

- 072-045-000-076-200-PH02A.JPG
- 072-045-000-076-200-PH02B.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: Swansea

Location: Lands End Way
Date: 7/5/2007

Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $220,110.00

Length: 145 Feet
Top Elevation: 88 Feet NAVD
FIRM Map Zone: V17
FIRM Map Elevation: 18 Feet NGVD

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

Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
The stone block seawall has stones that are approximately 4 feet by 2 feet by 2 feet in size. The wall has failed and fallen on top of itself at one side. The stones have fallen off throughout. There is no sign of scour. There is a small gravel beach in front and adjacent to the structure.

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
I None No Inshore Structures or Residential Dwelling Units Present

Structure Images:
072-046-000-077-100-PHO1A.JPG
072-046-000-077-100-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: Swansea

Location: Route 103

Date: 7/5/2007

Based On Comment:

Earliest Structure Record: Unknown

Estimated Reconstruction/Repair Cost: $113,546.00

Length: 460 Feet

Top Elevation: 88 Feet NAVD 88

FIRM Map Zone: A13

FIRM Map Elevation: 16 Feet NGVD

Primary Type: Revetment

Primary Material: Stone

Primary Height: Over 15 Feet

Secondary Type: 

Secondary Material: 

Secondary Height: 

Structure Summary:
The placed riprap is at a 1 on 2 slope with stones that are approximately 4 feet by 2 feet by 2 feet in size. The stones are not placed tightly together. There is some signs of movement. The revetment is used to protect the Route 103 bridge abutments and adjacent banks. Mean high water reaches mid-height of the stones.

<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 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>

<table>
<thead>
<tr>
<th>Priority</th>
<th>Rating</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>Moderate Priority</td>
<td>Consider for Active Project Improvement Listing</td>
<td>Inshore Structures with potential for Infrastructure Damage and/or Limited Residential Dwellings (&lt;1 dwelling impacted / 100 feet of shoreline)</td>
</tr>
</tbody>
</table>

Structure Images:
- 072-052-000-267-100-PHO1A.JPG
- 072-052-000-267-100-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: Swansea

Location: Route 103
Based On Comment: 
Earliest Structure Record: Unknown

Date: 7/5/2007
Estimated Reconstruction/Repair Cost: $86,394.00

Length: 350 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: A13
FIRM Map Elevation: Feet NGVD 16

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

Structure Summary:
The placed riprap is at a slope of 1 on 2. The stones are approximately 4 feet by 2 feet by 2 feet. The stones are not placed tightly together. There is some sign of movement. The riprap protects the abutments for the Route 103 bridge and adjacent banks. Mean high water is at mid-height of the slope.

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
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:
072-052-000-304-100-PHO1A.JPG
072-052-000-304-100-PHO1B.JPG

Structure Documents:

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

Structure Assessment Form

Property Owner:
Local

Location:
Route 195

Date: 7/5/2007

Presumed Structure Owner:
Local

Based On Comment:

Owner Name:
Swansea

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost: $78,989.00

<table>
<thead>
<tr>
<th>Length: 320 Feet</th>
<th>Top Elevation: 15 Feet NGVD</th>
<th>FIRM Map Zone: A11</th>
</tr>
</thead>
</table>

FIRM Map Elevation: 15 Feet NGVD

Primary Type: Revetment

Primary Material: Stone

Primary Height: Over 15 Feet

Secondary Type: Stone Material:

Secondary Height:

Structure Summary:
The structure is in front of the east bridge abutment for Route 195 is at a 1 on 1 slope with stones that are approximately 4 feet by 2 feet in size. There is no sign of erosion or stone movement.

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 IV

Level of Action Description 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: 072-053-000-185-100-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:
Swansea

Location:
Route 195

Date:
7/5/2007

Based On Comment:

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost:
$83,926.00

Length:
340 Feet
Top Elevation:
6 Feet NAVD 88
FIRM Map Zone:
A11
FIRM Map Elevation:
15 Feet NGVD

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

Secondary Type:

Secondary Material:

Secondary Height:

Structure Summary:
The 4 feet by 2 feet by 2 feet stones are placed at a 1 on 1 slope to protect the west bridge abutment for Route 195. There is no sign of erosion or stone movement.

Condition Rating
B Good

Priority Rating
IV High Priority

Level of Action Description
Minor

Action Description
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:
[072-058-000-001-100-PHO1A.JPG]

Structure Documents:

Prepared By: Bourne Consulting Engineering
Section II - Swansea

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>Shots</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>072-045-000-076-100</td>
<td>072-045-000-076-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-045-000-076-200</td>
<td>072-045-000-076-200-PHO2A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>Apr-07</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>072-045-000-076-200</td>
<td>072-045-000-076-200-PHO2B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>Apr-07</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>072-046-000-077-100</td>
<td>072-046-000-077-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-046-000-077-100</td>
<td>072-046-000-077-100-PHO1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-052-000-267-100</td>
<td>072-052-000-267-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-052-000-267-100</td>
<td>072-052-000-267-100-PHO1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-052-000-304-100</td>
<td>072-052-000-304-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-052-000-304-100</td>
<td>072-052-000-304-100-PHO1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-053-000-185-100</td>
<td>072-053-000-185-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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>072-058-000-001-100</td>
<td>072-058-000-001-100-PHO1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Swansea</td>
<td>August 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 II - Swansea

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 MA - DCR Documents for the Town of Swansea

<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>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>Sheets</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>
<tr>
<td>072-045-000-076-100</td>
<td>072-045-000-076-100-LIC1A</td>
<td>3314</td>
<td>DEP</td>
<td>Swansea</td>
<td>March 9, 1993</td>
<td>Plan Accompanying Petition of Town of Swansea to Construct and Maintain Shoreline Protection in Cole River and Mount Hope Bay</td>
<td>3</td>
<td>Ocean Grove Avenue</td>
<td>Construct and Maintain Shoreline Protection</td>
</tr>
</tbody>
</table>
1. SITE: BLUFFS COMMUNITY CENTER
   OCEAN GROVE AVENUE, SWANSEA, MA
2. ASSESSORS IDENTIFICATION: PLAT 48, LOT 76
3. ELEVATIONS: BASED ON MEAN LOW WATER DATUM
4. MASSACHUSETTS D.E.P.: FILE # SE 72-250
   SUPERCEDED ORDER OF CONDITIONS DATED FEB 26, 1993
6. PROPOSED WORK IS CONSISTENT WITH MASSACHUSETTS
   COASTAL ZONE MANAGEMENT PLAN REQUIREMENTS.
7. NO STRUCTURES IN NAVIGABLE WATERS ARE ADJACENT
   TO THE PROPOSED SITE.
8. PROPOSED WORK IS CONSISTENT WITH TOWN BY-LAWS.

"BM A-2"

BENCH MARKS
DRILL HOLE ELEV = 12.93' MLW
PK NAIL ELEV = 14.21' MLW

C-# = CURVE DATA (SEE SHEET 2)

Cole River - Mt. Hope Bay
√ Ebb - TIDAL - Flood

PLAN

PLAN ACCOMPANYING PETITION OF
TOWN OF SWANSEA
TO CONSTRUCT AND MAINTAIN
SHORELINE PROTECTION
IN COLE RIVER & MT. HOPE BAY

LICENSE PLAN NO. 3314
Approved by Department of Environmental Protection
of Massachusetts

COMMISIONER
DEPARTMENT DIRECTOR

SCALE: 1" = 50
SECTION A–A  SCALE: 1" = 8'

LICENSE PLAN NO. 33/4
Approved by Department of Environmental Protection
Date: MAY 21 1993

SECTION B–B  SCALE: 1" = 8'

NOTES & SPECIFICATIONS
1. EXISTING STONE MEETING UNDERLAYMENT SPEC. SHALL BE REUSED. CONCRETE AND DEBRIS SHALL BE REMOVED. CHINK VOIDS IN EXISTING STONE TO 3" ABOVE SURFACE PRIOR TO PLACEMENT OF GEOTEXTILE AND STONE BEDDING.
2. ARMOR STONE SIZE: 1700 – 2900 LBS (50% > 2300 LBS)
3. UNDERLAYMENT STONE SIZE: 179 – 290 LBS (50% > 230 LBS)
4. STONE BEDDING SIZE: 1–1/2" CRUSHED STONE
5. CONTRACTOR’S WORK LIMITS EXTENDS 40 FEET SEWARD OF CONTROL LINE.
6. ESTIMATED DREDGING QUANTITY = 326 CY. DISPOSAL SITE: TOWN VETERAN’S MEMORIAL PARK, G.A.R. HIGHWAY, ROUTE 6, SWANSEA, MA
7. ELEVATIONS: BASED ON MEAN LOW WATER DATUM

PLAN ACCOMPANYING PETITION OF
TOWN OF SWANSEA
TO CONSTRUCT AND MAINTAIN
SHORELINE PROTECTION
IN COLE RIVER & MT. HOPE BAY
COUNTY OF BRISTOL, SWANSEA, MA
Section III

Somerset
Section III – Community Findings – Town of Somerset

COMMUNITY DESCRIPTION
The Town of Somerset consists of a land area of 8.11 square miles out of a total area of 11.98 square miles and had a population of 18,234 in the 2000 census. The Town is located on the south coast of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline is 6.6 miles that are directly exposed to open ocean with the remaining shoreline forming a semi-protected bay with the neighboring town of Fall River. 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 Somerset, there were 12 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 5 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</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>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>810</td>
</tr>
<tr>
<td>Revetment</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>1995</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>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>230</td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>12</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td>3035</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 Swansea’s case there are a total of 12 structures which would require approximately $2.8 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 $1.8 million would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Somerset

<table>
<thead>
<tr>
<th>Primary Structure (t)</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>4</td>
<td>$25,000</td>
<td>$429,660</td>
</tr>
<tr>
<td>Retention</td>
<td>7</td>
<td>$21,014</td>
<td>$489,480</td>
</tr>
<tr>
<td>Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grain / Jetty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>1</td>
<td>$10,212</td>
<td>$910,140</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>$57,032</td>
<td>$910,140</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 Somerset the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Somerset

<table>
<thead>
<tr>
<th>Primary Structure (t)</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>11</td>
<td>$50,432</td>
<td>$910,140</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td>1</td>
<td>$6,600</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>
<tr>
<td></td>
<td>12</td>
<td>$67,032</td>
<td>$910,140</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 Somerset'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 - Somerset

Part B

Structure Assessment Reports
**Structure Assessment Form**

**Property Owner:**  
State

**Presumed Structure Owner:**  
State

**Owner Name:**  
MHD

**Location:**  
Route 6 Bridge

**Date:**  
7/5/2007

**Based On Comment:**

**Earliest Structure Record:**  
Unknown

**Estimated Reconstruction/Repair Cost:**  
$6,600.00

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 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>V11</td>
<td>20 Feet NGVD</td>
</tr>
</tbody>
</table>

**Primary Type:**  
Revetment

**Primary Material:**  
Stone

**Primary Height:**  
Under 5 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
The dumped riprap has stones that are approximately 200 pounds. Behind and adjacent to the riprap is a bridge abutment. There is no sign of scour at the toe.

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

**Structure Images:**  
[070-0A8-000-001-100-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: Somerset
Location: Riverside Street
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $1,391,590.00
Date: 7/5/2007

Length: 1325 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: 19
FIRM Map Elevation: V17

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

Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
The dumped riprap is on a 1 on 1 to a 1 on 3 slope. Most stones are 1 foot diameter. There are some larger concrete slabs randomly placed throughout. There is minor scour at the toe. There is a road and houses behind the structure. There is a small boat ramp located in the middle of the structure.

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
IV High Priority Consider for Next Project Constructor 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:
[070-0B1-000-001-100-PHO1A.JPG]

Structure Documents:

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Somerset

Location: Riverside Street
Based On Comment: 
Earliest Structure Record: Unknown

Date: 7/5/2007
Estimated Reconstruction/Repair Cost: $250,800.00

<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>100 Feet</td>
<td>16 Feet NAVD 88</td>
<td></td>
<td>A13 Feet NGVD</td>
</tr>
</tbody>
</table>

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

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
The stone block seawall is built in front of a road and adjacent to a concrete culvert. Some stones are 1 foot in diameter and are mortared. The remaining stones are 4 feet by 1 foot by 1 foot. There is some visible setting, shifting and rotating.

Condition Rating
D 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
IV High Priority

Action Description
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: 070-0C9-000-301-100-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:**
- Somerset

**Location:**
- Pierce Park

**Based On Comment:**

**Earliest Structure Record:**
- Unknown

**Estimated Reconstruction/Repair Cost:**
- $10,212.00

**Date:**
- 7/5/2007

### Measurements

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>230 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>20 Feet</td>
<td>Feet NGVD</td>
</tr>
<tr>
<td></td>
<td>V17</td>
</tr>
</tbody>
</table>

### Primary Characteristics

- **Primary Type:** Coastal Beach
- **Primary Material:** Sand
- **Primary Height:** Under 5 Feet

- **Secondary Type:** Coastal Dune
- **Secondary Material:** Sand
- **Secondary Height:** Under 5 Feet

### Structure Summary:

The small beach has a 1 on 15 slope with sand dunes behind it. The beach is filled and graded well. There is a park located behind the beach.

### Condition Rating

- **Condition Rating:** B
- **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:** None
- **Action Description:** Long Term Planning Considerations
- **No Inshore Structures or Residential Dwelling Units Present**

### Structure Images:

- 070-0D1-000-049-100-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: Somerset

Location: Dublin Street
Based On Comment: 
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $5,405.00

Date: 7/5/2007

Length: 45 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: 16
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:
The dumped riprap is 1 foot in diameter with a 1 on 2 to a 1 on 3 slope. The structure is in place to protect the road behind it. There is no visible erosion or scour.

Condition Rating: B
Level of Action: Minor
Description: 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: I
Action Description: None

Structure Images:
070-001-000-071-100-PHO1A.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>South Street Culvert</td>
<td>7/5/2007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Early Structure Record:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Unknown</td>
<td>$9,009.00</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>Somerset</td>
<td>Unknown</td>
<td>$9,009.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 Feet</td>
<td>Feet NAVD 88</td>
<td>16</td>
<td>A13</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>

<table>
<thead>
<tr>
<th>Structure Summary:</th>
</tr>
</thead>
</table>
The dumped riprap is 1 foot down with a 1 on 2 to a 1 on 3 slope. There is no erosion or scour visible. There are culverts adjacent on both sides.

<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>

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

**Structure Images:**

070-001-000-072-100-PHO1A.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>Mallard Point</td>
<td>7/5/2007</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>$50,160.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length: 40 Feet</th>
<th>Top Elevation: 17 Feet NAVD 88</th>
<th>FIRM Map Zone: B</th>
<th>FIRM Map Elevation: 17 Feet NGVD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Primary Type: Bulkhead/Seawall</th>
<th>Primary Material: Concrete</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:**
The stone block seawall has a cast in place top. The structure is an abandoned train bridge abutment. The stones are approximately 4 feet by 2 feet by 2 feet and are set offset. The cast in place wall is 4 feet high by 4 feet wide. There are many cracks and spalling in the cast in place wall.

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

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

**Structure Images:**
- [070-0D2-000-013-100-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: Somerset

Location: Mallard Point
Based On Comment:

Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $210,210.00

Date: 7/5/2007

Length: 175 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: B
FIRM Map Elevation: 17 Feet NGVD

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

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

Structure Summary:
The dumped riprap is on a slope. The stones are approximately 300 to 400 pounds in size. Some section loss and stone movement are visible. In front of the slope is approximately 10 to 15 stones of the same size lined up. They are there possibly to protect the riprap toe behind them.

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
1 None Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
070-0D2-000-013-200-PHO2A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Somerset

Location: Mallard Point
Based On Comment: 
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $210,210.00

Length: 175 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: B
FIRM Map Elevation: 17 Feet NGVD

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

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

Structure Summary:
The sloped dumped riprap has stones that are approximately 300 to 400 pounds. There is some visible section loss and stone movement throughout. In front of the slope there is approximately 10 to 15 stones lined up, possibly to protect the riprap toe behind them.

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 Units Present

Structure Images:
070-002-000-013-300-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: Somerset

Location: Waterfront Park
Based On Comment:
Earliest Structure Record: 1984
Estimated Reconstruction/Repair Cost: $379,500.00

Date: 7/5/2007

Length: 500 Feet NAVD 88
Top Elevation: 18 Feet NGVD
FIRM Map Zone: V17
FIRM Map Elevation:

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

Structure Summary:
The stone blocks are approximately 3 feet by 1 foot in size with a concrete walkway above and parking lot behind it. There is a boat ramp located at one end of the structure. There is some stone settling, and a few stones are missing. There are areas of erosion and undermine.

Condition Rating
C Fair
Moderate

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
1 None
Long Term Planning Considerations
No Inshore Structures or Residential Dwelling Units Present

Structure Images:
070-0D2-000-109-100-PHO1A.JPG

Structure Documents:

<table>
<thead>
<tr>
<th>USACE</th>
<th>September 1</th>
<th>Waterfront</th>
<th>070-0D2-000-109-100-COE1A</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>January 9, 1</td>
<td>Plan Accompanying</td>
<td>070-0D2-000-109-100-LIC1A</td>
</tr>
<tr>
<td>DEP</td>
<td>March 29, 19</td>
<td>Plans Accompanying</td>
<td>070-0D2-000-109-100-LIC1B</td>
</tr>
</tbody>
</table>

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

**Structure Assessment Form**

- **Location:** Waterfront Park  
  **Date:** 7/5/2007
- **Presumed Structure Owner:** Local
- **Owner Name:** Somerset
- **Earliest Structure Record:** 1984  
  **Estimated Reconstruction/Repair Cost:** $60,060.00

**Length:** 100 Feet  
**Top Elevation:** 18 Feet NAVD 88  
**FIRM Map Zone:** 18  
**FIRM Map Elevation:** V17  
**Feet NGVD:**

<table>
<thead>
<tr>
<th>Primary Type: Revetment</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:**
The dumped riprap is on a 1 on 1 slope with stones that are approximately 3 feet by 2 feet by 2 feet in size. The stones have signs of movement and settling.

<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>Fair</td>
<td>None</td>
<td>Moderate</td>
<td>Long Term Planning Considerations</td>
</tr>
<tr>
<td></td>
<td></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>
<td></td>
</tr>
</tbody>
</table>

**Structure Images:**
- 070-0D2-000-109-200-PHO2A.JPG

**Structure Documents:**
- **USACE:** September 1 - Waterfront  
  070-0D2-000-109-200-COE2A
- **DEP:** January 9, 1 - Plan Accompanying  
  070-0D2-000-109-200-LIC2A
- **DEP:** March 29, 19 - Plans Accompanying  
  070-0D2-000-109-200-LIC2B

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

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Somerset
Location: Main Street
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $25,606.00

Length: 170 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone:
FIRM Map Elevation:
Primary Type: Bulkhead/Seawall
Primary Material: Stone
Primary Height: 5 to 10 Feet
Secondary Type:
Secondary Material:
Secondary Height:

Structure Summary:
The stone bulkhead protects the street, walkway and houses behind it. The stones are approximately 3 feet by 2 feet in size. There is some stone heaving.

Condition Rating
B Good
Priority Rating
II Low Priority
Level of Action Minor
Future Project Consideration
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.

Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
070-0D2-000-118-100-PHO1A.JPG

Structure Documents:

Prepared By: Bourne Consulting Engineering
Section III - Somerset

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>070-0A8-000-001-100</td>
<td>070-0A8-000-001-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0B1-000-001-100</td>
<td>070-0B1-000-001-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0C9-000-301-100</td>
<td>070-0C9-000-301-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D1-000-049-100</td>
<td>070-0D1-000-049-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D1-000-071-100</td>
<td>070-0D1-000-071-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D1-000-072-100</td>
<td>070-0D1-000-072-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-013-100</td>
<td>070-0D2-000-013-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-013-200</td>
<td>070-0D2-000-013-200-PH02A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-013-300</td>
<td>070-0D2-000-013-300-PH03A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-109-100</td>
<td>070-0D2-000-109-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-109-200</td>
<td>070-0D2-000-109-200-PH02A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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>070-0D2-000-118-100</td>
<td>070-0D2-000-118-100-PH01A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Somerset</td>
<td>August 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 III - Somerset

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>
</table>

No MA - DCR Documents for the Town of Somerset
<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>070-002-000-109-100</td>
<td>070-002-000-109-100-L1C1A</td>
<td>185</td>
<td>DEP</td>
<td>Somerset</td>
<td>January 9, 1985</td>
<td>Plans Accompanying Petition of Town of Somerset Board of Selectmen to Construct and Maintain Waterfront Improvement at Village Waterfront Park in the Taunton River, Town of Somerset, County of Bristol, Mass.</td>
<td>3</td>
<td>Main Street</td>
<td>Waterfront Improvements - Including the Existing Seawall</td>
</tr>
<tr>
<td>070-002-000-109-100</td>
<td>070-002-000-109-100-L1C1B</td>
<td>289</td>
<td>DEP</td>
<td>Somerset</td>
<td>March 20, 1996</td>
<td>Plans Accompanying Petition of Town of Somerset Board of Selectmen to Provide Additional Floats and Piling at Village Waterfront Park, in the Taunton River, Town of Somerset, County of Bristol, Mass.</td>
<td>3</td>
<td>Main Street</td>
<td>New Floats Around Existing Seawall</td>
</tr>
<tr>
<td>070-002-000-109-200</td>
<td>070-002-000-109-200-L1C2A</td>
<td>185</td>
<td>DEP</td>
<td>Somerset</td>
<td>January 9, 1985</td>
<td>Plans Accompanying Petition of Town of Somerset Board of Selectmen to Construct and Maintain Waterfront Improvement at Village Waterfront Park in the Taunton River, Town of Somerset, County of Bristol, Massachusetts</td>
<td>3</td>
<td>Main Street</td>
<td>Waterfront Improvements - Including the Existing Seawall</td>
</tr>
<tr>
<td>070-002-000-109-200</td>
<td>070-002-000-109-200-L1C3B</td>
<td>289</td>
<td>DEP</td>
<td>Somerset</td>
<td>March 20, 1996</td>
<td>Plans Accompanying Petition of Town of Somerset Board of Selectmen to Provide Additional Floats and Piling at Village Waterfront Park, in the Taunton River, Town of Somerset, County of Bristol, MA</td>
<td>3</td>
<td>Main Street</td>
<td>New Floats Around Existing Seawall</td>
</tr>
</tbody>
</table>
PLAN ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO CONSTRUCT AND MAINTAIN WATERFRONT IMPROVEMENTS AT VILLAGE WATERFRONT PARK IN THE TAUNTON RIVER, TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.

N/F
JOSEPH BANNE GANEM
336 MAIN STREET
SOMERSET, MA.
M.H.W.
PROPOSED WALKWAY

TOWN OF SOMERSET
140 WOOD STREET
SOMERSET, MA.

PROPOSED WALKWAY

PROPOSED DOCK/FLOAT SYSTEM

EXISTING RIP-RAP TO BE SURFACE DRESSED.

REBUILD COLLAPSED WALL & REMOVE RIP-RAP

EXISTING SEAWALL

N/F
JOHN & SHEILA R.
ASHCROFT
200 MAIN STREET
SOMERSET, MA.

SOUNDINGS AND ELEVATIONS ARE IN FEET AND REFER TO MEAN LOW WATER.

FROM C.B.G.S. CHART No. 353

COMMUNWEALTH OF MASSACHUSETTS
LICENSE PLAN NO.1185

Approved by Department of Environmental Quality Engineering of Massachusetts
January 9, 1985
COMMISSIONER
CHIEF ENGINEER
DIVISION DIRECTOR
ELEVATION OF FLOAT & RAMP
12" BELOW M.L.W.

SCALE 1/8"=1'-0"

1 2 3 4 5
SCALE IN FEET

12'-0"

BUMPER
(2) 2x8 EDGE
2x12 DECK

20"±

POLYSTYRENE FLOAT
1x6 DIAGONALS AT 12" O.C.

TYPICAL SECTION

SCALE 3/8"=1'-0"

1 2 3 4 5
SCALE IN FEET

PLAN ACCOMPANYING PETITION OF TOWN OF SOMERSET BOARD OF SELECTMEN TO CONSTRUCT AND MAINTAIN WATERFRONT IMPROVEMENTS AT VILLAGE WATERFRONT PARK IN THE TAUNTON RIVER, TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 1185
Approved by Department of Environmental Quality Engineering
January 9, 1985
CONCRETE WALKWAY
W.W.F. 6x6 x 6 GA.
EL. 7.70

COMPACTED GRAVEL

UNDISTURBED EARTH

EXISTING SEAWALL

M.H.W. 4.40

M.L.W. 0.00

SECTION A-A
SCALE 3/8"=1'-0"

PLAN ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO CONSTRUCT AND MAINTAIN WATERFRONT
IMPROVEMENTS AT VILLAGE WATERFRONT PARK
IN THE TAUNTON RIVER, TOWN OF SOMERSET,
COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 1185
Approved by Department of Environmental Quality Engineering
JANUARY 9, 1985.
PLANS ACCOMPANYING PETITION OF TOWN OF SOMERSET
BOARD OF SELECTMEN
TO PROVIDE ADDITIONAL FLOATS & PILINGS AT VILLAGE WATERFRONT PARK IN THE TAUNTON RIVER,
TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 2689
Approved by Department of Environmental Protection of Massachusetts

Brant Seals Haworth
REGISTERED PROFESSIONAL ENGINEER
Sheet 1 of 3
LICENSE PLAN NO. 2589
Approved by Department of Environmental Protection
Date: May 4, 1991

ENLARGED PLAN
SCALE: 1/8" = 1'-0"

SCALE IN FEET
NOTES:
1. ALL TIMBERS & LUMBER TO BE PRESSURE TREATED.
2. ALL HARDWARE & FASTENERS TO BE HOT DIPPED GALVANIZED.

TYPICAL SECTION
SCALE: 1/2" = 1'-0"

PLANS ACCOMPANYING PETITION OF TOWN OF SOMERSET BOARD OF SELECTMEN TO PROVIDE ADDITIONAL FLOATS & PILINGS AT VILLAGE WATERFRONT PARK, IN THE TAUNTON RIVER, TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.
LICENSE PLAN NO. 2589
Approved by Department of Environmental Protection
Date: MAR 29 1991

PLANS ACCOMPANYING PETITION OF TOWN OF SOMERSET BOARD OF SELECTMEN TO PROVIDE ADDITIONAL FLOATS & PILINGS AT VILLAGE WATERFRONT PARK, IN THE TAUNTON RIVER, TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.
PLAN ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO CONSTRUCT AND MAINTAIN WATERFRONT
IMPROVEMENTS AT VILLAGE WATERFRONT PARK
IN THE TAUNTON RIVER, TOWN OF SOMERSET,
COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 1185
Approved by Department of Environmental Quality Engineering
of Massachusetts January 9, 1985

CHIEF ENGINEER
DIVISION DIRECTOR
ELEVATION OF FLOAT & RAMP

12" BELOW M.L.W.
SCALE 1/8"=1'-0"

EXIST. BOTTOM
12x16 FLOAT
12x16 FLOAT
12'

18'-0"

20"

M.L.W. 0.00
(-)1.00

EL. 7.70

1" Ø PIN

EL. 11.00

TYPICAL SECTION

POLYSTYRENE FLOAT

1 x 6 DIAGONALS AT 12" O.C.

2 x 12 DECK

2 x 8 EDGE

(2) 2 x 8 EDGE

SCALE 3/8"=1'-0"

COMMUNWEALTH OF MASSACHUSETTS
RODNEY W. WICK
NO. 2783X
PROFESSIONAL ENGINEER

PLAN ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO CONSTRUCT AND MAINTAIN WATERFRONT
IMPROVEMENTS AT VILLAGE WATERFRONT PARK
IN THE TAUNTON RIVER, TOWN OF SOMERSET,
COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 1185
Approved by Department of Environmental Quality Engineering
JANUARY 9, 1985
SECTION A-A

SCALE 3/8"=1'-0"

PLAN ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO CONSTRUCT AND MAINTAIN WATERFRONT
IMPROVEMENTS AT VILLAGE WATERFRONT PARK
IN THE TAUNTON RIVER, TOWN OF SOMERSET,
COUNTY OF BRISTOL, MASS.

LICENSE PLAN NO. 1185
Approved by Department of Environmental Quality Engineering
January 9, 1985
TOWN OF SOMERSET
300 MAIN STREET
SOMERSET, MA.

JOSEPH & ANNE Ganem
336 MAIN STREET
SOMERSET, MA.

SOUNDINGS & ELEVATIONS
ARE IN FEET AND REFER TO
MEAN LOW WATER.

EXISTING FLOATS
AND PILINGS

EXISTING SEAWALL

PROPOSED NEW FLOATS
AND NEW PILINGS

EXISTING STRUCTURES
AUTHORIZED UNDER
LICENSE NO 1185

BRANT SEALS
HAWORTH
No. 23900

LICENSE PLAN NO. 2389
Approved by Department of Environmental Protection
of Massachusetts

SHEET 1 OF 3
LICENSE PLAN NO. 2589
Approved by Department of Environmental Protection

Date: Mar. 9, 1991

ENLARGED PLAN

SCALE: 1/8" = 1' 0"

SCALE IN FEET

NOTES:
1. All timbers & lumber to be pressure treated.
2. All hardware & fasteners to be hot dipped galvanized.

2x8 decking
Bumper

POLYSTYRENE LOGS
2x8's

TYPICAL SECTION

SCALE: 1/2" = 1' 0"

SCALE IN FEET

PLANS ACCOMPANYING PETITION OF
TOWN OF SOMERSET
BOARD OF SELECTMEN
TO PROVIDE ADDITIONAL FLOATS &
PILINGS AT VILLAGE WATERFRONT
PARK, IN THE TAUNTON RIVER,
TOWN OF SOMERSET, COUNTY OF
BRISTOL, MASS.
LICENSE PLAN NO. 2589
Approved by Department of Environmental Protection
Date: MAR 29 1991

PLANS ACCOMPANYING PETITION OF TOWN OF SOMERSET BOARD OF SELECTMEN TO PROVIDE ADDITIONAL FLOATS & PILINGS AT VILLAGE WATERFRONT PARK, IN THE TAUNTON RIVER, TOWN OF SOMERSET, COUNTY OF BRISTOL, MASS.
| BCE Structure No | Document No | Contract/ Drawing Number | Entity | Municipality | Date       | Title                                                                 | Sheets | Location | Description                  |
|------------------|-------------|--------------------------|--------|--------------|------------|                                                                     |        |          |                              |
| 070-002-000-109-100 | 070-002-000-109-100-COE1A | 64-240         | USACE  | Somerset     | September 1984 | Waterfront Improvements in Taunton River at Town of Somerset, County of Bristol, Commonwealth of Massachusetts | 3      | Main Street | Seawall and Boat Ramp     |
| 070-002-000-109-200 | 070-002-000-109-200-COE2A | 64-240         | USACE  | Somerset     | September 1984 | Waterfront Improvements in Taunton River at Town of Somerset, County of Bristol, Commonwealth of Massachusetts | 3      | Main Street | Seawall and Boat Ramp     |
TOWN OF SOMERSET
140 WOOD STREET
SOMERSET, MA.

PROPOSED WALKWAY

EXISTING RIP-RAP
TO BE SURFACE DRESSED.

PROPOSED DOCK/FLOAT SYSTEM

REBUILD COLLAPSING WALL & REMOVE RIP-RAP

EXISTING SEAWALL

N/F
JOHN & SHEILA R.
ASHCROFT
200 MAIN STREET
SOMERSET, MA.

N/F
JOSEPH B. ANNE GANEM
335 MAIN STREET
SOMERSET, MA.

M.H.W.

E.L.W.

PROPOSED WALKWAY

TAUNTON RIVER

WATERFRONT IMPROVEMENTS
IN TAUNTON RIVER
AT TOWN OF SOMERSET
COUNTY OF BRISTOL
COMMONWEALTH OF MASSACHUSETTS
APPLICATION BY:
TOWN OF SOMERSET
BOARD OF SELECTMEN
JUNE 1984
ELEVATION OF FLOAT & RAMP

12" BELOW M.L.W.

SCALE 1/8"=1'-0"

12" FLOAT

12" FLOAT

M.L.W. 0.00

1" Ø PIN

EL. 11.00

EXIST. BOTTOM

10'

3'

18'-0"

20"

2 x 12 DECK

2 x 12's

(2) 2 x 8 EDGE

POLYSTYRENE FLOAT

1 x 6 Diagonals at 12" O.C.

TYPICAL SECTION

SCALE 3/8"=1'-0"

WATERFRONT IMPROVEMENTS
IN TAUNTON RIVER
AT TOWN OF SOMERSET
COUNTY OF BRISTOL
COMMONWEALTH OF MASSACHUSETTS

APPLICATION BY:
TOWN OF SOMERSET
BOARD OF SELECTMEN
JUNE 1984
SECTION A-A

SCALE 3/8" = 1'-0"

WATERFRONT IMPROVEMENTS
IN TAUNTON RIVER
AT TOWN OF SOMERSET,
COUNTY OF BRISTOL,
COMMONWEALTH OF
MASSACHUSETTS

APPLICATION BY:
TOWN OF SOMERSET
BOARD OF SELECTMEN
JUNE 1984
WATERFRONT IMPROVEMENTS IN TAUNTON RIVER AT TOWN OF SOMERSET COUNTY OF BRISTOL COMMONWEALTH OF MASSACHUSETTS
APPLICATION BY: TOWN OF SOMERSET BOARD OF SELECTMEN JUNE 1984
ELEVATION OF FLOAT & RAMP

12" BELOW M.L.W.
SCALE 1/8"=1'-0"

EXIST.
BOTTOM

EL. 11.00

12x16 FLOAT

12x16 FLOAT

18'-0"

20"

M.L.W. 0.00
(-11.00)

1" Ø PIN

TYPICAL SECTION

SCALE 3/8"=1'-0"

WATERFRONT IMPROVEMENTS
IN TAUNTON RIVER
AT TOWN OF SOMERSET
COUNTY OF BRISTOL
COMMONWEALTH OF MASSACHUSETTS
APPLICATION BY:
TOWN OF SOMERSET
BOARD OF SELECTMEN
JUNE 1984
SECTION A-A

WATERFRONT IMPROVEMENTS IN TAUNTON RIVER
AT TOWN OF SOMERSET, JET
COUNTY OF BRISTOL
COMMONWEALTH OF MASSACHUSETTS
APPLICATION BY:
TOWN OF SOMERSET
BOARD OF SELECTMEN
JUNE 1984
Section IV

Westport
Section IV – Community Findings – Town of Westport

COMMUNITY DESCRIPTION

The Town of Westport consists of a land area of 50.06 square miles out of a total area of 64.4 square miles and had a population of 14183 in the 2000 census. The Town is located south coast of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline is 8.2 miles that are directly exposed to open ocean. 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 even.

STRUCTURE INVENTORY

Within the Town of Westport, there were 14 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>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>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>617</td>
</tr>
<tr>
<td>Revetment</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5325</td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>380</td>
</tr>
<tr>
<td>Coastal Dune</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>17375</td>
</tr>
</tbody>
</table>

| Total | 14  | 8  | 5  | 1  | 23762 |

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 Westport’s case there are a total of 14 structures which would require approximately $12.4 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 $86,300 would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Westport

<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>3</td>
<td>$ 80,817</td>
<td>$ 250,113</td>
<td></td>
<td></td>
<td></td>
<td>$ 336,930</td>
</tr>
<tr>
<td>Revetment</td>
<td>6</td>
<td>$ 862,519</td>
<td>$ 66,528</td>
<td></td>
<td></td>
<td></td>
<td>$ 949,047</td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td></td>
<td>$ 86,315</td>
<td></td>
<td></td>
<td></td>
<td>$ 86,315</td>
</tr>
<tr>
<td>groin / Jetty</td>
<td>2</td>
<td>$ 55,560</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 55,560</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>2</td>
<td></td>
<td>$ 11,008,800</td>
<td></td>
<td></td>
<td></td>
<td>$ 11,008,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>$ 1,018,896</td>
<td>$ 11,331,441</td>
<td>$ 86,315</td>
<td></td>
<td>$ 12,436,652</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 Westport, the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Westport

<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>8</td>
<td>$ 363,813</td>
<td>$ 1,127,313</td>
<td>$ 86,315</td>
<td></td>
<td></td>
<td>$ 1,577,441</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td>6</td>
<td>$ 655,083</td>
<td>$ 10,204,128</td>
<td></td>
<td></td>
<td></td>
<td>$ 10,859,211</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></td>
<td>14</td>
<td>$ 1,018,896</td>
<td>$ 11,331,441</td>
<td>$ 86,315</td>
<td></td>
<td>$ 12,436,652</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 Westport’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 IV - Westport

Part B

Structure Assessment Reports
## CZM Coastal Infrastructure Inventory and Assessment

### Structure Assessment Form

- **Property Owner:** State
- **Location:** Route 88 Bridge
- **Presumed Structure Owner:** State
- **Based On Comment:**
- **Earliest Structure Record:** Unknown
- **Estimated Reconstruction/Repair Cost:** $370,260.00

### Measurements
- **Length:** 1500 feet NAVD 88
- **Top Elevation:** 14 feet NGVD
- **FIRM Map Zone:** A11
- **FIRM Map Elevation:**

### Description
- **Primary Type:** Revetment
- **Primary Material:** Stone
- **Primary Height:** Over 15 feet
- **Secondary Type:**
- **Secondary Material:**
- **Secondary Height:**

### Structure Summary
The placed riprap is on a 1 to 1 slope. The stones are approximately 4 feet by 2 feet by 2 feet in size. The riprap protects the bridge abutment and road leading to the bridge. The stones are well placed and interlocked. There is no sign of scour or movement.

### Condition Rating
- **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
- **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:
- [080-058-000-061-100-PHO1A.JPG](#)

### Structure Documents:

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

**Property Owner:**
- State

**Presumed Structure Owner:**
- State

**Owner Name:**
- MHD

**Location:**
- Route 88 Bridge

**Based On Comment:**

**Earliest Structure Record:**
- Unknown

**Estimated Reconstruction/Repair Cost:**
- $160,446.00

<table>
<thead>
<tr>
<th>Length: 650 Feet</th>
<th>Top Elevation: 14 Feet NGVD 88</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRM Map Zone: A11</td>
<td>FIRM Map Elevation: 14</td>
</tr>
<tr>
<td>Primary Type: Revetment</td>
<td>Primary Material: Stone</td>
</tr>
<tr>
<td>Secondary Type:</td>
<td>Secondary Material:</td>
</tr>
</tbody>
</table>

**Structure Summary:**
The placed riprap with stones of approximately 4 feet by 2 feet by 2 feet size is on a 1 to 1 slope. The riprap protects the bridge abutment and road leading to the bridge. The stones are well placed and interlocked with no sign of scour or movement.

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

**Structure Images:**
- [080-058-000-061-200-PNO2A.JPG]

**Structure Documents:**

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

Structure Assessment Form

Town: Westport
Structure ID: 080-076A-000-082-100
Key: community-map-block-parcel-structure

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Westport

Location: Westport Point
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $871,200.00

Date: 6/28/2007

Length: 1375 Feet
Top Elevation: 88 Feet NAVD 88
FIRM Map Zone: V14
FIRM Map Elevation: 19 Feet NGVD

Primary Type: Coastal Beach
Primary Material: Sand
Primary Height: 5 to 10 Feet

Secondary Type: Secondary Material: Secondary Height:

Length: 1375 Feet
Top Elevation: 88 Feet
FIRM Map Zone: V14
FIRM Map Elevation: 19 Feet

Structure Summary:
Coastal beach with cobble stones that are at a 1 on 5 slope. There is a road located behind the beach and a sandy beach located in front. The slope is not uniform and there are areas of low spots.

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 additional material for full protection and extended life.

Priority Rating
II
Low Priority

Action Description
Future Project Consideration
Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
080-076A-000-082-100-PH01A.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>
</table>

Presumed Structure Owner:
Local

Owner Name: Westport

Estimated Reconstruction/Repair Cost: $192,192.00

<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>1600 Feet</td>
<td>Feet NAVD 88</td>
<td>V14 Feet NGVD</td>
<td>19 Feet NGVD</td>
</tr>
</tbody>
</table>

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

Secondary Type: 
Secondary Material: 
Secondary Height: 

Structure Summary:
The placed riprap is at a 1 on 2 slope. The stones are approximately 4 feet by 2 feet by 2 feet in size. The toe is buried. There is no scour. There is minor stone movement and section loss. Behind the structure is the only road out to the point. High tide line is midway up the riprap.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Level of Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good Minor</td>
<td>III Moderate Priority</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>

Structure Images:
080-076A-000-132-100-PHO1A.jpg

Structure Documents:
MA-DCR | August 1999 | Proposed Causeway | 080-076A-000-132-100-DCR1A |

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

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Westport
Location: Gooseberry Neck
Based On Comment:
Earliest Structure Record: 1999
Estimated Reconstruction/Repair Cost: $132,132.00
Date: 6/28/2007

Length: 1100 Feet
Top Elevation: Feet NAVD 88
FIRM Map Zone: V14
FIRM Map Elevation: Feet NGVD 19

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

Structure Summary:
The placed riprap is at a 1 on 2 slope. The stones are approximately 4 feet by 2 feet by 2 feet in size. The toe is buried. There is no scour. There is minor stone movement and section loss. Behind the structure is the only road out to the point. High tide line is midway up the riprap.

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
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:
080-076A-000-151-100-PH01A.jpg

Structure Documents:
MA-DCR August 1999 Proposed Causeway 080-076A-000-151-100-DCR1A

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>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</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>MA-DCR</td>
<td>1981</td>
<td>$65,528.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>Feet NAVD 88</td>
<td>V14</td>
<td>16</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>Under 5 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:**
The dumped riprap is adjacent to the boat ramp. Stones average 4 feet by 2 feet by 2 feet in size. The stones show signs of movement and section loss. The cast in place ramp is located between the riprap.

**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

**Structure Images:**
- 080-076A-000-152-100-PHO1A.JPG

**Structure Documents:**
- USACE: June 2, 1981
- MA-DCR: 9/1/1982
- Goldeberry Neck
- Boat Ramp -

Prepared By: Bourne Consulting Engineering
Structure Assessment Form

Property Owner: Local

Presumed Structure Owner: Local

Owner Name: Westport

Location: Main Road

Based On Comment:

Earliest Structure Record: 1957

Estimated Reconstruction/Repair Cost: $221,958.00

Date: 6/28/2007

Length: 177 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: A11

FIRM Map Elevation: 13 Feet NGVD

Primary Type: Bulkhead/ Seawall

Primary Material: Stone

Primary Height: 10 to 15 Feet

Secondary Type: Secondary Material:

Secondary Height:

Structure Summary:
The stone block seawall is mortared together. The stones have settled. There is some movement and section loss. Asphalt and concrete on top of the stones. The structure is a pier.

Condition Rating

Moderate

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

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:

080-083-000-001-100-PH01A.jpg

Structure Documents:

MA-DCR April 1957 Proposed Harbor 080-083-000-001-100-DCR1A

MA-DCR June 2000 Proposed Harbor 080-083-000-001-100-DCR1B

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

Structure Assessment Form

Property Owner: Local

Presumed Structure Owner: Local

Owner Name: Westport

Location: Main Road

Based On Comment:

Earliest Structure Record: 1957

Estimated Reconstruction/Repair Cost: $27,489.00

Length: 175 Feet

Top Elevation: NAVD 88

FIRM Map Zone: A11

FIRM Map Elevation: 13 Feet NGVD

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Secondary Type: Secondary Material:

Secondary Height:

Structure Summary:
There are dumped stones with asphalt on top of them with a timber pier built around them. The stones are approximately 100 to 200 pounds.

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
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:
080-083-000-002-100-PH01A.JPG

Structure Documents:
MA-DCR April 1957 Proposed Harbor 080-083-000-002-100-DCR1A
MA-DCR June 2000 Proposed Harbor 080-083-000-002-100-DCR1B

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

Structure Assessment Form

Property Owner: Local

Location: Main Road

Based On Comment:

Earliest Structure Record: 1957

Estimated Reconstruction/Repair Cost: $34,155.00

Length: 45 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: Feet NGVD

FIRM Map Elevation:

Primary Type: Bulkhead/Seawall

Primary Material: Stone

Primary Height: 5 to 10 Feet

Secondary Type: Secondary Material:

Secondary Height:

Structure Summary:
The stone block bulkhead has stones that are approximately 4 feet by 2 feet by 2 feet in size. There is an asphalt road above the stones connecting to the pier. There is no visible scour. There is some stone settling at the toe.

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

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:
[080-083-000-002-200-PHO2A.JPG]
[080-083-000-002-200-PHO2B.JPG]

Structure Documents:
MA-DCR April 1957 Proposed Harbor 080-083-000-002-200-DCR2A
MA-DCR June 2000 Proposed Harbor 080-083-000-002-200-DCR2B

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: Horseneck Point
Based On Comment: 
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $43,560.00

Date: 6/28/2007

Length: Top Elevation: 330 Feet
FIRM Map Zone: V14
FIRM Map Elevation: 15 Feet NAVD 88
Feet NGVD

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

Structure Summary:
Dumped riprap groin. Stones are approximately 4 feet by 2 feet by 2 feet. Not all stones are visible. The structure is 90 percent buried by sand.

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
Low Priority Future Project Consideration
Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
080-090-000-002-100-PHO1A.JPG
080-090-000-002-100-PHO1B.JPG

Structured Documents:

Prepared By: Bourne Consulting Engineering
CZN 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>State</td>
<td>Horseneck Beach</td>
<td>4/23/2009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Presumed Structure Owner:</th>
<th>Based On Comment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</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>MA-DCR</td>
<td></td>
<td>$10,137,600.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length:</th>
<th>Top Elevation:</th>
<th>FIRM Map Zone:</th>
<th>FIRM Map Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>16000</td>
<td>Feet NAVD 88</td>
<td>V14</td>
<td>15 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>Coastal Beach</td>
<td>Sand</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>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Structure Summary:
Sandy beach with high dunes behind. Beach is a popular habitat for nesting protected birds. The are west end of the beach show signs of recent nourishment.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rating</th>
<th>Priority</th>
<th>Level of Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Fair</td>
<td>High</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>
</tbody>
</table>

Structure Images:
- 080-090-000-054-100-PHO1A.JPG
- 080-090-000-054-100-PHO1B.JPG
- 080-090-000-054-100-PHO1C.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: 
MHD

Location: 
Bridge Road

Based On Comment:

Earliest Structure Record: 1995

Estimated Reconstruction/Repair Cost: $80,817.00

Length: 395 Feet

Top Elevation: 12 Feet NAVD 88

FIRM Map Zone: A11

FIRM Map Elevation: Feet NGVD

Primary Type: Bulkhead/Seawall

Primary Material: Concrete

Primary Height: Under 5 Feet

Secondary Type: Revetment

Secondary Material: Stone

Secondary Height: 5 to 10 Feet

Structure Summary:
The cast in place seawall surrounds the town boat ramp. There is riprap coming off the seawall. The wall is 1 foot wide by 1 foot high inshore and by 5 feet high outshore. The riprap is placed at a 1 on 1 slope. The stones are approximately 4 feet by 2 feet by 2 feet. The toe is well buried. There is no sign of scour. There is a parking lot behind the structures, and a boat ramp and floats in the middle of them.

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

Structure Images: 080-091-000-061-100-PH01A.JPG

Structure Documents: DEP November 1 Plan to Accompany 080-091-000-061-100-LIC1A

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

**Property Owner:**
Local

**Location:**
Bridge Road

**Owner Name:**
Westport

**Date:**
6/28/2007

**Presumed Structure Owner:**
Local

**Based On Comment:**

**Earliest Structure Record:**
1995

**Estimated Reconstruction/Repair Cost:**
$86,315.00

**Length:**
65 Feet

**Top Elevation:**
65 Feet NAVD 88

**FIRM Map Zone:**
A11

**FIRM Map Elevation:**
14 Feet NGVD

**Primary Type:**
Breakwater

**Primary Material:**
Stone

**Primary Height:**
Under 5 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

---

**Structure Summary:**
The breakwater is in place to protect the boat ramp. The structure is 2 feet wide, constructed of cobbles and mortar. There is some section loss and scour at the base of the structure. There are also cracks in the mortar.

**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**
- Low Priority

**Future Project Consideration**
- Inshore Structures Present with Limited potential for Significant Infrastructure Damage

---

**Structure Images:**
- 080-091-000-061-200-PHO2A.JPG

**Structure Documents:**
- DEP
- Nov 1995
- Plan to Accompany
- 080-091-000-061-200-LIC2A

---

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

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Westport
Location: Bridge Road
Based On Comment: 
Earliest Structure Record: 1995

Length: 50 Feet Top Elevation: 14 Feet NGVD
FIRM Map Zone: A11
FIRM Map Elevation: 88 Feet NAVD

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

Date: 6/28/2007
Estimated Reconstruction/Repair Cost: $12,000.00

Structure Summary:
The dumped riprap groin has stones that are approximately 2 feet by 1 foot by 1 foot in size. There is no sign of movement or scour.

Condition Rating
Level of Action Description
B Good
Minor
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 Action Description
II Low Priority Future Project Consideration
Inshore Structures Present with Limited potential for Significant Infrastructure Damage

Structure Images:
[080-091-000-061-300-PHO3A.JPG]

Structure Documents:
[DEP] [Nov 1995] Plan to Accompany [080-091-000-061-300-LIC3A]

Prepared By: Bourne Consulting Engineering
Section IV - Westport

Part C

Structure Photographs
<table>
<thead>
<tr>
<th>BCE Structure No</th>
<th>Document No</th>
<th>Contract Draw 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>080-005-000-061-100</td>
<td>080-005-000-061-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-005-000-061-200</td>
<td>080-005-000-061-200-PHD2A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0076A-000-082-100</td>
<td>080-0076A-000-082-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0076A-000-132-100</td>
<td>080-0076A-000-132-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0076A-000-151-100</td>
<td>080-0076A-000-151-100-PHD1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0076A-000-152-100</td>
<td>080-0076A-000-152-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0083-000-001-100</td>
<td>080-0083-000-001-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0083-000-002-100</td>
<td>080-0083-000-002-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0083-000-002-200</td>
<td>080-0083-000-002-200-PHD2A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0083-000-002-200</td>
<td>080-0083-000-002-200-PHD2B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0090-000-002-100</td>
<td>080-0090-000-002-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0090-000-002-100</td>
<td>080-0090-000-002-100-PHD1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>August 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>080-0090-002-054-100</td>
<td>080-0090-002-054-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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>080-0090-002-054-100</td>
<td>080-0090-002-054-100-PHD1B.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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>080-0090-002-054-100</td>
<td>080-0090-002-054-100-PHD1C.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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>080-0091-000-061-100</td>
<td>080-0091-000-061-100-PHD1A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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>080-0091-000-061-200</td>
<td>080-0091-000-061-200-PHD2A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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>080-0091-000-061-300</td>
<td>080-0091-000-061-300-PHD3A.jpg</td>
<td>Bourne Consulting Engineering</td>
<td>Westport</td>
<td>April 2009</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 IV - Westport

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>080-076A-000-151-100</td>
<td>080-076A-000-151-100-DCR1A</td>
<td>3397</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>August 1999</td>
<td>Proposed Causeway Rehabilitation - Gooseberry Neck - Horseneck Beach State Reservation - Prepared for DPW of MA - Division of Waterways</td>
<td>10</td>
<td>Gooseberry Neck</td>
<td>Riprap</td>
</tr>
<tr>
<td>080-076A-000-152-100</td>
<td>080-076A-000-152-100-DCR1A</td>
<td>811-W-112-012</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>9/1/1982</td>
<td>Boat Ramp - Gooseberry Neck</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>080-083-003-001-132</td>
<td>080-083-003-001-100-DCR1A</td>
<td>1755</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>April 1987</td>
<td>Proposed Harbor Improvements - Jetty Reconstruction, Timber Walkway and Finger Piers</td>
<td>2</td>
<td>Main Road</td>
<td>Jetty Reconstruction</td>
</tr>
<tr>
<td>080-083-003-001-120</td>
<td>080-083-003-001-100-DCR1B</td>
<td>3421</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>June 2000</td>
<td>Proposed Harbor Improvements - Rehabilitation of Town Wharfs - Westport Harbor</td>
<td>24</td>
<td>Main Road</td>
<td>Wharfs</td>
</tr>
<tr>
<td>080-083-003-002-100</td>
<td>080-083-003-002-100-DCR1A</td>
<td>1755</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>April 1987</td>
<td>Proposed Harbor Improvements - Jetty Reconstruction, Timber Walkway and Finger Piers</td>
<td>2</td>
<td>Main Road</td>
<td>Jetty Reconstruction</td>
</tr>
<tr>
<td>080-083-003-002-100</td>
<td>080-083-003-002-100-DCR1B</td>
<td>3421</td>
<td>MA-DCR</td>
<td>Westport</td>
<td>June 2000</td>
<td>Proposed Harbor Improvements - Rehabilitation of Town Wharfs - Westport Harbor</td>
<td>24</td>
<td>Main Road</td>
<td>Wharfs</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>Sheets</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>
<tr>
<td>090-091-000-061-100</td>
<td>090-091-000-061-100-LIC1A</td>
<td>5037</td>
<td>DEP</td>
<td>Westport</td>
<td>November 1995</td>
<td>Plan to Accompany Petition of Commonwealth of Massachusetts Public Access Board to Construct and Maintain a Concrete Boat Ramp, Riprap, Piles and Float System at the East Branch of the Westport River in the Town of Westport, Bristol County, Massachusetts</td>
<td>4</td>
<td>Main Road</td>
<td>Construct and Maintain Concrete Boat Ramp, Riprap, Piles and Float System</td>
</tr>
<tr>
<td>090-091-000-061-200</td>
<td>090-091-000-061-200-LIC2A</td>
<td>5037</td>
<td>DEP</td>
<td>Westport</td>
<td>Nov 1995</td>
<td>Plan to Accompany Petition of Commonwealth of Massachusetts Public Access Board to Construct and Maintain a Concrete Boat Ramp, Riprap, Piles and Float System at the East Branch of the Westport River in the Town of Westport, Bristol County, Massachusetts</td>
<td>4</td>
<td>Main Road</td>
<td>Construct and Maintain Concrete Boat Ramp, Riprap, Piles and Float System</td>
</tr>
<tr>
<td>090-091-000-061-300</td>
<td>090-091-000-061-300-LIC3A</td>
<td>5037</td>
<td>DEP</td>
<td>Westport</td>
<td>Nov 1996</td>
<td>Plan to Accompany Petition of Commonwealth of Massachusetts Public Access Board to Construct and Maintain a Concrete Boat Ramp, Riprap, Piles and Float System at the East Branch of the Westport River in the Town of Westport, Bristol County, Massachusetts</td>
<td>4</td>
<td>Main Road</td>
<td>Construct and Maintain Concrete Boat Ramp, Riprap, Piles and Float System</td>
</tr>
</tbody>
</table>
EAST BRANCH WESTPORT RIVER

LOCATION MAP
1 INCH = 5 MILES

DREDGE TO EL.-4.0'
APPROX. 500 CU. YDS.

12" DIA. ANCHOR PILES
(TYP.)

6" x 16' SEASONAL WOOD FLOATS (6 EA.)

6" x 8' SEASONAL WOOD FLOATS (4 EA.)

6" x 4' SEASONAL WOOD RAMP (2 EA.)

6" x 4' SEASONAL METAL PLATE (2 EA.)

PLANT
1" = 50'

BENCHMARK
MDPW GRAN BND.
EL= 8.16 MLW

LICENSE PLAN NO. 5031
Approved by Department of Environmental Protection of Massachusetts

COASTAL ENGINEERING CO., INC.
ORLEANS, MASS. APRIL 25, 1965
ANCHOR PILE BEYOND LOADING (FLOATS NOT SHOWN)

12" CONC. RET. WALL

6" CONC. RAMP W/ 3/4" GROVED SURFACE

2' TOE WALL

6' - 0"

20' - 0"

52' - 0"

20' - 0"

6' - 0"

TOP OF PILE ELEV. = 12.0'

12" DIA. P.T. TIMBER PILE

AHT EL. = 3.2'

MHW EL. = 2.6'

MLW EL. = 0.0'

6" CONC. RAMP 8 X 8 P.T. TIMBER WAHCOR/BOLT

12" CRUSHED STONE BASE

RAMP TOE DEPTH EL. = -4.0'

2' TOE WALL

SECTION "B-B"

LICENSE PLAN NO. 5037

Approved by Department of Environmental Protection
Date: NOV 01 1995
SECTION "C-C"

1/2" = 1'-0"

LICENSE PLAN NO. 5037

Approved by Department of Environmental Protection
Date: NOV 01 1995
Section V

Dartmouth
Section V – Community Findings – Town of Dartmouth

COMMUNITY DESCRIPTION

The Town of Dartmouth consists of a land area of 61.53 square miles out of a total area of 63.95 square miles and had a population of 30,666 in the 2000 census. The Town is located on the south coast of Massachusetts and its location can be seen on this report’s cover. The estimated length of shoreline is 14.5 miles that are directly exposed to open ocean. 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 Dartmouth, 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 6 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>Primary Structure (1)</th>
<th>Total Structures</th>
<th>Structure Condition Rating</th>
<th>Total Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead / Seawall</td>
<td>1</td>
<td>1</td>
<td>1250</td>
</tr>
<tr>
<td>Revetment</td>
<td>4</td>
<td>2</td>
<td>515</td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td>1</td>
<td>930</td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Coastal Dune</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Beach</td>
<td>1</td>
<td>1</td>
<td>4500</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>4</td>
<td>7295</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 Dartmouth’s case there are a total of 8 structures which would require approximately $12.6 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 $12 million would be required to upgrade the Town’s coastal protection.
STRUCTURE REPAIR / RECONSTRUCTION COST - Town of Dartmouth

<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></td>
<td>$6,451,500</td>
<td></td>
<td></td>
<td>$6,451,500</td>
</tr>
<tr>
<td>Revetment</td>
<td>4</td>
<td>$47,124</td>
<td></td>
<td>$168,010</td>
<td></td>
<td></td>
<td>$215,134</td>
</tr>
<tr>
<td>Breakwater</td>
<td>1</td>
<td>$223,200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$223,200</td>
</tr>
<tr>
<td>Groin / Jetty</td>
<td>1</td>
<td>$24,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$24,000</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>1</td>
<td></td>
<td></td>
<td>$5,702,400</td>
<td></td>
<td></td>
<td>$5,702,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td>$294,324</td>
<td>$168,010</td>
<td>$12,153,900</td>
<td>$5,702,400</td>
<td></td>
<td><strong>$12,616,234</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 Dartmouth the breakdown of structures by assumed ownership is as follows:

STRUCTURE OWNERSHIP / REPAIR COST - Town of Dartmouth

<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>8</td>
<td>$294,324</td>
<td>$168,010</td>
<td>$6,451,500</td>
<td></td>
<td></td>
<td>$6,913,834</td>
</tr>
<tr>
<td>Commonwealth of Mass.</td>
<td></td>
<td></td>
<td></td>
<td>$5,702,400</td>
<td></td>
<td></td>
<td>$5,702,400</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>8</strong></td>
<td>$294,324</td>
<td>$168,010</td>
<td>$12,153,900</td>
<td>$5,702,400</td>
<td></td>
<td><strong>$12,616,234</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 V-B which contains Structure Assessment Reports for each individual structure found.

SUMMARY

The enclosed reports and associated documents reflects the Town of Dartmouth’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 - Dartmouth

Part B

Structure Assessment Reports
CZM Coastal Infrastructure Inventory and Assessment

Structure Assessment Form

Property Owner: State
Presumed Structure Owner: State
Owner Name: MA-DCR

Location: Demarest Lloyd Beach
Based On Comment:
Earliest Structure Record: Unknown
Estimated Reconstruction/Repair Cost: $5,702,400.00

Date: 4/23/2009

Length: 4500 Feet
Top Elevation: 88 Feet NAVD
FIRM Map Zone:
FIRM Map Elevation: Feet NGVD

Primary Type: Coastal Beach
Primary Material: Sand
Primary Height: 5 to 10 Feet
Secondary Type: Secondary Material:
Secondary Height:

Structure Summary:
Beach mostly consisting of 4 inch to 6 inch diameter cobbles. One small area is sandy. Beach has an approximately 1 to 100 slope. There is a small berm and dunes behind the beach, then parking and picnic areas. Signs of erosion from strong currents.

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
I None No Inshore Structures or Residential Dwelling Units Present

Structure Images:
015-010-006-000-100-PHO1A.JPG
015-010-006-000-100-PHO1B.JPG
015-010-006-000-100-PHO1C.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:
Dartmouth

Location:
Plummer Memorial Bridge

Based On Comment:

Earliest Structure Record:
Unknown

Estimated Reconstruction/Repair Cost:
$89,866.00

Date:
6/28/2007

Length: 115 Feet
Top Elevation: 88 Feet NAVD

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

Secondary Type: Secondary Material: Secondary Height:

FIRM Map Zone: V13
FIRM Map Elevation: 15 Feet NGVD

Structure Summary:
The dumped riprap with a 1 to 2 slope. The stones are approximately 3 feet by 2 feet by 2 feet in size. The filter fabric is visible. Stones have shifted and moved. There is some section loss. The toe is still intact; the stones are not buried.

Condition Rating
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
High Priority

Action Description
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:
015-011-000-001-100-PH01A.JPG

Structure Documents:
**Structure Assessment Form**

**Property Owner:**
Local

**Presumed Structure Owner:**
Local

**Owner Name:**
Dartmouth

**Location:**
Plummer Memorial Bridge

**Based On Comment:**

**Earliest Structure Record:**
Unknown

**Estimated Reconstruction/Repair Cost:**
$78,144.00

<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>100 Feet</td>
<td>Feet NAVD 88</td>
<td>V13</td>
<td>16 Feet NGVD</td>
</tr>
</tbody>
</table>

**Primary Type:**
Revetment

**Primary Material:**
Stone

**Primary Height:**
10 to 15 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
The dumped riprap has stones that are approximately 3 feet by 2 feet by feet in size and are on a 1 to 2 slope. The filter fabric is visible. Stones have shifted and moved. There is some section loss. The toe is still intact and the stones are buried.

**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 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:**
015-011-000-087-100-PHA1A.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: Dartmouth

Location: Padamaran Harbor Breakwater

Based On Comment:

Earliest Structure Record: 1954

Estimated Reconstruction/Repair Cost: $223,200.00

Date: 6/28/2007

Length: 930 Feet
Top Elevation: 18 Feet NAVD 88
FIRM Map Zone: V13
FIRM Map Elevation: 18 Feet NGVD

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

Secondary Type: Secondary Material: Secondary Height:

Structure Summary:
A detached stone breakwater that protects the mouth of Padanaram Harbor. The stones are approximately 5 feet by 2 feet by 2 feet. Some stone movement and settling.

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
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: 015-108-000-002-100-PHO1A.JPEG

Structure Documents:

<table>
<thead>
<tr>
<th>USACE</th>
<th>June 24, 1995</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-DCR</td>
<td>May 1954</td>
<td>Proposed Harbor</td>
</tr>
<tr>
<td>MA-DCR</td>
<td>July 1955</td>
<td>Proposed Harbor</td>
</tr>
</tbody>
</table>

015-108-000-002-100-COE1A
015-108-000-002-100-DCR1A
015-108-000-002-100-DCR1B

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

Structure Assessment Form

Property Owner: Local
Presumed Structure Owner: Local
Owner Name: Dartmouth

Location: Padanaram Bridge
Based On Comment: 
Earliest Structure Record: Unknown

Date: 6/28/2007
Estimated Reconstruction/Repair Cost: $6,451,500.00

Length: 1250 Feet
Top Elevation: 16 Feet NAVD 88
FIRM Map Zone: V13
FIRM Map Elevation: 16 Feet NGVD

Primary Type: Bulkhead/Seawall
Primary Material: Stone
Primary Height: Over 15 Feet
Secondary Type: Revetment
Secondary Material: Stone
Secondary Height: 5 to 10 Feet

Structure Summary:
The 100 to 200 pound stones are mortared together to form a causeway. There are many areas of erosion at the top. The eroded holes have been filled with asphalt. The wall has scour throughout at the base. Some areas have riprap of the same size stones at the base.

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

Structure Images:
- 015-112-000-027-100-PHO1A.JPG
- 015-112-000-027-100-PHO1B.JPG
- 015-112-000-027-100-PHO1C.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: Dartmouth

Location: Bridge Street

Based On Comment: 

Earliest Structure Record: 1982

Estimated Reconstruction/Repair Cost: $23,562.00

Date: 6/28/2007

Length: 150 Feet

Top Elevation: Feet NAVD 88

FIRM Map Zone: V13

FIRM Map Elevation: Feet NGVD 16

Primary Type: Revetment

Primary Material: Stone

Primary Height: 10 to 15 Feet

Secondary Type: 

Secondary Material: 

Secondary Height: 

Structure Summary:
The dumped riprap has stones that are approximately 3 feet by 2 feet by 2 feet in size. The stones are at a 1 on 1 slope. The stones are dumped around the bridge abutment. The toe is intact and there is no visible 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
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:
015-117-000-007-100-PHO1A.JPG

Structure Documents:
USACE
December 2
Proposed Expansion
015-117-000-007-100-COE1A

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>Bridge Street</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>
</tr>
</thead>
<tbody>
<tr>
<td>Dartmouth</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date:</th>
<th>Estimated Reconstruction/Repair Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/28/2007</td>
<td>$23,562.00</td>
</tr>
</tbody>
</table>

**Length:** 150 Feet NAVD 88

**FIRM Map Zone:** A11

**FIRM Map Elevation:** 13 Feet NGVD

**Primary Type:** Revetment

**Primary Material:** Stone

**Primary Height:** 10 to 15 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
The placed riprap has stones that are approximately 3 feet by 2 feet by 2 feet in size. The stones are at a 1 on 1 slope. The stones are placed around the bridge abutment. The toe is intact and there is no visible movement.

<table>
<thead>
<tr>
<th>Condition Rating</th>
<th>Priority Rating</th>
<th>Priority Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Good</td>
<td>High Priority</td>
<td>Consider for Next Project Construction Listing</td>
</tr>
<tr>
<td>Minor</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>
</tr>
</tbody>
</table>

**Structure Images:**
015-117-000-008-100-PHI01A.JPG

**Structure Documents:**

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

**Property Owner:** Local

**Location:** Mosher Street

**Date:** 6/28/2007

**Presumed Structure Owner:** Local

**Based On Comment:**

**Owner Name:** Dartmouth

**Earliest Structure Record:** Unknown

**Estimated Reconstruction/Repair Cost:** $24,000.00

**Length:** 100 Feet NAVD 88

**Top Elevation:**

**FIRM Map Zone:** V13

**FIRM Map Elevation:** 18 Feet NGVD

**Primary Type:** Groin/Jetty

**Primary Material:** Stone

**Primary Height:** 5 to 10 Feet

**Secondary Type:**

**Secondary Material:**

**Secondary Height:**

**Structure Summary:**
The dumped stone groin has stones of approximately 2 feet by 1 foot by 1 foot size. The groin protects a concrete drainage pipe from the street. Mean high water is approximately mid length of the groin.

**Condition**  B  **Priority**  II

**Rating**  Good  **Low Priority**

**Level of Action**  Minor  **Future Project Consideration**

**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.  **Inshore Structures Present with Limited potential for Significant Infrastructure Damage**

**Structure Images:** 015-124-000-005-100-PHO1A.JPG

**Structure Documents:**

Prepared By: Bourne Consulting Engineering
Section V - Dartmouth

Part C

Structure Photographs
Section V - Dartmouth

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>
</table>

No Town Documents for the Town of Dartmouth
<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>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>Sheet</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>
<tr>
<td>015-117-000-007-100</td>
<td>015-117-000-007-100-COE1A</td>
<td>83-310</td>
<td>USACE</td>
<td>Dartmouth</td>
<td>December 23, 1982</td>
<td>Proposed Expansion of Existing Public Launching Ramp and Stone Protection in Apponegansett River - Near Peddernam Bridge, Bristol County, MA</td>
<td>2</td>
<td>Gulf Road</td>
<td>Riprap and Boat Ramp</td>
</tr>
</tbody>
</table>
NOTE
Elevations are in feet and tenths above plane of mean low water. Minus figures show depths below the same plane.
Location of proposed work shown in red.
Existing stone in top course to be removed and incorporated with new stone to form a compact mass. (See sections YY and ZZ.)
NOTE:

Soundings are in feet and tenths and refer to Mean Low Water.

This plan prepared for license purposes only not for construction.

Purpose: Public Use

PROPOSED EXPANSION OF EXISTING PUBLIC LAUNCHING RAMP AND STONE PROTECTION IN APPONAGANSETT RIVER
NEAR PADANARAM BRIDGE
BRISTOL COUNTY, STATE OF MASSACHUSETTS
APPLICATION BY MASSACHUSETTS D.E.O.E.
DIVISION OF WATERWAYS
SHEET 1 OF 2 DATED 12/23/82

PREPARED BY TIBBITTS ENGINEERING CORP. NEW BEDFORD, MASS.
TYPICAL SECTION

PROPOSED EXPANSION OF EXISTING PUBLIC LAUNCHING RAMP AND STONE PROTECTION

IN APPONAGANSETT RIVER
NEAR PADANARAM BRIDGE
BRISTOL COUNTY, STATE OF MASSACHUSETTS
APPLICATION BY MASSACHUSETTS D.E.Q.
DIVISION OF WATERWAYS

PREPARED BY TIBBETTS ENGINEERING CORP. NEW BEDFORD, MASS.

DATE: 12/23/82