

Town Administrator Report  
April 23, 2019

The following is a summary of the major activities of the Office of the Town Administrator for the previous week.

- 1. Town Meeting Wrap-up** -I was happy to see a relatively smooth Town Meeting process unfold on April 9. This represented the culmination of many months' worth of work to prepare to present our recommendations for the upcoming year. I was proud of the efforts of all of our Town Departments throughout the budget process, as well as the many Boards and Committees that guide us through the process such as the Capital Program Committee, Community Preservation, Finance Committee and Selectmen. With everyone strongly involved we are able to develop the consensus necessary to present voters with the strategies needed for a successful year. My thanks also go to our Moderator guiding the meeting through the many articles. In order to complete the follow-up needed for the Town meeting actions we now continue with the process of involving the Departments and Boards in implementing each of the projects and initiatives approved at the Town Meeting. In doing so we will review each item approved and devote the necessary resources to follow through and make sure the projects are smoothly implemented. This process is ongoing, and we have already made progress in several key areas.
- 2. Beach Nourishment II Permitting Update**—Since my update on March 26 regarding the meeting with the Army Corps. of Engineers in Concord, there has been a great deal of activity with respect to the Beach Nourishment II project. Firstly, a major log-jam has been broken with the attached public notice published by the Army Corps on April 16. Prior to the issuance of this type of permit the Corps. is required to publish the public notice, so this publication indicates that they are prepared to move forward with permitting, which is certainly very good news for the Town. The public notice period extends to May 16, after which we are in hopes that the Corps. will be moving forward with the permitting. We have submitted all of the information requested throughout the process, and we feel that we have complied with all of the permitting requirements. Some of the complexity of the beach nourishment project include the fact that the Town is extending nourishment into the intertidal zone to reclaim the historical profile of the beach, and this carries questions which we have addressed regarding potential impacts on natural resources such as eelgrass. After surveying the eelgrass beds the Town's project keeps 250 feet away from the beds where the minimum distance is 125 feet.
- 3. Coastal Infrastructure Grants.**- In anticipation of the permitting coming together, working through Liz Durkee and our Conservation Department we have submitted a grant proposal to the Commonwealth of Massachusetts through its Municipal Vulnerability Planning Action Grant Program in order to fund the beach nourishment project. Now that we have completed the vulnerability planning, we are eligible for the new funding released by the State to implement vulnerability plans. We are hopeful that

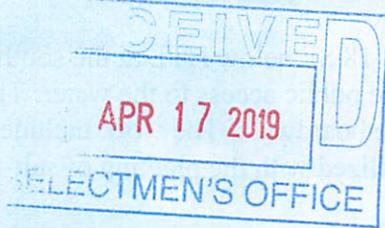
the natural solution of beach nourishment to further protect the North Bluff will be an attractive project for the State to fund, and I will keep the Board apprised of our progress. Additionally, on Friday, April 19 we conducted a conference call with officials from Massachusetts Coastal Zone Management to request their support for the Beach Nourishment application and to review other upcoming grant opportunities that may best fit the Town's priorities in the MVP plan. The two main opportunities we discussed include a new Coastal Resiliency Program offering grants up to \$500,000 for eligible coastal resiliency projects. The other program we are targeting for next year is the massive federally funded Hazard Mitigation Program which can fund up to \$10 million toward the East Chop Bluff revetment if we could be successful with our application. The State reviews the applications and may recommend a single application to FEMA for funding. This past year we lost out to a Boston waterfront project and we discussed with CZM strategies for making our application more competitive.

4. **Oak Bluffs Capped Landfill PV Project.** -Bids have been received for the Solar PV projects at the Town's capped Landfill as well as the Oak Bluffs School Roof. Town Meeting additionally approved the Selectmen's leasing a portion of the capped landfill for the solar project. I am attaching the financial pro-forma for the project detailing the anticipated energy production and financial benefits from the proposed project. The high bidder is the Greenskies Company. They propose a 1.8 MW PV system that will produce a guaranteed over 1.8 million kWh of electricity per year at the site. Netting out the capital lease costs and the administrative add-on from the Cape and Vineyard Electric Cooperative, the Town will receive a net gain starting out at \$181,808 per year, increasing each year to a total of nearly \$5 million in profit over the twenty-year lease period. Moreover, with the vendor receiving a 30% tax credit as well as the five-year MACRS tax incentive along with the SRECS tariff benefits, the Town pays only a small portion of the total capital costs. Without these tax incentives, the capital cost for the Town to complete this project on our own would make the project uneconomic. The vendor has additionally clarified its offer on the battery storage micro grid which would add an additional \$13,500 in annual Town profit to the deal. The smaller 271.8 kW project at the Oak Bluffs School will net to the Town an additional \$56,003 to \$69,311 annually. The Board's next step is to evaluate the lease agreement as authorized by Town Meeting to allow the project to move forward. I would like to authorize CVEC to develop the draft documents for presentation to and discussion with the Board.



US Army Corps  
of Engineers®  
New England District  
696 Virginia Road  
Concord, MA 01742-2751

# PUBLIC NOTICE



Comment Period Begins: April 16, 2019  
Comment Period Ends: May 16, 2019  
File Number: NAE-2016-00293  
In Reply Refer To: Joshua Helms  
Phone: (978) 318-8211  
E-mail: [joshua.m.helms@usace.army.mil](mailto:joshua.m.helms@usace.army.mil)

The District Engineer has received a permit application from the Town of Oak Bluffs, 56 School Street, Oak Bluffs, Massachusetts 02557, to conduct work and place fill in waters of the United States in order to provide protection to the existing coastal banks and public/private infrastructure, and restore public beaches for recreational purposes.

This work is proposed in the Atlantic Ocean and Nantucket Sound along the shoreline of Oak Bluffs along Sea View Ave. Extension and Sea View Ave. Work at the project site will be completed from 41.46194°N, -70.55861°E and ends at 41.45139°N/-70.55306°E as shown on project plans dated July 7, 2017.

The project work can be separated into two phases and is outlined below.

## Phase 1

The first phase of the work commenced on January 2016 and work was substantially completed over six (6) months ending in July 2016.

The Town of Oak Bluffs is seeking an after-the-fact permit to retain the structures and fill that were constructed as a part of this phase. This includes the placement of a 550' linear foot sheet pile bulkhead (1,055 SF) directly seaward of the existing concrete seawall footing (footing located approximately 2' seaward of the top of the existing concrete wall) and a 120' section of sheet piles for the ADA accessible ramp access to the beach area, totalling 670 linear feet. The top of the seawall was set at an elevation of 12.5' NGVD29, approximately 4 feet higher than the seawall it replaced. The voids between the existing concrete seawall and the bellies of the new steel sheets were filled with gravel and capped with a steel cap.

Upon completion of the construction of the shoreline stabilization measures, the Town of Oak Bluffs constructed a 560 linear foot (6,720 SF) wooden boardwalk on top of the seawall. The boardwalk is approximately 12 feet wide. Benches, lighting, ramps and other amenities were constructed on the boardwalk in order to support pedestrian and bicycle traffic.

Additional work to stabilize the shoreline included the re-construction of an existing 760 LF (6,679 SF±) of stone revetment immediately waterward of the HTL. The construction of the revetment involved the placement of 1,806 cubic yards of stone revetment. During the stone revetment work, approximately 22,000 SF was temporarily impacted below the HTL in order to remove the existing stone revetment and install the new stone revetment toe-stones and then the area was regraded to complete the work. The steel sheet piles were driven from on top of the existing concrete seawall and once the tie-back anchors were installed, a majority of the stone revetment was placed from land in a similar fashion where possible. Any required stone revetment work

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on the beach was performed at low tide to minimize potential impacts to the environment from temporary mounded berms or stones.

Finally, a 250 SF stairway and landing were constructed 18 SF below HTL at the southern limits of the project during the Spring of 2016 project in order to provide safe public access to the water. The project also included the restoration of the coastal bank along the length of the boardwalk. The work included grading the coastal bank with specified fill and loam and the slope was stabilized with the planting of salt-tolerant species of coastal vegetation.

The Town of Oak Bluffs is seeking an after-the-fact permit to retain this previously authorized structure.

**Phase 2**

In order to further protect the shoreline and enhance the recreational beach, the Town of Oak Bluffs is proposing a large scale beach nourishment and groin maintenance and rehabilitation project. The work will extend into the intertidal zone and seaward of the currently authorized Inkwel and Pay Beach nourishment projects permitted for sediment placement.

Beach nourishment of engineered profiles will be completed and maintained at Jetty, North Bluff, Pay, and Inkwel Beaches. Additionally, seven (7) timber groins, previously constructed in the mid-1900s that are currently not serviceable will be reconstructed along the beaches. In addition to the construction of the timber groins, one (1) stone groin at Inkwel will be modified to optimize the stability of the shoreline system and minimize the frequency of future beach maintenance events.

The Phase 2 work is outlined and summarized below:

Approximately 34,975 cubic yards (CY) of sand will be placed along 3,950 linear feet of shoreline, a 283,261 SF area. 216,676 SF of the total area is located below the high tide line at Jetty Beach (1,587 SF), North Bluff (94,981 SF), Pay Beach (43,291 SF), Inkwel Beach (76,817 SF).

- The following quantities of beach nourishment materials will be placed and maintained at the beaches as outlined below:

Location	Total Nourishment Area (SF)	Total Volume of fill (CY)	Nourishment Area Below HTL (SF)
Jetty Beach	29,237	354	1,587
North Bluff	102,057	16,476	94,981
Pay Beach	50,417	5,590	43,291
Inkwel Beach	101,550	12,555	76,817
Total Impact Area	283,261	34,975	216,676

The proposed work includes the placement of material seaward of the existing revetments and coastal banks at North Bluff and Pay Beach and the proposed filling to embayment of the beach sections between the modified and reconstructed groins..

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- The nourishment will establish a top of berm elevation of 6.0 NGVD29 and material be placed waterward of the berm at 10:1 slope.
- Reconstruction of the North Jetty to 4.6 and 7.5 with 2:1 slope
  - 17± feet wide with a varying top width
- South Jetty at the entrance Oak Bluffs Harbor el 4.6
  - 22± feet wide with a varying top width
- Reconstruction of six 50 linear foot (LF) timber groins that extend 50 LF feet seaward from the existing seawall
- Retain LF timber groin on Pay Beach that extends 50 LF feet seaward from HTL (50' x 1' = 50 SF)
- Inkwell beach groin to be reconstructed (50' x 20' = 1,000 SF) and extended (70' x 20' = 1,400 SF)
  - 20± feet wide with varying top width
  - EL varies from 6 to 1.44 to 2.5
- Construction of 5' wide Stairs at North Bluff Beach

The work is shown on the attached plans sets entitled "PLAN ACCOMPANYING PETITION OF: TOWN OF OAK BLUFFS TO LICENSE & MAINTAIN BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION AT: OAK BLUFFS COUNTY OF DUKES" on sixteen sheets, and dated "3/27/19" and "NORTH BLUFF SEAWALL AS-BUILT EXHIBIT" on one sheet and dated "6/4/18."

### Alternatives Considered

The proponent considered the following alternatives and combinations of the following alternatives to meet the project goals.

- No-Build
- Rebuild Concrete Seawall to Current Elevation – did not provide future storm resiliency and increased temporary aquatic impacts
- Rebuild Concrete Seawall to New Elevation – while this would have been a long term solution this would have come at a high cost financially and environmentally. The challenging geotechnical conditions would have required cofferdams and earth-supported construction methods that would have resulted in more ground disturbance, longer project duration and greater temporary impacts.
- Re-build Sheet pile wall to New Elevation – no footings were required to construct the sheet pile wall which reduced the project duration and costs related to excavation and temporary structures needed to complete the work
- Reconstruct the rip rap revetment wall in front of the seawall
- Rebuild the seawall and the rip rap revetment
- Construct Sheet pile wall and rip rap revetment
- Placement of beach nourishment in front of seawalls to protect the seawall. Different nourishment models were considered.
- Rebuild the seawalls and place sand as beach nourishment waterward of the seawalls.

- Construct the sheet pile wall with sand placed waterward as beach nourishment
- Reconstruct stone groins
- Reconstruct stone and timber groins
- Rebuild the seawalls, reconstruct timber groins historically located along the shoreline, and nourish the beach.

The applicant has stated that the preferred alternative described in the work above will provide the Town of Oak Bluffs with a long-term cost-effective way to protect the Oak Bluffs shoreline while ensuring that recreational opportunities are not lost.

Furthermore, the applicant has stated that without beach nourishment, recreational opportunities waterward of the seawall may have been permanently lost as a result of increased wave energy and erosion waterward of the seawall; therefore, only alternatives that included beach nourishment were considered. Other alternatives would not replace the eroded beach or ensure that the existing beach is retained.

In addition, the applicant has stated the short construction window of six (6) months and relatively low costs of the sheet pile wall ultimately helped the Town and the Department of Conservation and Recreation (DCR) decide to move forward with a sheet pile wall alternative. They also states that this will help to provide protection to Seaview Ave. and adjacent private properties. The project will also improves public access along the Oak Bluffs' shoreline and beaches. The raising of the North Bluff seawall four (4') feet and the reconstruction of stone and timber groins along with beach nourishment will optimize shoreline stabilization, prevent storm related damage and improve the recreational value of the town beach resource for tourism and economic benefits for the Town of Oak Bluffs and Martha's Vineyard.

#### Avoidance and Minimization

The Town of Oak Bluffs revised the proposed design plans in March 2019. The plan changes, required to meet Regulatory requirements, included a reduction in the proposed nourishment footprint from 446,040 SF to 283,261. A reduction of 162,779 SF. This included a reduction from 326,020 SF below the HTL to 216,676 SF. This resulted in an approximately 109,344 SF reduction of impacts to intertidal and subtidal habitat. Additionally, the proposed alteration and rehabilitation of one groin was eliminated from the project further reducing the temporary impacts associate with the project.

The Town of Oak Bluffs has avoided and minimized impacts to aquatic resources by utilizing the following best management practices. The proposed project work area is located 152' to the closest eel grass bed. The applicant has drafted a piping plover management plan in order to avoid take of the species which will be incorporated into the permit. Finally, the Town of Oak Bluffs has agreed to incorporate the following special conditions into the permit for this project.

1. Any silt-producing work authorized herein shall not be conducted during the time of year (TOY) restriction of February 1 to September 30 of any year in order to avoid and minimize impacts to fish species during sensitive life history phases; however, no TOY restriction is necessary if one of the following conditions are met:
  - a. Work will be completed "in the dry (low tide)".

- b. A silt curtain is to be installed at the seaward limit of work. The silt curtain is to be installed so as to completely enclose the in-water work site, thereby isolating any silt producing activities from adjoining waters.
2. Prior to the start of each nourishment project the Commission shall receive in writing a plan detailing the beach nourishment process. The plan shall include specific details of the dewatering process, the specific locations of the nourishment sites, how the sites will be accessed, how the material will be deposited and spread, and the timing of the project as it relates to protected species. All elevations and contours, as well as the actual nourishment sites, shall conform to the approved plans. No work shall begin until the Commission provide written approval of said plan.
3. The license shall allow the public in the exercise of such rights to pass freely over and around all structures within such intertidal area.
4. The source of beach nourishment material may come from both offshore dredging operations authorized under a separate Chapter 91 permit or from an upland site.
5. Prior to the commencement of nourishment activities the Licensee shall perform an eelgrass survey at least 50' beyond the seaward limit of proposed beach nourishment footprint. Results of the eelgrass survey shall be forwarded to the Oak Bluffs Conservation Commission and MassDEP Wetlands and Waterways Program, SE Regional Office. If eelgrass is found in any area, the limits shall be clearly marked with buoys or other suitable marking methods. No nourishment shall be placed within 50' of eelgrass.
6. The proponent shall implement the 2010 Eel Grass Monitoring Plan, including pre and post nourishment eel grass surveys to demonstrate that no loss of eel grass beds has occurred. In addition, the proponent shall conduct a follow-up eel grass survey approximately one year after initial placement of nourishment and subsequently once every five years using the same methodology.
7. Eelgrass will be monitored prior to and following nourishment activities so that an assessment of any direct impacts can be made.
8. The town will submit pre and post construction beach profiles over the work area. The beach elevations shall be measured along a series of shore perpendicular control transects over the length of the project area. Beach profile data shall be collected and submitted to the Department annually during the term of this permit.
9. All sediment used for beach nourishment shall be clean sediment of a grain size compatible with the existing beach sediments.
10. Any barge used in the reconstruction process shall be operated in at least 2 feet of water at low tide to prevent grounding of the barge.
11. All work shall be conducted in such a manner to prevent siltation from impacting wetland areas.

12. All disturbed areas shall be loamed and seeded or planted with suitable vegetation as soon as practicable.
13. During construction turbidity shall be contained using best available measures.
14. Material of construction and equipment shall be stored in a manner and location that will minimize the compaction of soil and the concentration of runoff.
15. All construction refuse shall be removed from the site and disposed of in accordance with all local, state, and federal laws and regulations.
16. Each day's debris shall be cleaned up and taken away.

#### **AUTHORITY**

Permits are required pursuant to:

- Section 10 of the Rivers and Harbors Act of 1899
- Section 404 of the Clean Water Act
- Section 103 of the Marine Protection, Research and Sanctuaries Act.

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

The U.S. Army Corps of Engineers, New England District (Corps), is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. The Corps will consider all comments received to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, as amended.

The activities proposed herein may require permission from the Corps pursuant to 33 U.S.C. 408 because may temporarily or permanently occupy or use a Corps federally authorized Civil Works project. Beach

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nourishment associated with this project will be sited immediately adjacent to a federal erosion control project. The proposed design is to provide long term shoreline stability while minimizing the need for future beach nourishment events.

The proposed alteration is located along the eastern shoreline of Oak Bluffs adjacent to Nantucket Sound extending north to south commencing at the jetties at the entrance to Oak Bluffs Harbor to Inkwell Beach in the Town of Oak Bluffs, MA. The limits of the proposed project extend approximately 3,950 linear feet (LF) beginning at the northern property line of Jetty Beach and extending south along Sea View Avenue Extension and Sea View Avenue.

An activity that requires §408 permission is not authorized by the Corps under Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, or Section 103 of the Marine Protection, Research and Sanctuaries Act until the Corps issues the §408 permission to alter, occupy, or use the Corps project, and issues a written §10/404/103 permit. Through this public notice we are soliciting information necessary to inform the Corps evaluation and review. Comments on the §408 alteration shall be directed to Andrew Cattano, Office of Levee Safety, 978-318-8329, Andrew.M.Cattano@usace.army.mil

**ESSENTIAL FISH HABITAT**

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Essential Fish Habitat describes waters and substrate necessary for fish for spawning, breeding, feeding or growth to maturity.

The previously completed work impacted more than 0.5 acres of EFH. This habitat consisted of revetment stone and sandy intertidal substrate. This proposed project will have an adverse effect on approximately 5.25 acres of EFH. This habitat consists of sand. Loss of these habitats may adversely affect species that use these waters and substrate. The District Engineer has made a preliminary determination that site-specific impacts may be substantial. Accordingly, the Corps will submit an expanded EFH assessment to National Marine Fisheries Service, who in turn will provide conservation recommendations to the Corps. The Corps will coordinate with the applicant regarding implementation of these recommendations. The EFH consultation will be concluded prior to the final decision.

**NATIONAL HISTORIC PRESERVATION ACT**

Based on his initial review, the District Engineer has determined that the proposed work may impact properties listed in, or eligible for listing in, the National Register of Historic Places. Additional review and consultation to fulfil requirements under Section 106 of the National Historic Preservation Act of 1966, as amended, will be ongoing as part of the permit review process.

**ENDANGERED SPECIES CONSULTATION**

The Corps has reviewed the application for the potential impact on Federally-listed threatened or endangered species and their designated critical habitat pursuant to section 7 of the Endangered Species Act as amended. It is our preliminary determination that the proposed activity for which authorization is being sought is designed,

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situated or will be operated/used in such a manner that it is not likely to adversely affect a listed species or their critical habitat. We are coordinating with the NMFS and/or U.S. Fish and Wildlife Service on listed species under their jurisdiction and the ESA consultation will be concluded prior to the final decision.

#### **OTHER GOVERNMENT AUTHORIZATIONS**

The states of Connecticut, Maine, Massachusetts, New Hampshire and Rhode Island have approved Coastal Zone Management Programs. Where applicable, the applicant states that any proposed activity will comply with and will be conducted in a manner that is consistent with the approved Coastal Zone Management Program. By this Public Notice, we are requesting the State concurrence or objection to the applicant's consistency statement.

The following authorizations have been applied for, or have been, or will be obtained:

- ( X ) Permit, license or assent from State.
- ( X ) Permit from local wetland agency or conservation commission.
- ( X ) Water Quality Certification in accordance with Section 401 of the Clean Water Act.

#### **COMMENTS**

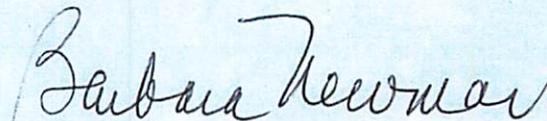
In order to properly evaluate the proposal, we are seeking public comment. Anyone wishing to comment is encouraged to do so. Comments should be submitted in writing by the above date. If you have any questions, please contact Joshua Helms at (978) 318-8211, (800) 343-4789 or (800) 362-4367, if calling from within Massachusetts.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The Corps holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse phase of the public.

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. All comments will be considered a matter of public record. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

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THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.



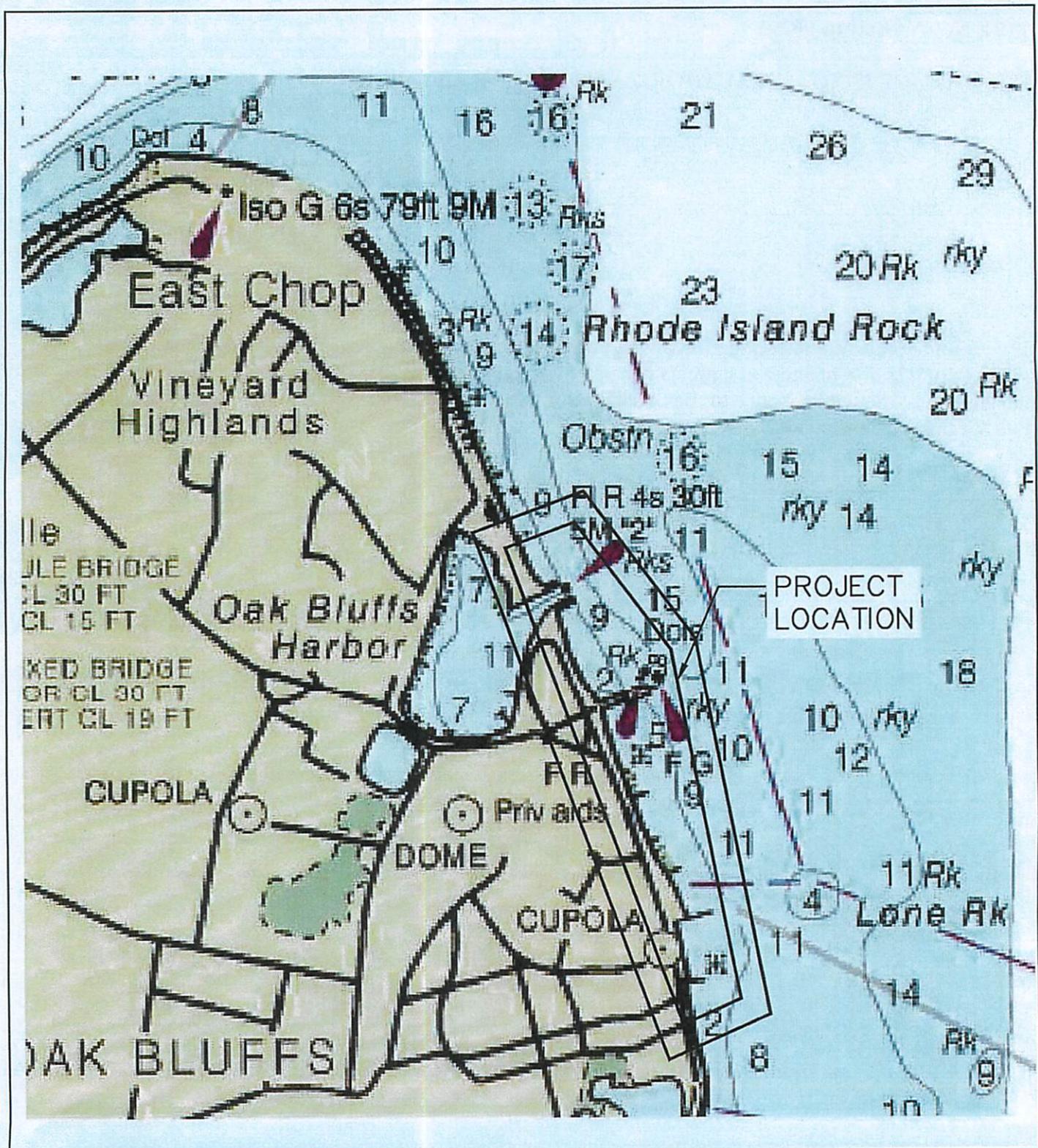
**Barbara Newman**  
**Chief, Permits and Enforcement Branch**  
**Regulatory Division**

If you would prefer not to continue receiving Public Notices by email, please contact Ms. Tina Chaisson at (978) 318-8058 or e-mail her at [bettina.m.chaisson@usace.army.mil](mailto:bettina.m.chaisson@usace.army.mil). You may also check here ( ) and return this portion of the Public Notice to: Bettina Chaisson, Regulatory Division, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751.

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

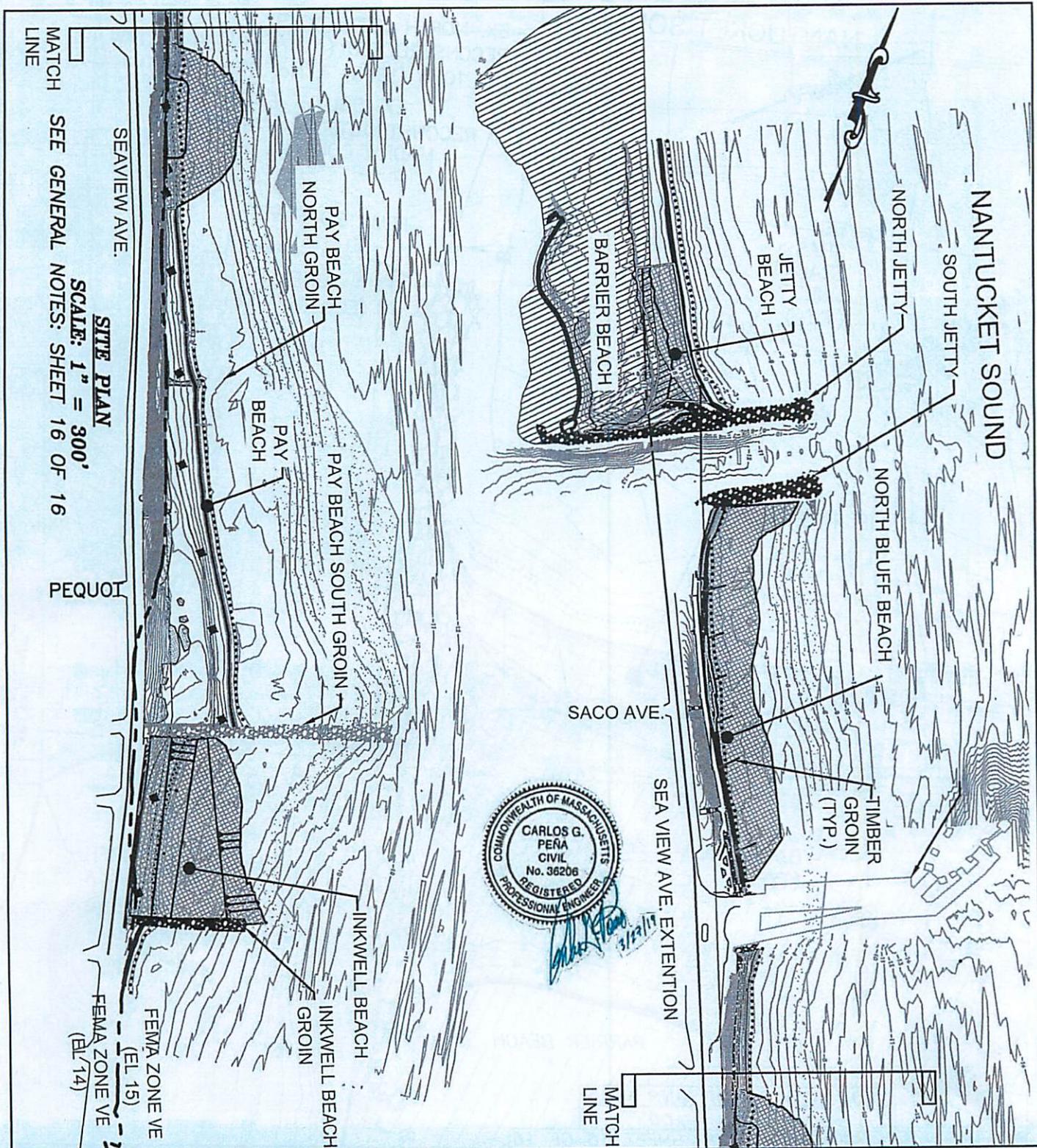
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PURPOSE: SHORELINE PROTECTION &  
 BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
           NGVD29 = 0.0  
           MHW = 1.14  
           HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

VICINITY MAP  
 OAK BLUFFS  
 QUAD SHEET  
 SCALE: 1"=500±

PROPOSED BEACH NOURISHMENT  
 AND GROIN & JETTY  
 REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK  
 BLUFFS  
 DATE: 3/27/19 SHEET 1 OF 16



SEAVIEW AVE.  
**SITE PLAN**  
 SCALE: 1" = 300'  
 MATCH SEE GENERAL NOTES: SHEET 16 OF 16  
 LINE

PEQUOT

FEMA ZONE VE  
 (EL 15)  
 FEMA ZONE VE  
 (BL/14)



SACO AVE.

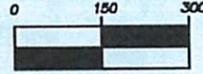
SEA VIEW AVE. EXTENTION

MATCH  
 LINE

PURPOSE: SHORELINE PROTECTION &  
 BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

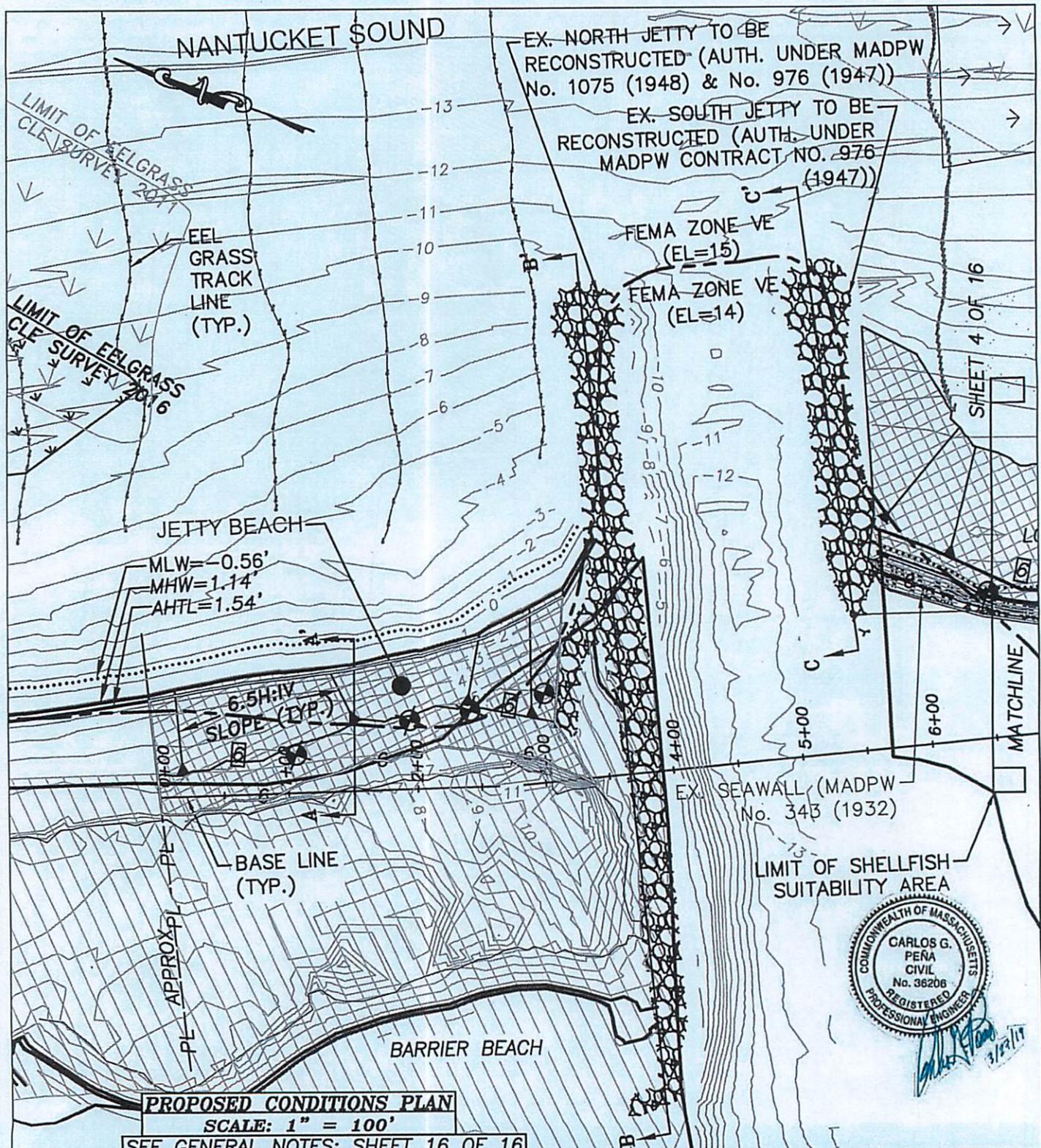
**PROJECT OVERVIEW**

GRAPHIC SCALE

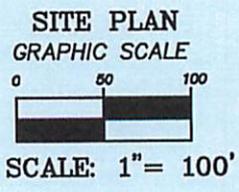


SCALE: 1" = 300'

PROPOSED BEACH NOURISHMENT  
 AND GROIN & JETTY  
 REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK  
 BLUFFS  
 DATE: 3/27/19 SHEET 2 OF 16



PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738



PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 3 OF 16

SHEET 3 OF 16

MATCHLINE

MLW = -0.56'  
MHW = 1.14'  
AHTL = 1.54'

PROPOSED BEACH ACCESS  
STAIRS (SEE DETAILS SHEET 15)

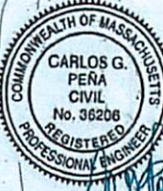
SACO AVE.

PROPOSED CONDITIONS PLAN  
SCALE: 1" = 100'  
SEE GENERAL NOTES: SHEET 16 OF 16

SEAVIEW AVE. EXT.

MATCHLINE

SHEET 5 OF 16



CARLOS G. PERA  
CIVIL  
No. 36206  
REGISTERED  
PROFESSIONAL ENGINEER

NORTH BLUFF BEACH

APPROX. PROP TOE OF SLOPE

PROP. TOP OF BERM  
EL = 6.0'  
WIDTH = ± 30'

BEACH GRAB LOCATION (TYP.)

EEL GRASS TRACK LINE (TYP.)

EX. DETERIORATED TIMBER GROIN (TYP.) TO BE RECONSTRUCTED (±50 LF) (6) TOTAL, NORTH OF FERRY DOCK

250' FROM TOE OF SLOPE TO EEL GRASS BED

APPROXIMATE FERRY DOCK LOCATION

LIMIT OF EELGRASS BY C/E SURVEY 2016

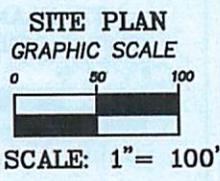
LIMIT OF EELGRASS BY C/E SURVEY 2016

LIMIT OF EELGRASS BY C/E SURVEY 2008

LIMIT OF EELGRASS BY C/E SURVEY 2016

LIMIT OF EELGRASS BY C/E SURVEY 2008

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
DATUM: MLW = -0.56  
          NGVD29 = 0.0  
          MHW = 1.14  
          HTL = 1.54  
FOTH-CLE  
15 CREEK RD. MARION, MA 02738



PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
AT: OAK BLUFFS  
COUNTY OF: DUKES  
APPLICATION BY: TOWN OF OAK BLUFFS  
DATE: 3/27/19 SHEET 4 OF 16

MATCHLINE

SHEET 4 OF 16



15+00

16+00

17+00

18+00

19+00

20+00

21+00

22+00

23+00

**PROPOSED CONDITIONS PLAN**  
 SCALE: 1" = 100'  
 SEE GENERAL NOTES: SHEET 16 OF 16

SEAVIEW AVE. EXT.

MATCHLINE

SHEET 6 OF 16

APPROX. FERRY DOCK LOCATION  
 EEL GRASS TRACK LINE (TYP.)

LIMIT OF EELGRASS BY CLE SURVEY 2008  
 PAY BEACH

APPROX. PROP. TOE OF SLOPE FROM TOE OF SLOPE TO EEL GRASS BED

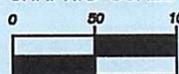
PROP TOP OF BERM  
 EL=6.0; WIDTH±50'

10H:1V SLOPE (TYP.)

MLW = -0.56'  
 MHW = 1.14'  
 HTL = 1.54'

EELGRASS SURVEY 2011  
 EELGRASS SURVEY 2016  
 EELGRASS SURVEY 2008

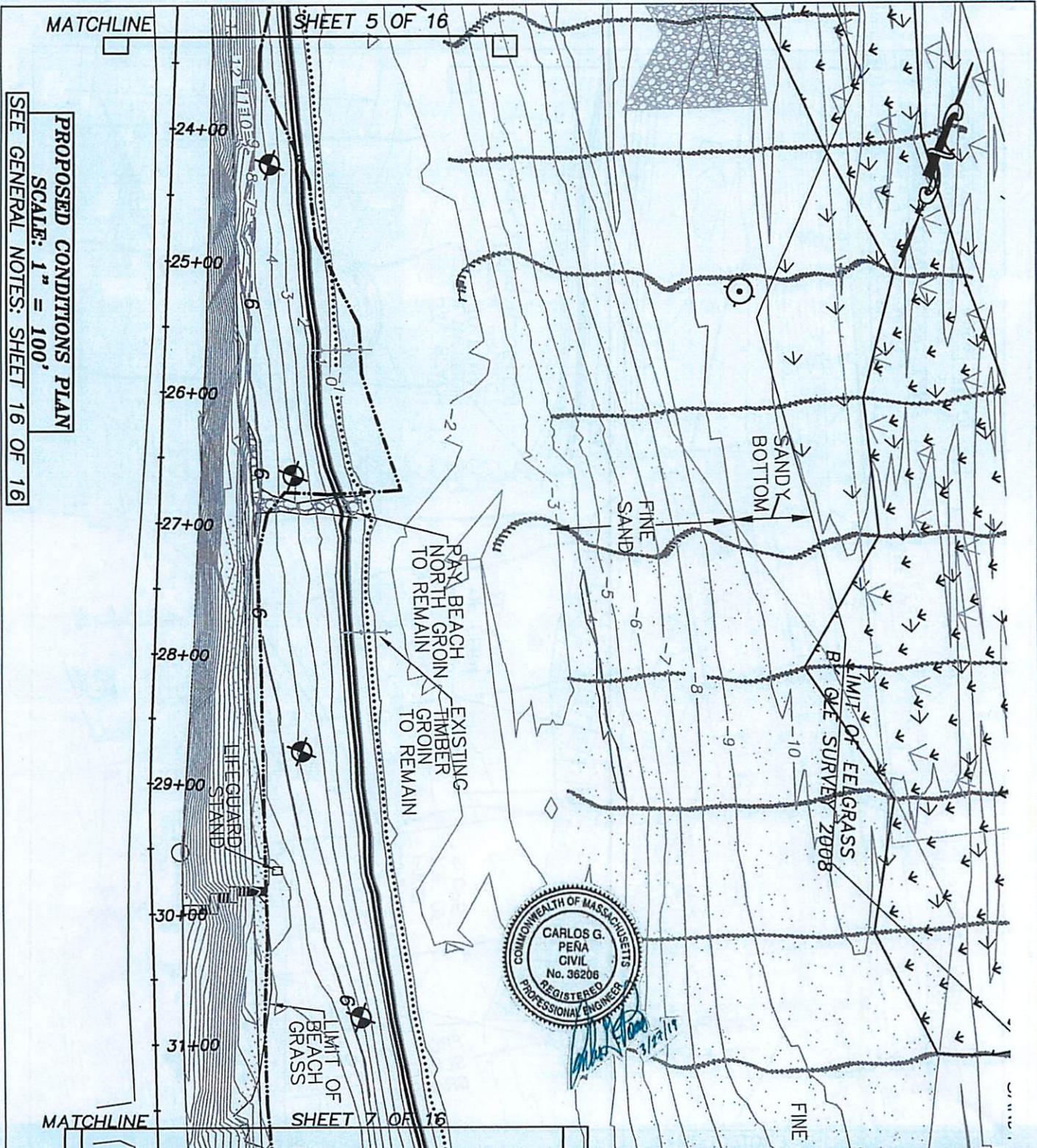
**SITE PLAN**  
 GRAPHIC SCALE



SCALE: 1" = 100'

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 5 OF 16



MATCHLINE

SHEET 5 OF 16

PROPOSED CONDITIONS PLAN

SCALE: 1" = 100'

SEE GENERAL NOTES: SHEET 16 OF 16

24+00  
25+00  
26+00  
27+00  
28+00  
29+00  
30+00  
31+00

PAX BEACH NORTH GROIN TO REMAIN  
EXISTING TIMBER GROIN TO REMAIN

LIEGUARD STAND

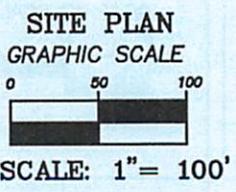
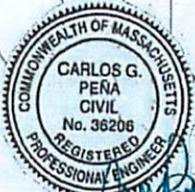
LIMIT OF BEACH GRASS

LIMIT OF EELGRASS BY GLE SURVEY 2008

SANDY BOTTOM

FINE SAND

FINE



PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 6 OF 16

MATCHLINE SHEET 6 OF 16

PROPOSED CONDITIONS PLAN  
SCALE: 1" = 100'  
SEE GENERAL NOTES: SHEET 16 OF 16

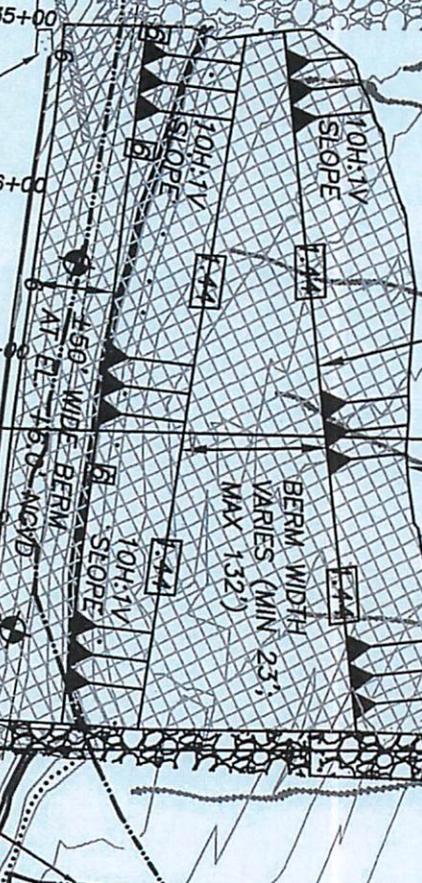
EDGE OF PAVEMENT

PROJECT BASELINE

LIMIT OF SHELLFISH SUITABILITY AREA

40+00  
40+12.05

32+00  
33+00  
34+00  
35+00  
36+00  
37+00  
38+00  
39+00



PAY BEACH SOUTH GROIN TO REMAIN  
STA. 23+00 TO 35+00



3/27/19

PROP TOP OF BERM  
EL=1.44'

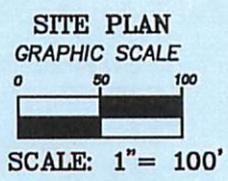
APPROX. PROP. TOE OF SLOPE

162'  
FROM TOE OF SLOPE TO EEL GRASS BED

EX. INKWELL BEACH GROIN TO BE RECONSTRUCTED (AUTH. UNDER MADPW CO. No. 502 (1937), 664 & 892 (1946))

LIMIT OF EELGRASS  
BY CIE SURVEY 2018

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
           NGVD29 = 0.0  
           MHW = 1.14  
           HTL = 1.54  
 FOTH-CL  
 15 CREEK RD. MARION, MA 02738

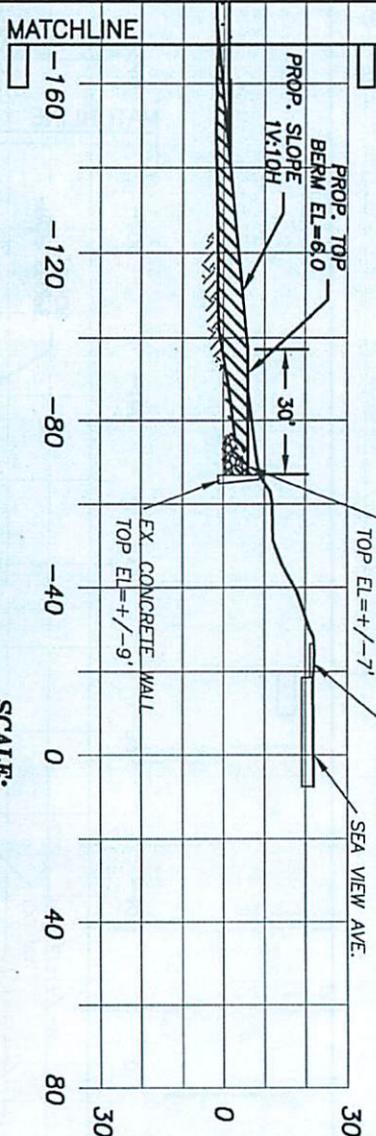
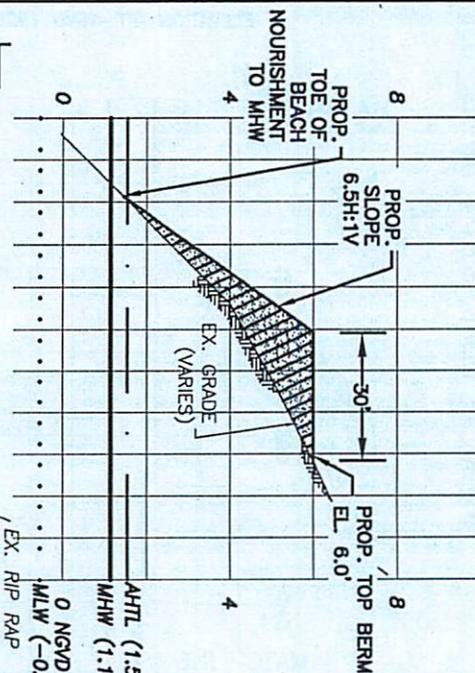


PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 7 OF 16

**PROPOSED BEACH NOURISHMENT - JETTY BEACH**  
**SECTION A-A (STA 1+50)**

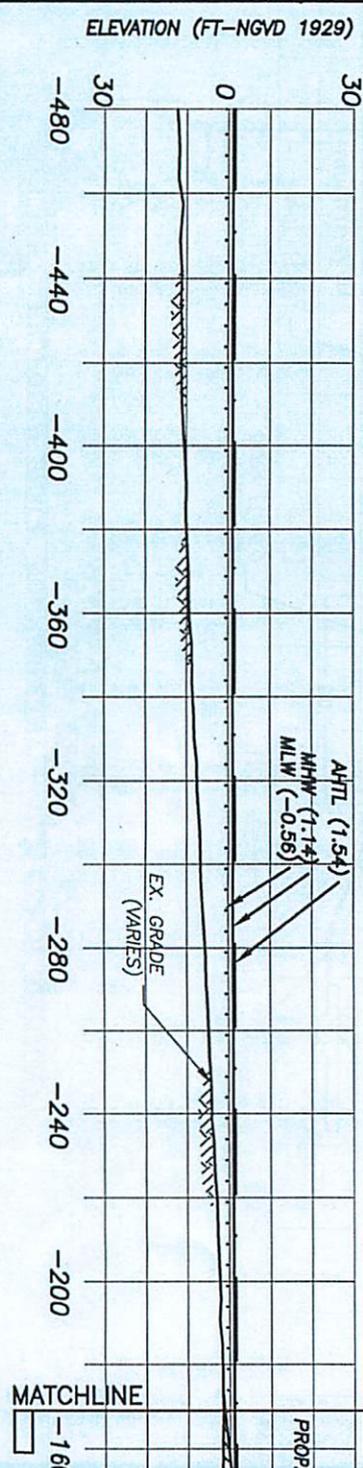
SCALE:  
 1" = 40' HORIZONTAL  
 1" = 4' VERTICAL

SEE GENERAL NOTES: SHEET 16 OF 16



**NORTH BLUFF BEACH**  
**SECTION D - D**  
**(STA 10+50)**

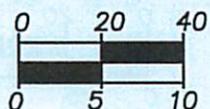
SCALE:  
 1" = 40' VERTICAL & HORIZONTAL



PURPOSE: SHORELINE PROTECTION &  
 BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

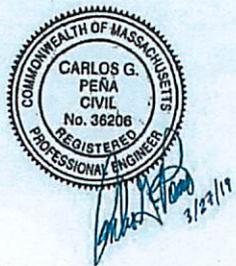
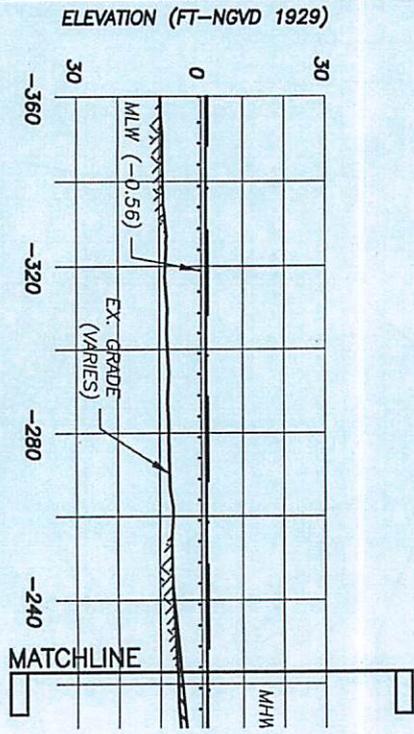
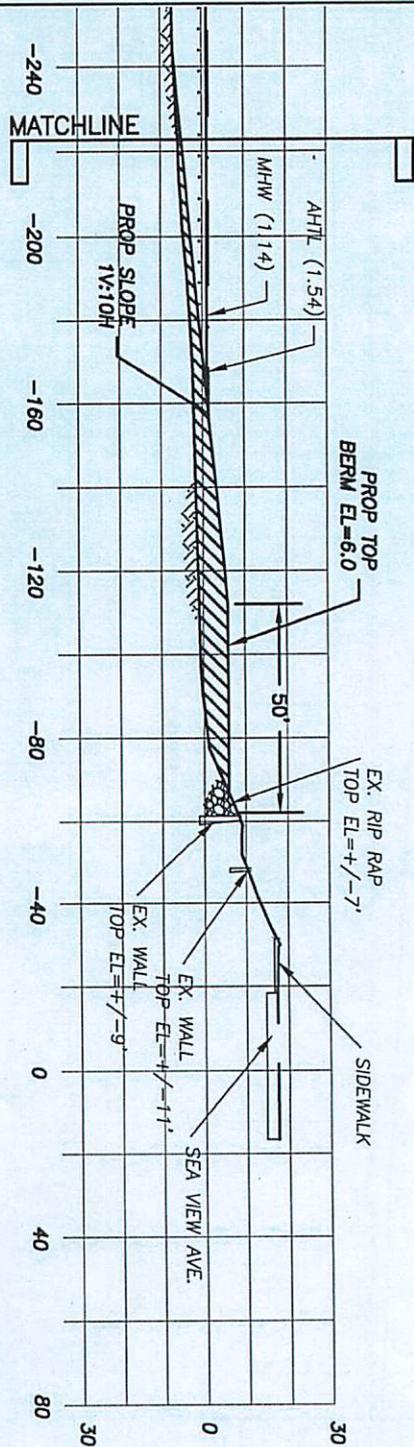
SECTION VIEW

GRAPHIC SCALE



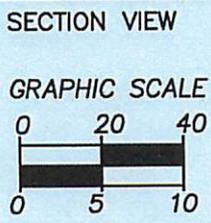
PROPOSED BEACH NOURISHMENT  
 AND GROIN & JETTY  
 REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK  
 BLUFFS  
 DATE: 3/27/19 SHEET 8 OF 16

**PROPOSED BEACH NOURISHMENT - PAY BEACH SECTION**  
**E-E (STA 20+50)**  
**SCALE: 1" = 40'**



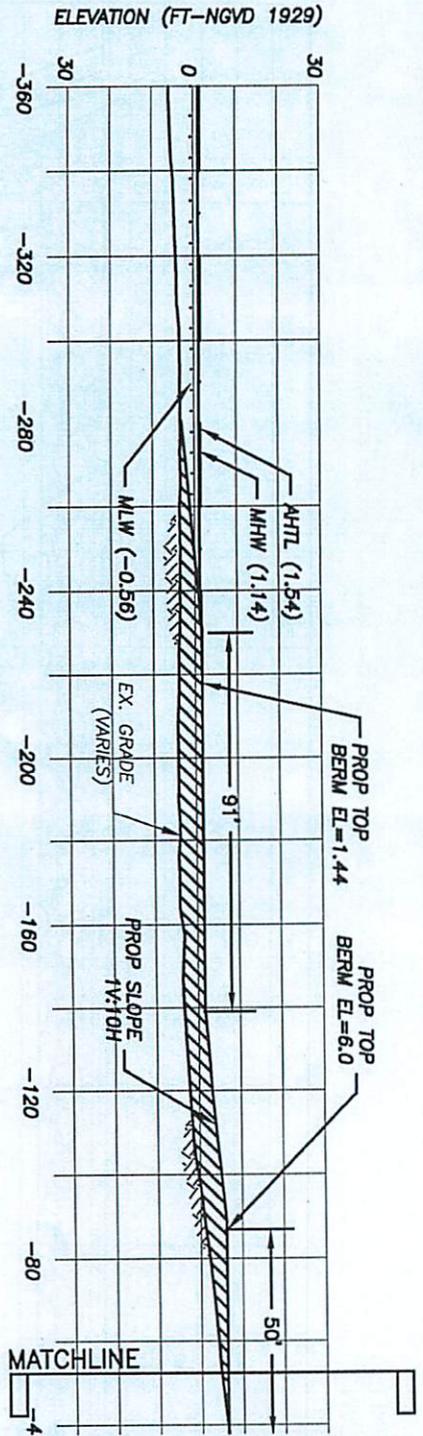
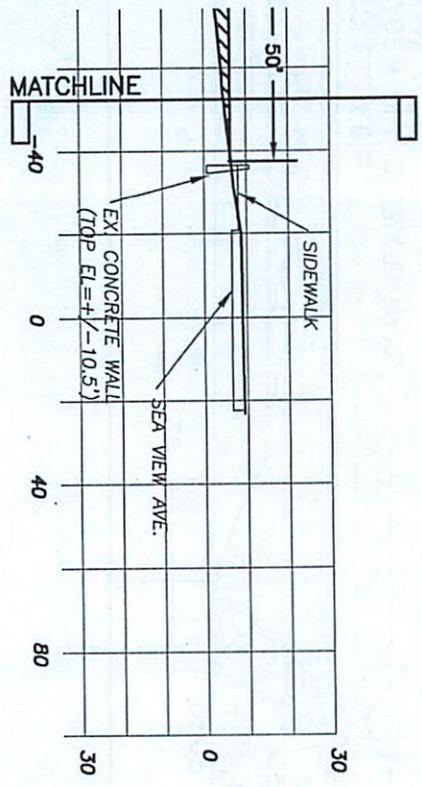
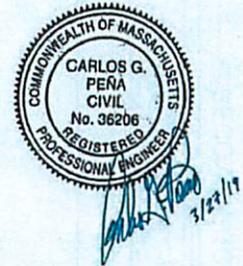
SEE GENERAL NOTES: SHEET 16 OF 16

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738



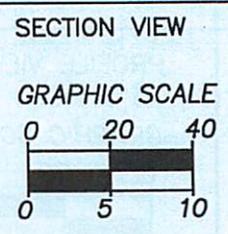
PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 9 OF 16

**PROPOSED BEACH NOURISHMENT - INKWELL BEACH**  
**SECTION F-F (STA 37+50)**  
**SCALE: 1" = 40'**



SEE GENERAL NOTES: SHEET 16 OF 16

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

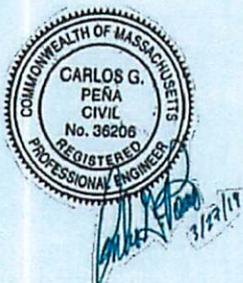
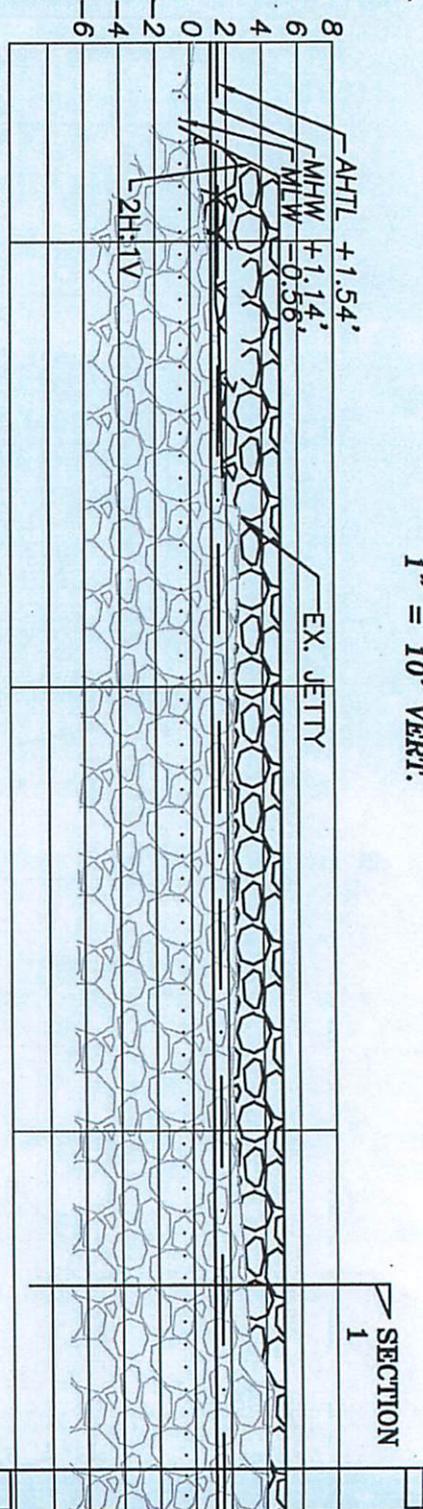


PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 10 OF 16

**PROPOSED JETTY - SECTION B-B NORTH JETTY (STA 3+70)**

SCALE: 1" = 40' HOR.  
1" = 10' VERT.

ELEVATION (FT. - NGVD 1929)



RECONSTRUCT NORTH JETTY TO EL. 4.6'±  
(JETTY AUTHORIZED UNDER MADPW DIV. OF WATERWAYS  
CONTRACT NO. 1075 (DEC. 1948)  
CONTRACT NO. 976 (MAY 1947))

20' +/-

PROP. EL. +7.5'±

SLOPE 2H:1V

MATCH LINE

MATCH LINE

SECTION 1

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
DATUM: MLW = -0.56

NGVD29 = 0.0

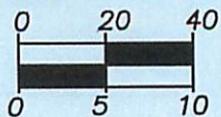
MHW = 1.14

HTL = 1.54

FOTH-CLE  
15 CREEK RD. MARION, MA 02738

PROFILE VIEW

GRAPHIC SCALE



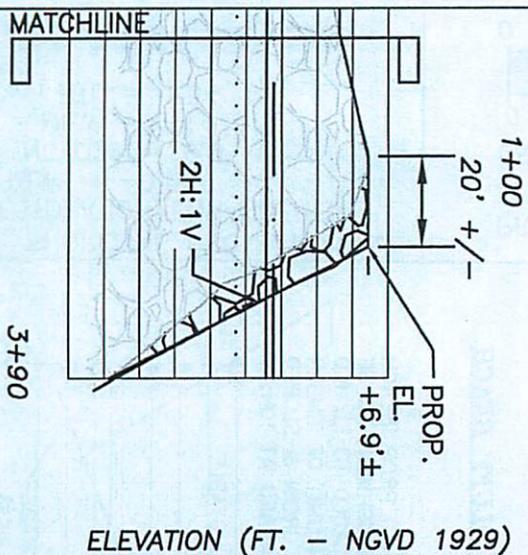
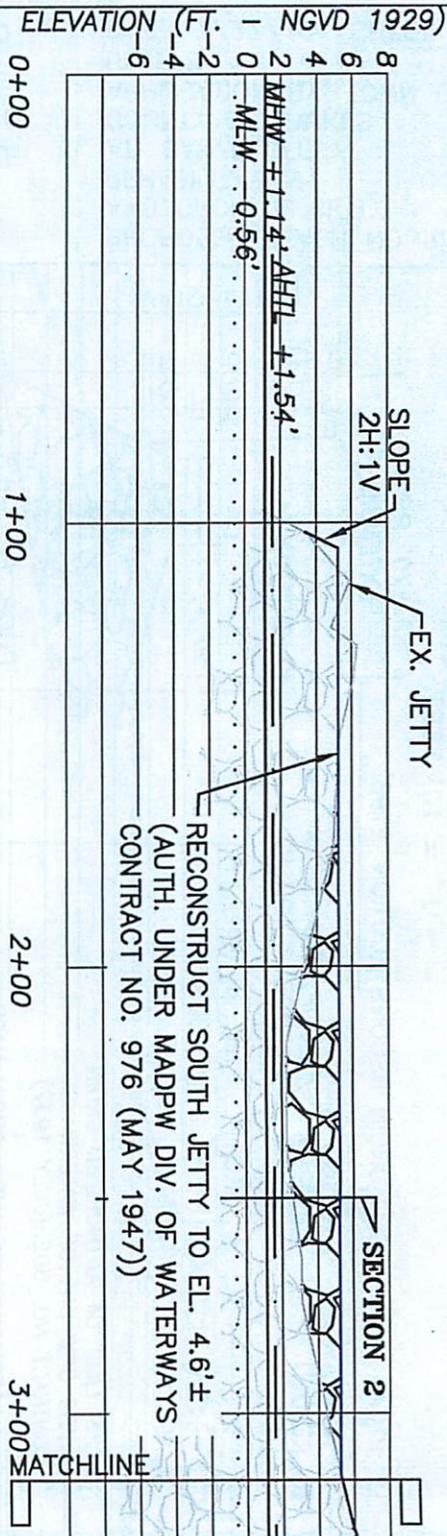
PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
AT: OAK BLUFFS  
COUNTY OF: DUKES  
APPLICATION BY: TOWN OF OAK BLUFFS

DATE: 3/27/19 SHEET 11 OF 16

SEE GENERAL NOTES: SHEET 16 OF 16

**PROPOSED GROIN & JETTY - SECTION C-C SOUTH JETTY (STA 5+70)**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL

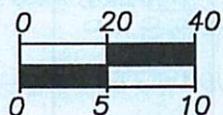


SEE GENERAL NOTES: SHEET 16 OF 16

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
           NGVD29 = 0.0  
           MHW = 1.14  
           HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

PROFILE VIEW

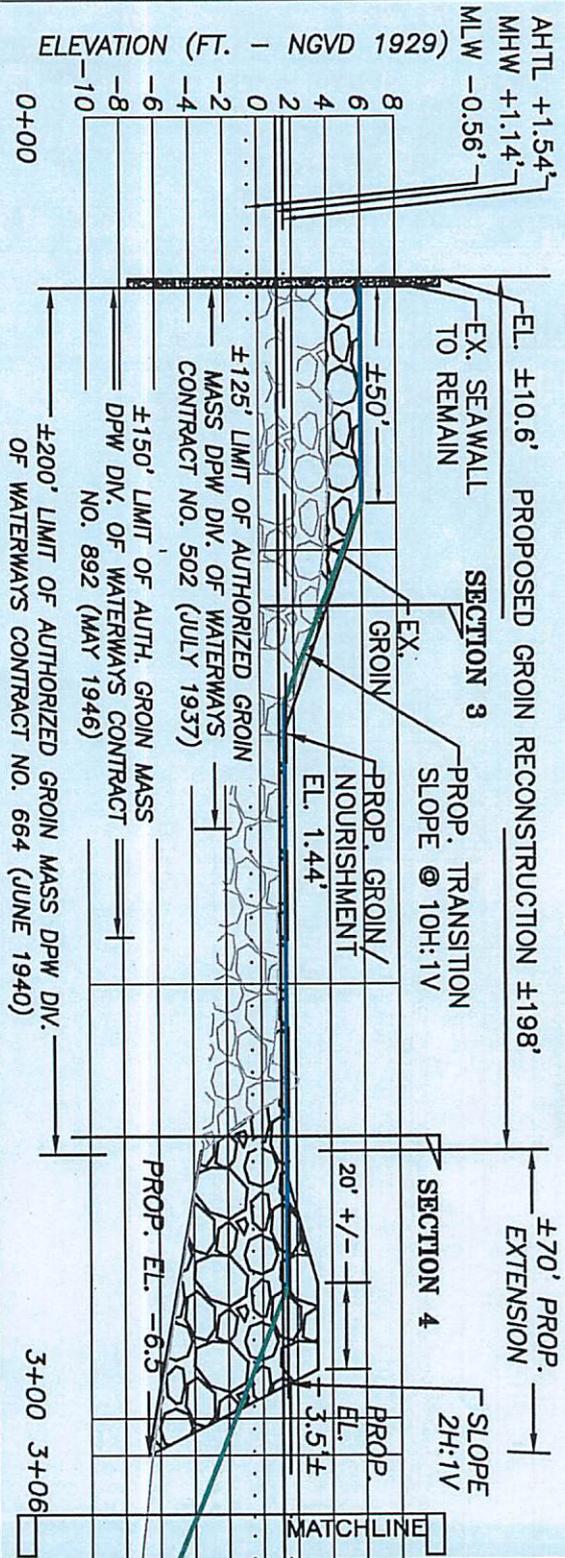
GRAPHIC SCALE



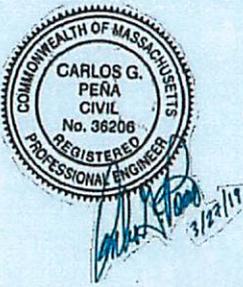
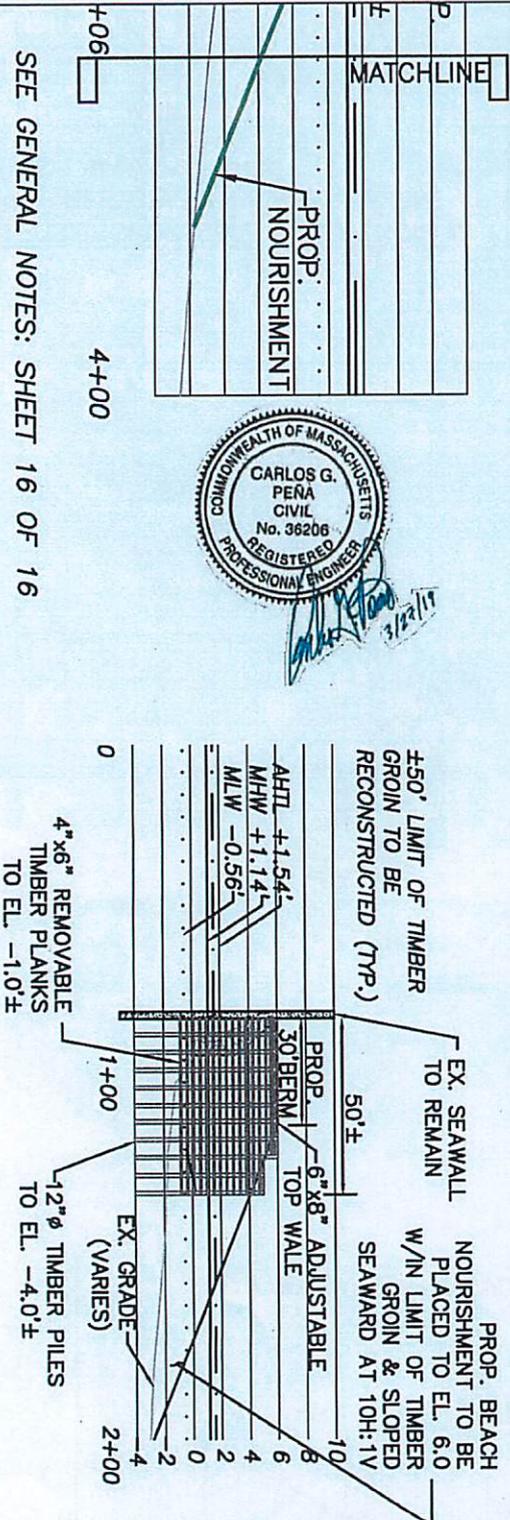
PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 12 OF 16

**PROPOSED GROIN SECTION J-J GROIN PROFILE-INKWELL BEACH (STA 39+32)**

SCALE:  
 1" = 40' HOR.  
 1" = 10' VERT.



**TYPICAL TIMBER GROIN PROFILE-NORTH BLUFF BEACH**  
 SCALE 1"=50'



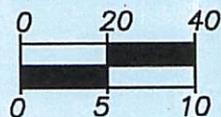
SEE GENERAL NOTES: SHEET 16 OF 16

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54

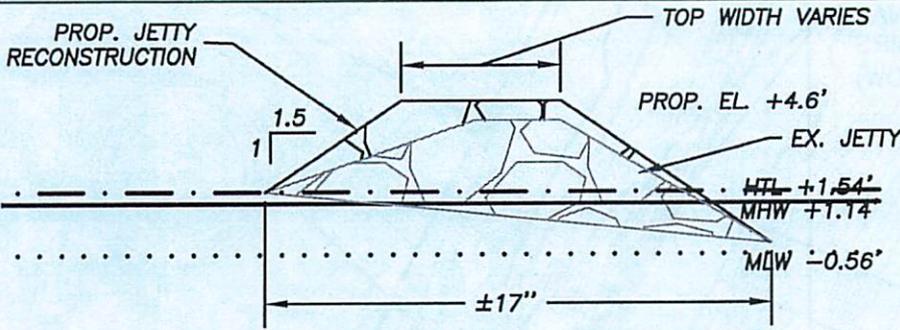
FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

PROFILE VIEW

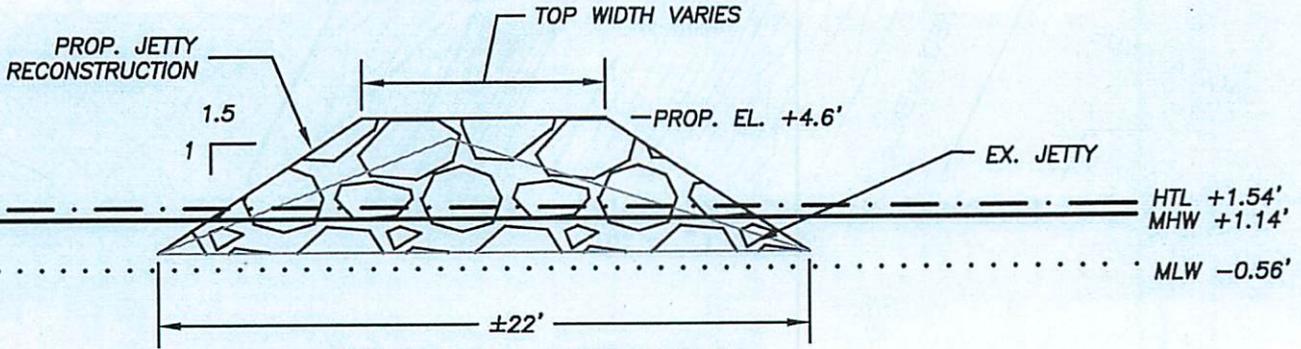
GRAPHIC SCALE



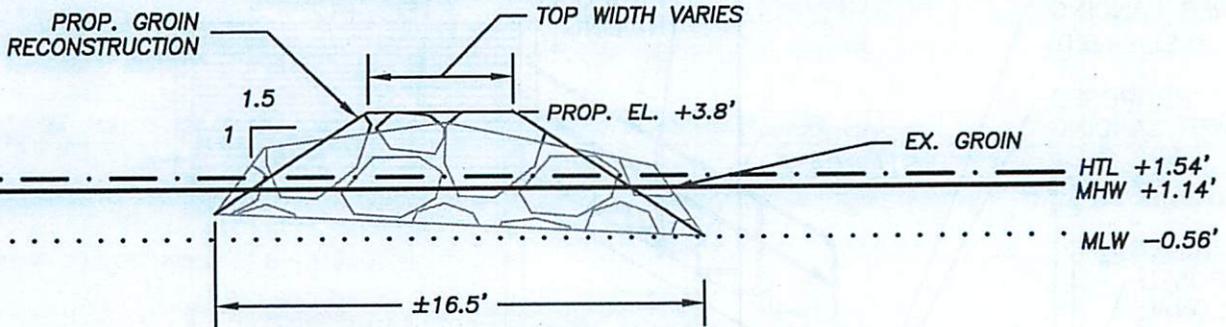
PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 13 OF 16



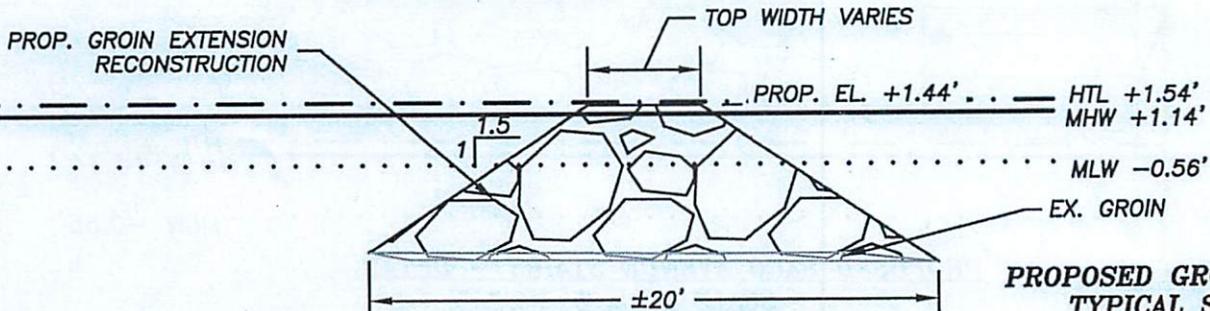
**SECTION 1-1: NORTH JETTY**



**SECTION 2-2: SOUTH JETTY**



**SECTION 3-3: INKWELL BEACH**

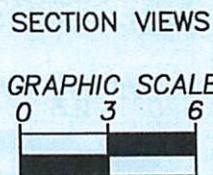


**SECTION 4-4: INKWELL BEACH**

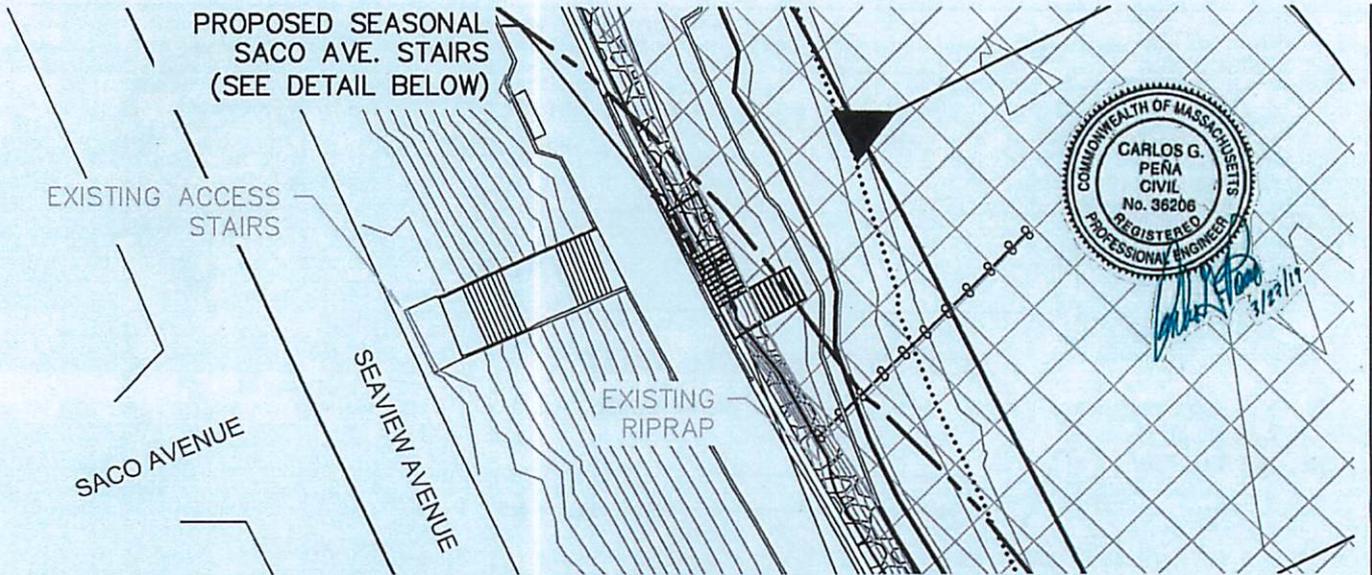
**PROPOSED GROIN & JETTY  
TYPICAL SECTIONS  
SCALE 1" = 6'**

SEE GENERAL NOTES: SHEET 16 OF 16

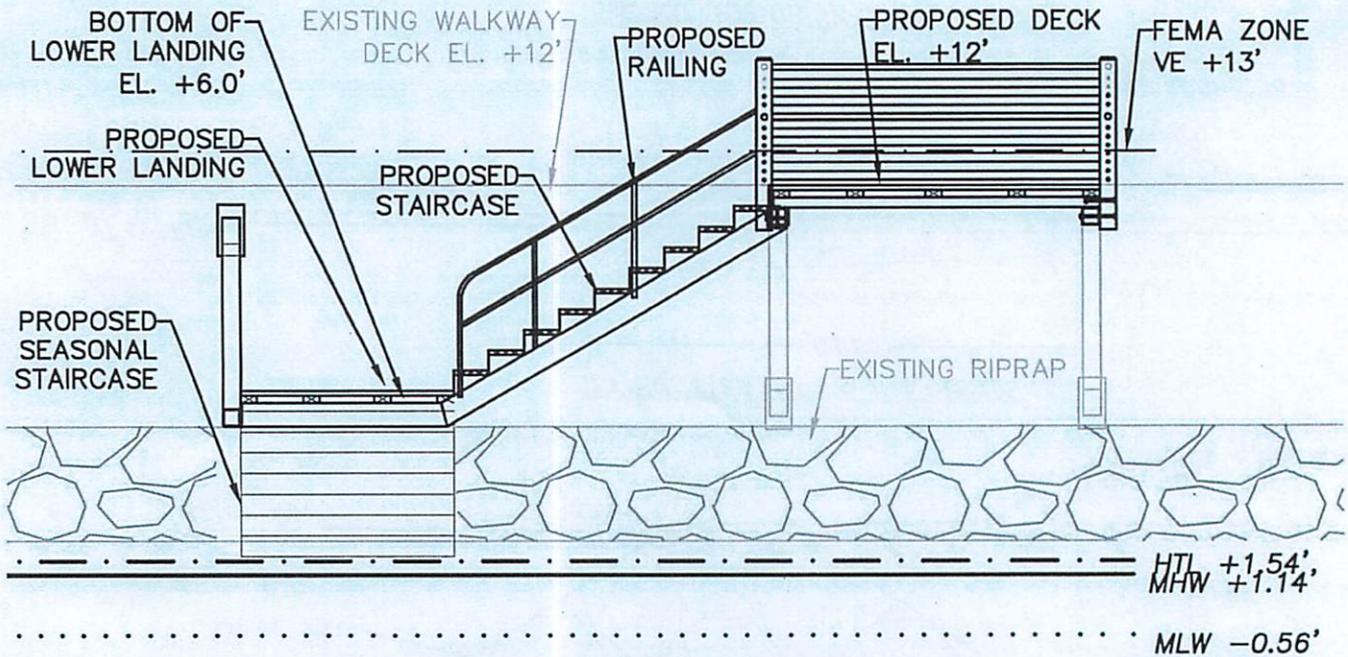
PURPOSE: SHORELINE PROTECTION &  
BEACH RESTORATION/ENHANCEMENT  
DATUM: MLW = -0.56  
NGVD29 = 0.0  
MHW = 1.14  
HTL = 1.54  
FOTH-CLE  
15 CREEK RD. MARION, MA 02738



PROPOSED BEACH NOURISHMENT  
AND GROIN & JETTY  
REHABILITATION  
AT: OAK BLUFFS  
COUNTY OF: DUKES  
APPLICATION BY: TOWN OF OAK  
BLUFFS  
DATE: 3/27/19 SHEET 14 OF 16



**PROPOSED SACO STREET STAIRS - PLAN VIEW**  
**SCALE 1" = 30'**

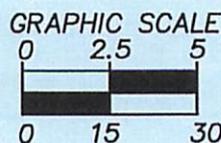


**PROPOSED SACO AVENUE STAIRS - DETAIL**  
**SCALE 1" = 5'**

SEE GENERAL NOTES: SHEET 18 OF 18

PURPOSE: SHORELINE PROTECTION &  
 BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

SACO AVENUE STAIRS



PROPOSED BEACH NOURISHMENT  
 AND GROIN & JETTY  
 REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK  
 BLUFFS  
 DATE: 3/27/19 SHEET 15 OF 16

**GENERAL NOTES:**

1. PROJECT SITE IS DEFINED AS MAP 8, LOT 294 AND MAP 9, LOTS 1 & 58 AS PER TOWN OF OAK BLUFFS ASSESSOR'S OFFICE.
2. TOPOGRAPHY FROM FOTH-CLE SURVEY DATE 9/9, 9/15, 9/21, 11/10, AND 11/11/2016. RESULTS OF HYDROGRAPHIC SURVEY BY CLE ON 9/14/2016.
3. HABITAT, TIMBER & STONE GROIN LOCATIONS FROM CLE SURVEY DATED 6/30/09 & 7/1/10.
4. ELEVATIONS ARE IN FEET AND TENTHS AND REFER TO NGVD29 DATUM. AHTL = +1.54'.
5. PROJECT BENCHMARK IS NOAA DISK "BM NO. 1". BENCHMARK ELEVATIONS IS +14.85' NGVD29 SET IN ROCK AT BUS STATION NEAR OAK BLUFFS FERRY TERMINAL.
6. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES SHOWN, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS AT THAT TIME. INTERPOLATED INFORMATION FROM BETWEEN SOUNDING RUNS IS NOT GUARANTEED. SHOALS, OBSTRUCTIONS OR OTHER DIFFERING CONDITIONS MAY EXIST BETWEEN THESE RUNS. CONSULT WITH CLE ENGINEERING FOR MORE DETAILED INFORMATION.
7. PROPERTY LINES WHERE SHOWN ARE APPROXIMATE AND WERE TAKEN FROM MA GIS DATA LAYERS.
8. LAND CONTAINING SHELLFISH AREAS AS SHOWN, BASED UPON AVAILABLE INFORMATION FROM MAGIS & REPRESENT POTENTIALLY SUITABLE HABITAT.
9. LIMITS OF EEL GRASS (2016) INTERPOLATED BASED ON TRANSECT LINES SURVEYED ON 9/16/16 AND 9/23/16 BY CLE ENGINEERING, INC.
10. EEL GRASS INSPECTION BY FOTH-CLE ON 9/16/2016.
11. EEL GRASS INSPECTION CONFIRMED THERE IS NO EEL GRASS IN THE SCOPE OF WORK.
12. PROJECT SITE IS IN FEMA ZONE VE EL. 15 NAVD88 (EL. +16.3' NGVD29) IN ACCORDANCE TO THE MOST RECENT FEMA FIRM #25007C0108J, EFFECTIVE DATE JULY 20, 2016.
13. POSSESSION AND USE OF THE MATERIAL CONTAINED ON THESE DRAWINGS IS GRANTED ONLY IN CONNECTION WITH ITS USE AS IT RELATES TO THE TITLED PROJECT, ANY OTHER USE, REPRODUCTION OR DISCLOSURE OF THE INFORMATION CONTAINED HEREON IS EXPRESSLY PROHIBITED WITHOUT THE WRITTEN CONSENT OF FOTH-CLE.

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**BEACH NOURISHMENT NOTES:**

1. PROP. BEACH NOURISHMENT QUANTITIES/FOOTPRINT AREAS:
 

JETTY BEACH	354 CY	29,237 SF
NORTH BLUFF BEACH	16,476 CY	102,057 SF
PAY BEACH	5,590 CY	50,417 SF
INKWELL BEACH	12,555 CY	101,550 SF
TOTAL	34,975 CY	283,261 SF
2. NOURISHMENT QUANTITIES BASED ON TOPOGRAPHIC SURVEY DONE BY FOTH-CLE IN 2016.
3. TOP OF BERM ELEVATION TO BE +6.0 NGVD 29 (+6.56 MLW).
4. BEACH NOURISHMENT MATERIAL SHALL BE COMPATIBLE WITH EXISTING/NATIVE BEACH SEDIMENTS.

**LEGEND**

-  NEARSHORE SAMPLING LOCATIONS
-  BEACHGRAB SAMPLE LOCATIONS
-  BARRIER BEACH
-  PROPOSED BEACH NOURISHMENT
-  EELGRASS
-  BEACH GRASS
-  MEAN LOW WATER (MLW)
-  MEAN HIGH WATER (MHW)
-  HIGH TIDE LINE (HTL)
-  FEMA FLOOD ZONE
-  6 - EX. CONTOUR
-  PROPOSED CONTOUR
-  EEL GRASS SURVEY 2016 TRANSECT LINE



*Handwritten signature and date: 3/27/19*

<b>DATUMS</b>	<b>MLW</b>
	(2017 TIDES)
1.54	2.1 (AHTL)
1.14	1.70 (MHW)
0.00	0.56
-0.56	0.00
NGVD 29	MLW
NOAA TIDE STATION OAK BLUFFS #8448208 AND VDATUM V3.5	

PURPOSE: SHORELINE PROTECTION & BEACH RESTORATION/ENHANCEMENT  
 DATUM: MLW = -0.56  
           NGVD29 = 0.0  
           MHW = 1.14  
           HTL = 1.54  
 FOTH-CLE  
 15 CREEK RD. MARION, MA 02738

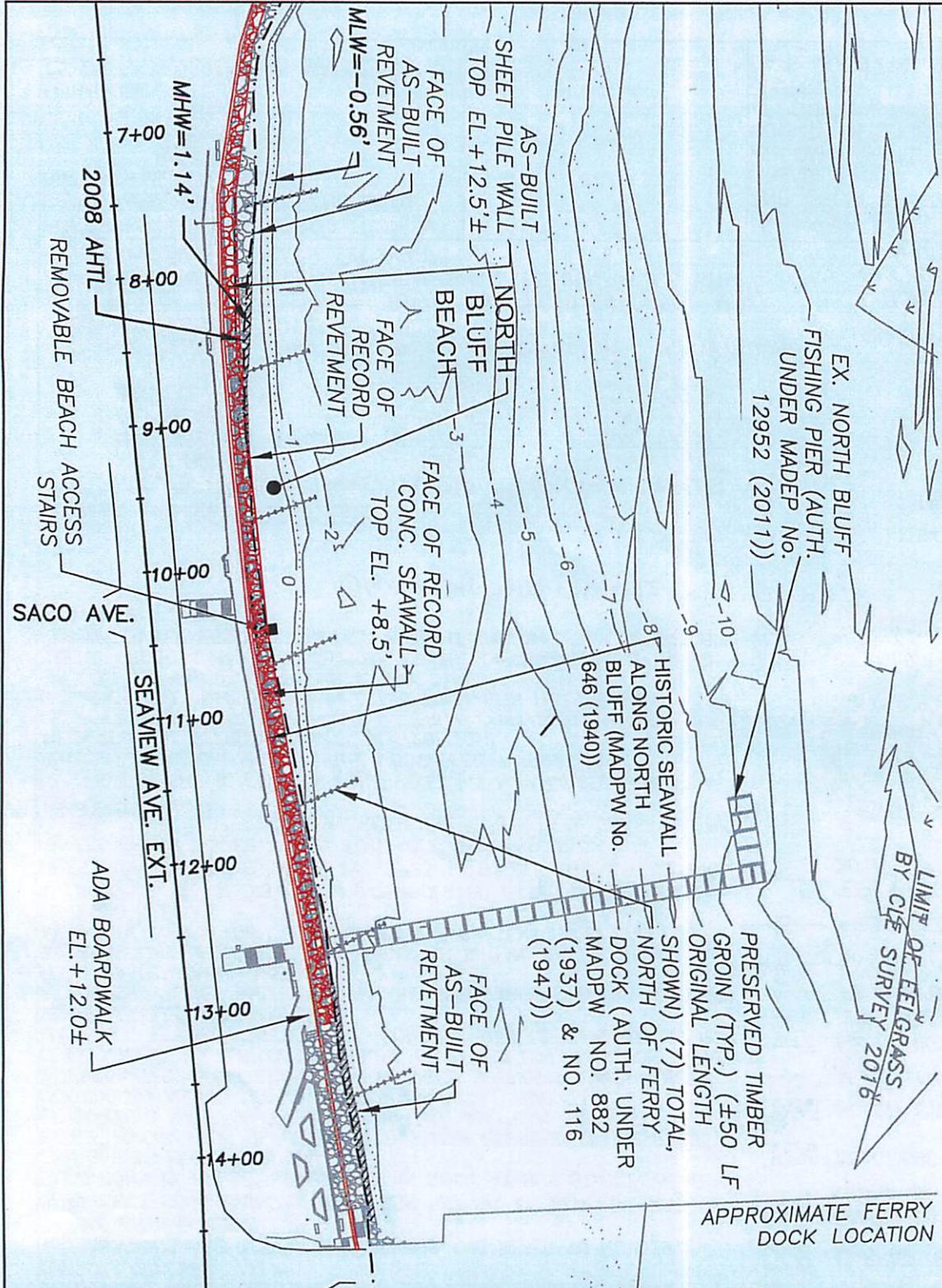
PROPOSED BEACH NOURISHMENT AND GROIN & JETTY REHABILITATION  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK BLUFFS  
 DATE: 3/27/19 SHEET 16 OF 16

**LEGEND**

- = AHTL 8/20/2008 (PRE-CONSTRUCTION)
- ▨ = AS-BUILT AREA SEAWARD OF 2008 AHTL (.02 AC)
- ▨ = RECORD SEAWALL/REVETMENT FOOTPRINT

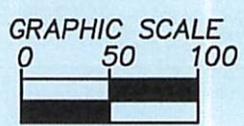
**NOTES**

- 1) AS-BUILT SURVEY PERFORMED ON 9/15/16
- 2) CONTOURS NOT SHOWN LANDWARD OF SHORELINE PROTECTION STRUCTURES FOR CLARITY PURPOSES.



PURPOSE: SHORELINE PROTECTION  
 DATUM: MLW = -0.56  
 NGVD29 = 0.0  
 MHW = 1.14  
 AHTL = 2008 SHOWN  
 FOTH-CLE ENGINEERING GROUP  
 15 CREEK RD. MARION, MA 02738

NORTH BLUFF SEAWALL  
 AS-BUILT EXHIBIT



AFTER THE FACT FILING FOR  
 NORTH BLUFF SEAWALL  
 AT: OAK BLUFFS  
 COUNTY OF: DUKES  
 APPLICATION BY: TOWN OF OAK  
 BLUFFS  
 DATE: 6/4/18 SHEET 1 OF 1

**Municipal Vulnerability Preparedness Grant Program  
Application**

**RFR ENV 19 MVP 02**

**Town of Oak Bluffs – North Bluff Preservation Project**

**Part One – Application and Attachments A and B**



# TOWN OF OAK BLUFFS

Post Office Box 1327 • Oak Bluffs, MA 02557  
Telephone 508-693-3554 • Fax 508-696-7736

## Board of Selectmen

Gail M. Barmakian, *Chairman*  
Jason Balboni  
Gregory A. Coogan  
Brian C. Packish  
Michael J. Santoro

April 16, 2019

Ms. Mia Mansfield  
Director of Climate Change Adaptation and Resilience  
EOEEA  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Robert L. Whritenour, Jr.  
*Town Administrator*

**RE: Town of Oak Bluffs North Bluff FY 19 MVP Action Grant (RFR ENV 19 MVP 02)**

Dear Ms. Mansfield,

I am pleased to submit for your review the attached application for a Fiscal Year 2019 MVP Action Grant for the Town of Oak Bluffs North Bluff Preservation Project. This critical coastal resiliency project is the first phase of the Town's broader Seaview Avenue Preservation Project and addresses the highest priorities of our Municipal Vulnerability Preparedness (MVP) planning process.

Due to extreme weather, Northeast storms, increased storm surge and sea level rise, our North Bluff coastline has become increasingly threatened. The addition of beach nourishment will help to absorb energy to protect our recently constructed seawall, which was forced to be raised four feet higher than the original, failing seawall due to sea level rise. This project is required to protect the coastal bank, Sea View Avenue Extension, and homes and businesses on Sea View Avenue Extension, as well as to restore the historically significant recreational value to the beach. Additionally, Sea View Avenue Extension is a major transportation hub/gateway linking the Oak Bluffs Harbor and the Steamship Authority dock and terminal. The road, harbor, Steamship terminal and beach are critical to the economy of the Town and are all significantly impacted in a positive manner by this project.

This project will achieve our goal of increasing our community's climate change resiliency to protect critical infrastructure by applying natural techniques (beach nourishment) to soften the hardened approach of the seawall and taking advantage of existing timber groins to enhance the value of the beach nourishment. This project is part of a planned, phased resiliency plan for the shoreline of Oak Bluffs, addressing environmental, social, infrastructure and economic impacts of climate change for Oak Bluffs in a pro-active and reasonable manner.

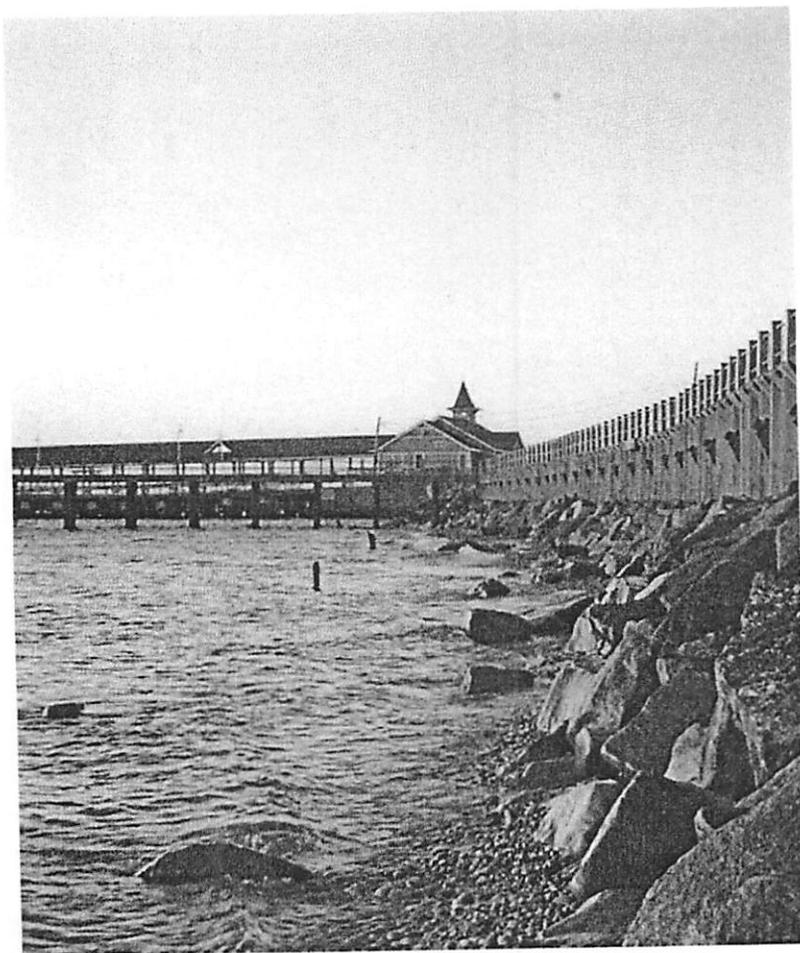
We look forward to your consideration of our proposal, and we stand ready to provide any additional information you may require in evaluating our request.

Sincerely,

Robert L. Whritenour, Jr.,  
Town Administrator

**Municipal Vulnerability Preparedness Grant Program  
RFR ENV 19 MVP 02**

**Town of Oak Bluffs – North Bluff  
Preservation Plan**



Project: Dredge Sengekontakt Pond, Retrofit Existing Timber Groins on North Bluff Beach, Nourish North Bluff Beach

# Municipal Vulnerability Preparedness Grant Program Application Form

## RFR ENV 19 MVP 02

1. **Municipality:** Town of Oak Bluffs
  
2. **Project Title:** North Bluff Preservation Project
  
3. **Type of Project:**
  - Detailed Vulnerability and Risk Assessment and Further Planning
  - Community Outreach and Education
  - Local Bylaws, Ordinances, Plans, and Other Management Measures
  - Redesigns and Retrofits
  - Energy Resilience Strategies
  - Chemical Safety & Climate Vulnerabilities
  - Nature-Based Flood Protection, Drought Prevention, Water Quality, and Water Infiltration Techniques
  - Nature-Based, Infrastructure, and Technology Solutions to Reduce Vulnerability to Extreme Heat and Poor Air Quality
  - Nature-Based Solutions to Reduce Vulnerability to other Climate Change Impacts (Storms and storm surge, coastal erosion, sea level rise)
  
4. **Contact Person:** Elizabeth Durkee  
**Agency:** Town of Oak Bluffs, Conservation Agent  
**Address:** PO Box 1327, Oak Bluffs, MA 02557  
**Zip:** 02557  
**Telephone :** 508-693-3554 x118   **Fax:**  
**Email:** edurkee@oakbluffsma.gov
  
5. **Proposed Funding:**

<b>Total Project Cost:</b>	<b>\$2,959,080.00</b>
<b>Grant Request:</b> \$2,000,000.00	
<b>Municipal Match (at least 25% of total project cost):</b> \$959,080.00	
<b>Other:</b> (other grant(s) applied for): None at this time.	

6. **Project Summary (1-2 short paragraphs describing the project):**

The Town of Oak Bluffs, on the Island of Martha's Vineyard, is surrounded by water on three sides. The **North Bluff Preservation Project** is the first phase of the Town's Sea View Avenue Preservation Plan. Essentially a beach nourishment project, the **North Bluff Preservation Project** has three components, two nature-based and one retrofit:

1. Dredge Sengekontacket Pond (or find an alternate source of beach nourishment)
2. Retrofit existing timber groins on the North Bluff beach to better contain the beach nourishment
3. Nourish the North Bluff beach below mean high water to enlarge the beach for climate resiliency and increased recreational value

The North Bluff is on the eastern shore of Oak Bluffs adjacent to Nantucket Sound. It is located on Sea View Avenue Extension and consists of a beach, a new seawall, a pedestrian boardwalk, and a coastal bank. The seawall, built in 2016 to replace a failed seawall, was raised four feet to address sea level rise. Sea View Avenue Extension is a major Island transportation gateway. It sits between the Oak Bluffs Harbor and the Steamship Authority dock and terminal. It is the primary vehicular access for pick-up and drop-off of passengers from six ferry services. The **North Bluff Preservation Project** will protect the new seawall, pedestrian boardwalk, coastal bank, road, infrastructure, and homes and businesses from the impacts of extreme weather, including stronger Northeast storms, increasing storm surge, coastal erosion and sea level rise. It will also increase the recreational and economic value of the beach.

7. **Project Narrative**

Please provide your full project narrative. See Section 3A for more specifics on each criterion. Use the rating system as a guide for what information should be included in the narrative to ensure the maximum score possible for your project. Only use the space provided.

a. **Problem This Project Will Address and Climate Change Adaptation**

Oak Bluffs is both a summer resort and year-round community beloved for its free, public downtown beaches as well as expansive parks and Victorian-era charm. The climate change impacts identified in the MVP process that the **North Bluff Preservation Project** will address are storm damage from stronger and more frequent storms (largely Northeasters), greater storm surge, coastal erosion and sea level rise. The primary drivers of this project are protection of a major boat and vehicular transportation hub, protection of the local economy, improvement of water quality in a coastal pond, reestablishment of a beach system, and the enhancement of the recreational values of a downtown beach.

The **North Bluff Preservation Project** was chosen for this grant opportunity because:

A) **It fits three of the Town's MVP-identified action priorities:**

1. Protect Oak Bluffs Harbor (protect recreational and economic value of the harbor)
2. Sea View Avenue Preservation (storm damage protection, protection of recreational and cultural values of the Sea View Avenue beaches)
3. Address Climate Resiliency Using Nature-based Solutions where Possible (strengthen hard infrastructure where necessary but focus on nature-based climate resiliency)

**B) It is the next logical step in the Town's downtown coastal resiliency efforts (it is Phase I of the Town's Sea View Avenue Preservation Plan)**

**C) It will address three major coastal resiliency problems:**

- 1. The dredging of Sengekontacket Pond will provide safe navigation for small boats, increase water circulation and improve coastal pond water quality. This in turn will improve recreational and commercial shellfishing in the pond as well as general pond recreation. The Island's ponds and salt marshes are critical to the Island's environmental, recreational and economic well-being.**
- 2. The groin retrofit and beach nourishment will protect the new seawall against storm damage and sea level rise. The seawall was built in 2016, four feet higher than the old, failed seawall, to address the impacts of sea level rise. By protecting the seawall the project will also protect the pedestrian boardwalk, the coastal bank, Sea View Avenue Extension, and the homes and businesses on the road. It will protect a major boat and vehicular transportation hub. Sea View Avenue Extension provides access for parking and passenger pick-up and drop-off for ferries from Falmouth, Woods Hole, New Bedford, Hyannis, Nantucket and Rhode Island. The year-round Island population of 17, 084 increases to 90,000 in the summer. In the short window of the summer season, damage to Sea View Avenue would severely impact the public safety, social and economic well-being of the Oak Bluffs community and the Island as a whole.**
- 3. The beach nourishment portion of the project will enhance the natural and recreational value of a free, public, in-town beach. At high tide there is virtually no beach left at the North Bluff and there is no more natural sediment feeding the beach. The beach is extremely popular among neighborhood residents, families and - as it so convenient to the ferry boats - day trippers. The beach nourishment will enhance the natural environment by recreating a beach system. The retrofit of the timber groins will maximize the amount of time the nourishment will remain on the beach, thereby increasing coastal resiliency.**

**In addition to the new seawall, there have been extensive improvements to the North Bluff in the past decade. The pedestrian walkway above the seawall, built in 2016, creates safe separation of pedestrian and vehicular traffic and provides a new scenic open space setting. It adds scenic, recreational and economic value to the North Bluff. In 2014 the MA Division of Marine Fisheries, Office of Access and Boating built a fishing pier off the North Bluff, providing ADA accessible fishing for the public. In 2010 the North Bluff public restrooms were restored and in 2009 the Steamship Authority renovated their terminal and dock.**

**The proposed North Bluff Preservation Project will protect this critical corner of Town from extreme weather and sea level rise.**

## **b. Need for Assistance**

Coastal resiliency is not an afterthought in Oak Bluffs – it is critical to the Town's survival. Oak Bluffs is a peninsula on an island. As a summer resort community, the foundation of the Town's economy is the shoreline - the beaches, scenic public roads and bike paths, coastal ponds, salt marshes and public parks. Oak Bluffs' shoreline is open to the public; scenic public roads stretch from one end of town to the other, from the drawbridge above Lagoon Pond linking Oak Bluffs with Tisbury to the Big ("Jaws") Bridge over Sengekontacket Pond that connects Oak Bluffs with Edgartown. Along this coastline there are about 80 acres of free, public beaches, five coastal ponds, four brackish ponds, three barrier beach systems, and the Oak Bluff Harbor, a major recreational and commercial boating facility.

Like most coastal towns, Oak Bluffs does not have the funding required for major coastal resiliency projects. In 2016 the Town creatively funded the North Bluff seawall and boardwalk project through the Community Preservation Act (CPA), MA Division of Conservation and Recreation, the MA Dam and Seawall Repair or Removal grant program, the Seaport Economic Council, and FEMA. The proposed beach nourishment project is the final piece of the North Bluff restoration and the first phase of the Town's Sea View Avenue Preservation Plan. CPA funds paid for the engineering design and permitting of the North Bluff Preservation Project. This project will protect critical access to the Oak Bluffs Harbor and enhance the recreational value of a popular downtown public beach. Oak Bluffs takes coastal resiliency very seriously. The Town has been planning and permitting climate change adaptation projects for many years. As a result, the Town is able to propose for MVP Action Grant funding an all but shovel ready coastal resiliency project (awaiting one permit, USACE, expected by July 2019) that addresses three MVP-identified priorities.

### **Work Addressing Climate Change Impacts Previously Completed by the Community:**

- 2006-2019 Research, design and permitting for enlargement of Farm Pond culvert, including a storm gate, to improve water quality in the pond and coastal resiliency of land surrounding the Pond
- 2010 CZM StormSmart Coasts Pilot Program – Updated Town Floodplain Bylaw and developed Floodplain Bylaw Regulations
- 2011 Conservation agent, 15-piece series in the Vineyard Gazette newspaper on the impacts of climate change on Martha's Vineyard
- 2016 Coastal Vulnerability Assessment and Adaptation Plan, Kleinfelder, Inc.
- 2016 Wastewater generator installed above the flood elevation at Dukes pump station; electrical upgrades for permanent backup at Dukes station
- 2017 Valuation of the Ecosystem Services provided by Oak Bluffs' Public Coastal Wetlands, ABT Associates
- 2017+ Salt Marsh Restoration, Felix Neck Wildlife Sanctuary, Sengekontacket Pond
- 2018 Permitting completed for East Chop Bluff Stabilization Project
- 2018 Study of design alternatives for repair/realignment of Oak Bluffs Harbor jetties
- 2018-19 Design of Nature-based storm water management system to address frequent flooding on County Road

c. Project Description

The North Bluff Preservation Project is threefold:

1. Dredge 16,476 cubic yards of material from Sengekontaktet Pond (or alternate source) for placement on the North Bluff beach.
2. Remove six existing, deteriorated timber groins and replace them with 30 foot long timber groins to contain the beach nourishment, establish a consistent beach width and maximize the longevity of the nourishment for coastal resiliency. The replacement groins will be approximately 22 feet shorter than the original timber groins.
3. Nourish the North Bluff beach below mean high water to protect the seawall, boardwalk, coastal bank, road, and structures from extreme weather. The nourishment will consist of 30 foot and 50 foot wide level berms constructed at elevation 6.0 NGVD extending from the upper shoreline and then transitioning at a 10H: 1V slope along the foreshore of the beach.

A beach monitoring plan, based on best management practices, will be implemented to ensure shoreline protection from storm events and to maintain the coastal resiliency required to preserve the adjacent public and private infrastructure.

(See Attachment A – Project Plans)

The rationale for this project selection: the new seawall needs protection from storms, storm surge and sea level rise, there is public demand for beach nourishment, water quality in Sengekontaktet Pond will improve, public safety will be enhanced, and it meets the criteria for three of Town's identified MVP priority actions.

**Methodology and Deliverables:**

- A. Mechanical or hydraulic dredging of compatible screened sand from Sengekontaktet Pond or other suitable source and transported to the project site via truck or barge. The last dredging event in 2009 totaled 45,000 cubic yards and it is anticipated that at least 40,000 cubic yards are currently available (subject to confirmation by pre-dredge hydrographic survey proposed in the fall of 2019).
- B. Placement of sand from either the roadway via conveyor system or ocean via temporarily grounded barge and then grading to required grades by mechanical (bulldozer and front-end loader) means.
- C. Construction of timber groin from a temporarily grounded of jack-up barge along the beach. Another option would be to construct the timber groins following the completion of the beach nourishment work with land-based pile-installation and other required equipment.

The beach nourishment is considered sacrificial and necessary to provide protection for the seawall, coastal bank, and upland infrastructure. The current climate change projections with predicted sea level rise were the basis for the beach nourishment design to create a stable, sacrificial beach. The beach nourishment design is based on the results of an Applied Coastal Research and Engineering, Inc. report with the intention of creating stable elevated beach contours for the 25-year 2% run-up storm event and to sequester the nourishment between the reconstructed timber groins to extend the project design life to an estimated longevity of more than 30% of the beach nourishment remaining after six years. The estimated design life for the retrofit timber groins is approximately 30 years.

The groins and beach nourishment will be established at elevation 6.0 NGVD and the top of the new seawall is at elevation 12.5 NGVD 29. Beach nourishment will be added to the beach as needed to maintain the 6.0 elevation. The entrapped beach nourishment will protect the seawall at least for the lifetime of the timber groins (2050), as the highest sea level rise projection for 2050 to date is 3.1 feet. If the groins are replaced with new groins once their design life has expired, and if the beach is regularly nourished, the seawall may be protected against sea level rise until sometime

between 2070 and 2100 (sea level rise high scenario for the year 2100 being 7.7 feet).

The stakeholders who took part in the MVP process identified both the Oak Bluffs Harbor and Sea View Avenue as sites requiring priority action.

**Oak Bluffs Harbor:** The North Bluff Preservation Project reduces key vulnerabilities by protecting Sea View Avenue Extension and its infrastructure from extreme weather and thereby protecting access to the Oak Bluffs Harbor, a major commercial and recreational boating facility and Town income-producer. Sea View Avenue Extension is the Town's gateway transportation hub that connects boat passengers and vehicular traffic.

**Sea View Avenue Preservation Plan:** The stakeholders identified Sea View Avenue as a priority site for coastal adaptation. The Town has already developed a Sea View Avenue Preservation Plan that includes nourishment of four in-town, Sea View Avenue beaches to protect the coastal road, infrastructure and buildings, and to increase the recreational value of the Town's popular, free and public beaches. Several years ago the Town identified nourishment of the North Bluff beach as the first priority of the Sea View Avenue Preservation Plan.

Nourishing the North Bluff beach will improve coastal resiliency at the site of the beach, seawall and road, but the resiliency impacts of this project will travel far beyond the immediate site. Tens of thousands of year-round and seasonal Island residents access the North Bluff to pick-up and drop off passengers on the ferries that dock in the Oak Bluffs Harbor and the at the Steamship Authority dock. If the North Bluff (Sea View Avenue Extension) was damaged in a coastal storm the entire downtown Oak Bluffs vehicular transportation system would be thrown into chaos; six passenger ferries and the car and passenger Steamship Authority ferries all dock adjacent to Sea View Avenue Extension. The road also links the Harbor to downtown Oak Bluffs and access to Edgartown, Tisbury, and all Island towns. Nourishing the North Bluff beach will benefit the public by protecting this transportation gateway.

The beach nourishment will increase the recreational benefits of the beach. Due to longstanding revetments, groins and jetties, the Oak Bluffs shoreline no longer has the capacity to naturally replenish itself. According to a coastal sediment transport study by Applied Coastal Research and Engineering, Inc., "essentially the entire Oak Bluffs shoreline has been receding since the mid-1800s." This project will enhance public access to the shoreline and increase the recreational, economic, social and environmental values of a highly significant corner of the Oak Bluffs coastline. The Oak Bluffs economy is directly tied to the quality and accessibility of the Town's public beaches, harbor and scenic coastal roads.

#### **d. Feasibility and Transferability**

The likelihood of success for this project is excellent.

The Town of Oak Bluffs owns the North Bluff beach. The beach is managed by the Parks Commission. The North Bluff Preservation Project is a priority for both the Board of Selectmen and Parks Commission.

The public is extremely supportive of this project as it will recreate a viable downtown bathing beach. Currently there is almost no beach at high tide and there is no natural sediment nourishing this beach. In the past it was a wide, popular, family-friendly beach that provided lifeguards and swimming lessons. The neighbors are adamant about revival of the beach. Day trippers, who arrive on the Island on ferries at both the adjacent harbor and Steamship dock, will once again be able to enjoy a beach convenient to the downtown business district, the Town parks, and all the passenger ferries.

The project includes the same team of engineers, Foth/CLE Engineering, Inc., and Town officials who successfully managed construction of the North Bluff seawall and boardwalk in 2016. The project will be constructed by a qualified marine contractor to be selected through the public bidding process. All permits are in place except that of the USACE, which is expected by July 2019. In 2015 the Town successfully dredged Sengekontacket Pond and placed the beach nourishment on Sea View Avenue's Town Beach. This team is experienced managing the entire scope of this project.

The combination of nature-based resiliency and the retrofit of existing groins is a creative approach to climate adaptation that can serve as a model for other coastal communities, particularly those that have old groins and jetties that can be retrofitted to enhance coastal resiliency. The precursor to this project, the rebuilt seawall and new pedestrian boardwalk (constructed in 2016), is also transferable for Towns where existing infrastructure needs upgrades; the higher seawall protects against sea level rise and the pedestrian boardwalk adds open space and economic value to the shoreline. The seawall and boardwalk project was highlighted in a presentation at the 2018 Martha's Vineyard Coastal Conference. The combined projects (seawall/boardwalk and beach nourishment/groin retrofit) will be showcased at every available opportunity.

#### **e. Community Outreach, Engagement, and Education**

The North Bluff Preservation Project has been in the works for several years and much community outreach and education has already taken place. During construction of the new North Bluff seawall the public made it very clear that nourishing the North Bluff beach was of utmost importance. As a result, the Town made nourishment of this beach the number one priority of the Sea View Avenue Preservation Plan. In addition to the climate resiliency benefits of this project, this grant application is a result of the public desire for a better North Bluff beach. The residents of the North Bluff, in particular, are extremely supportive of beach enhancement. In fact, per their request, the boardwalk was redesigned to allow construction of an additional stairway to the beach.

The Sea View Avenue Preservation Plan (including beach nourishment of the North Bluff beach) was subject to a public hearing by the Oak Bluffs Conservation Commission. All abutters within 300 feet of the project site were notified of the hearing by certified mail. In addition, Foth/CLE Engineering has provided several overviews and updates on the beach nourishment projects at Board of Selectmen meetings.

Before the start of the North Bluff Preservation Project the Town will hold a well-publicized public input session. It will be held in the summer so seasonal residents are able to attend.

An environmental justice community, Oak Bluffs has a significant population of Brazilians. Renourishment of the North Bluff beach will provide a new recreational opportunity for the

Brazilian community in the form of a free, in-town beach accessible by car, bicycle, and public transportation. A representative of the Brazilian community was invited as a stakeholder to the MVP project workshops, accepted the invitation, but did not attend the workshops.

The Martha's Vineyard Times is a free, weekly local newspaper that is delivered to every Island rural route and post office box. The Times has a weekly Brazilian column. Notice of the public input session will be placed on the same page as the Brazilian column.

There is a local Facebook pages called Islander's Talk that has over 10,000 "friends," including both year-round and summer residents. Notice of the public input session will be posted on Islander's Talk. Notice will also be posted on the Town website. All residents of the North Bluff neighborhood will be notified of the public input session via certified mail.

(In addition, the Town of Oak Bluffs is a well-known African-American summer resort community. A future phase of the Sea View Avenue Preservation Plan is the nourishment of an in-Town beach informally known as The Inkwell, a culturally significant beach for the African-American community.)

The Town will include in the project all reasonable public feedback that can be incorporated into the project in a manner that does not significantly affect the project permits or impacts the grant program's project deadline. The North Bluff Preservation Project is a case where the public desire for a better beach aligns perfectly with the science-and-nature-based solution for enhancing coastal resiliency for the benefit of the entire Island community.

#### f. Incorporation of Nature-based Solutions and Strategies

Two-thirds of the North Bluff Preservation Project is nature-based. When sand is placed on Oak Bluffs' in-town beaches it is eventually transported south along the shore where it ends up either in the Town of Edgartown or in Sengekontacket Pond. The Town regularly dredges the material out of the pond and places it back on the beaches. This is about as natural as a man-made solution can be.

To maximize the amount of time the sand stays on the North Bluff beach the Town is proposing the creative retrofitting of old, existing timber groins. The existing groins would not be allowed to be built today, but by taking advantage of their existence, by tweaking them (rebuilding and shortening), they become important coastal engineering structures that enhance the coastal resiliency value of the beach nourishment.

The use of retrofitted coastal engineering structures and beach nourishment to help decrease the impacts of extreme weather and sea level rise, is a viable project based on current sea level rise estimates. The beach nourishment and groins are to be established at +6 NGVD. The retrofitted groins have a life expectancy of 30 years. In 30 years sea level rise is projected to be between 1.3 and 3.1 feet. The elevation of the top of the seawall is 12.5 NGVD 29.

#### g. Timeline/ Scope and Budget

The timeline for the North Bluff Preservation Project will be from October 2019 through January 2020, subject to funding. Work will be performed during the time-of-year established for protection of fisheries and endangered species. Local and state permits are in hand and USACE authorization is expected by July 2019. With the exception of the anticipated USACE permit this project is shovel-ready.

See Attachment B - Budget

#### **h. Project Management and Partners**

The project manager and point of contact for this project is Robert L. Whritenour, Jr., Town Administrator.

508-693-3554 x113

[rwhritenour@oakbluffsma.gov](mailto:rwhritenour@oakbluffsma.gov)

Mr. Whritenour is a highly experienced Town Administrator. He has held the position of Town Administrator in three coastal Massachusetts communities. He has a Master of Public Administration degree. His expertise in finance and oversight of large coastal improvement projects insures that the North Bluff Preservation Project will be successfully completed on time and on budget. In Oak Bluffs Mr. Whritenour has managed the construction of a new state-of-the-art fire station, the construction of a new North Bluff sea wall and pedestrian boardwalk, and a major dredging project in Sengekontacket Pond. He established a Strategic Planning Program that helped the Town identify climate resiliency as a Town planning priority. He organized and established a downtown streetscape and comprehensive planning program with public outreach for economic development. Mr. Whritenour possesses all of the management, financial, organizational and planning and public outreach skills required to manage the North Bluff Preservation Project.

The Town has worked successfully for many years with Foth/CLE Engineering, Inc. Projects include:

- North Bluff Seawall and Boardwalk Project – design, permitting, project oversight
- East Chop Bluff stabilization design and permitting
- Sea View Avenue Preservation Plan – design and permitting

See Attachment C – Mr. Whritenour’s Resume

See Attachment D – Letters of Support

8. Attach **Yearly Progress Report** (use EEA-provided template in Attachment F)

See Attachment E – Yearly Progress Report

9. Attach **Statement of Match** (described in Section 2E)

See Attachment F – Statement of Match

April 17, 2019

Date



Signature of Chief Municipal Officer

Robert L. Whritenour, Jr., Town Administrator

Name and Title (Typed)

N/A

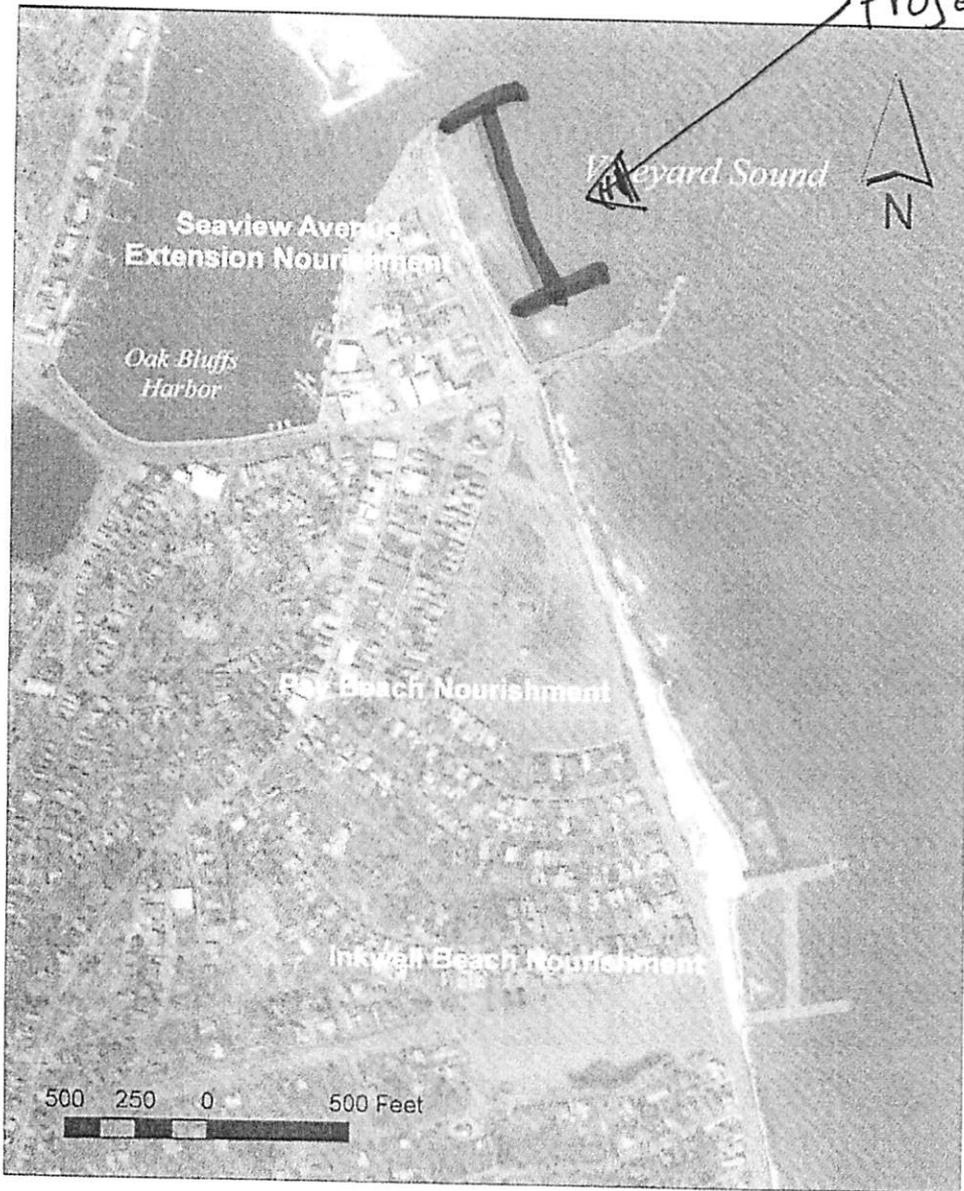
Duration of Term

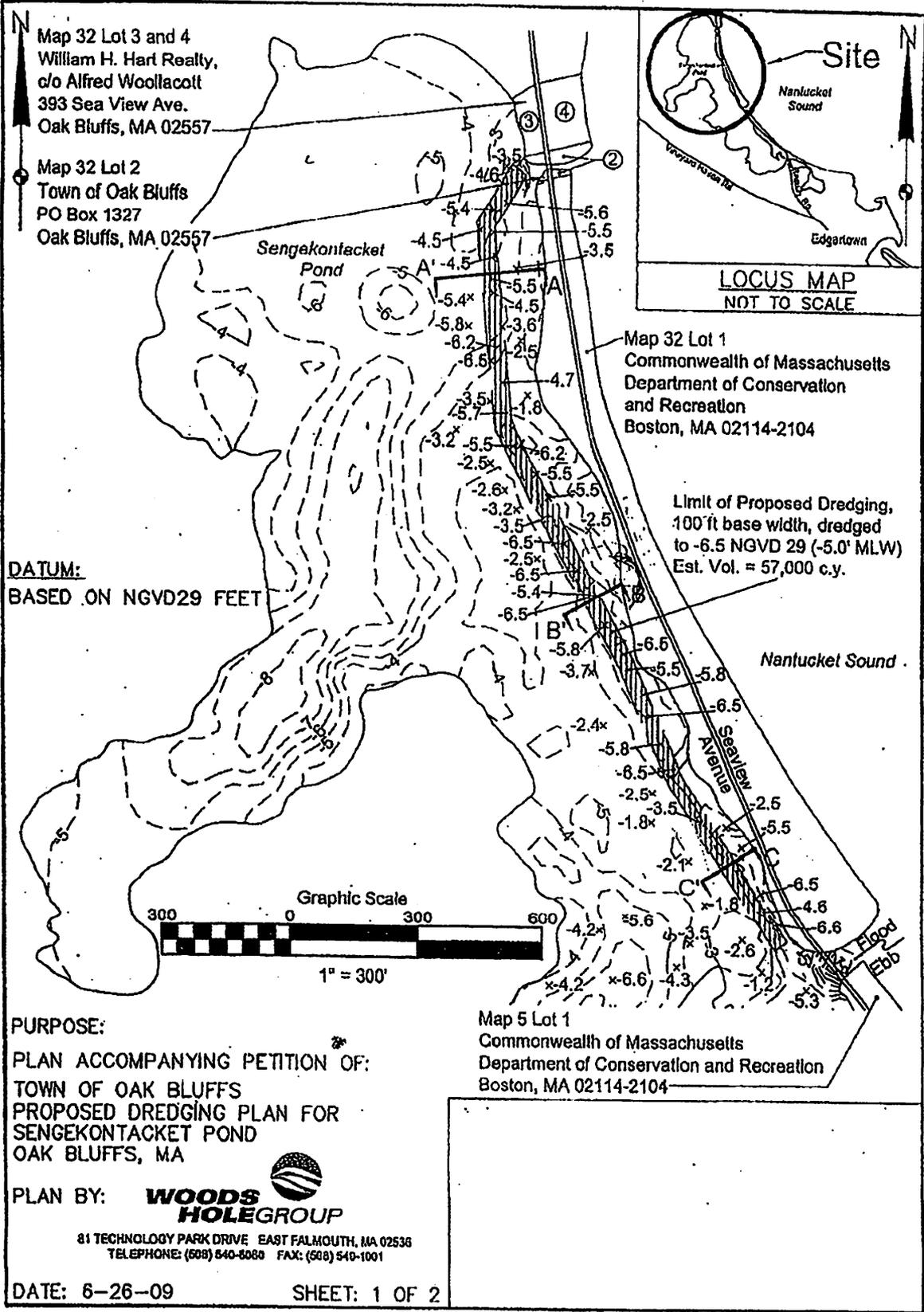
Mailing Address: PO Box 1327  
Oak Bluffs, MA 02557

Telephone: (508) 693-3554

# Attachment A - Project PLANS

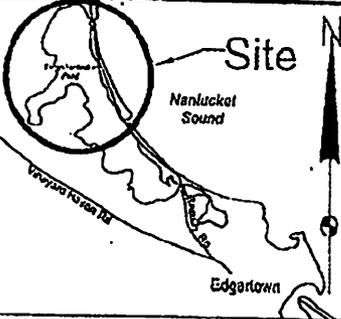
Project Site





Map 32 Lot 3 and 4  
 William H. Hart Realty,  
 c/o Alfred Woollacott  
 393 Sea View Ave.  
 Oak Bluffs, MA 02557

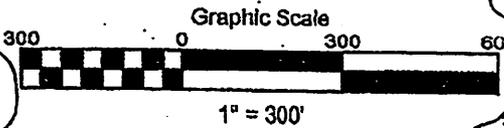
Map 32 Lot 2  
 Town of Oak Bluffs  
 PO Box 1327  
 Oak Bluffs, MA 02557



Map 32 Lot 1  
 Commonwealth of Massachusetts  
 Department of Conservation  
 and Recreation  
 Boston, MA 02114-2104

Limit of Proposed Dredging,  
 100' ft base width, dredged  
 to -6.5 NGVD 29 (-5.0' MLW)  
 Est. Vol. = 57,000 c.y.

**DATUM:**  
 BASED ON NGVD29 FEET



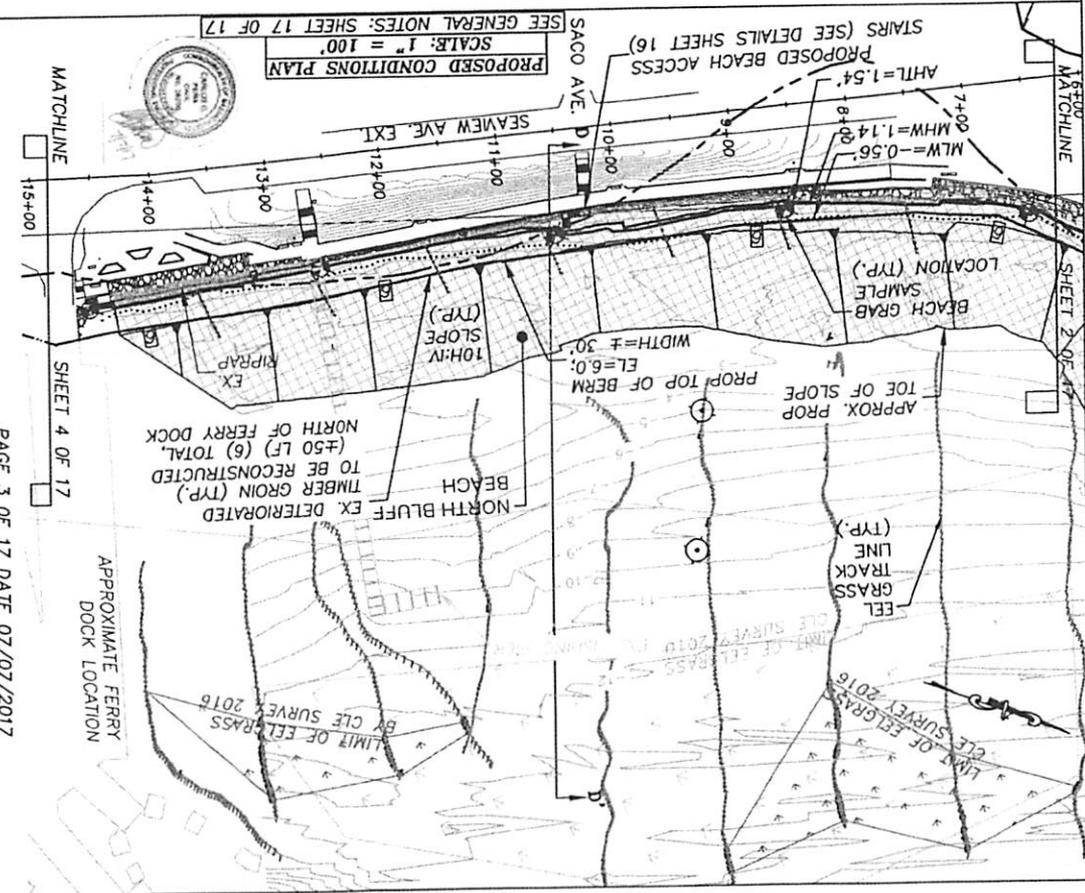
**PURPOSE:**  
 PLAN ACCOMPANYING PETITION OF:  
 TOWN OF OAK BLUFFS  
 PROPOSED DREDGING PLAN FOR  
 SENGEKONTACKET POND  
 OAK BLUFFS, MA

Map 5 Lot 1  
 Commonwealth of Massachusetts  
 Department of Conservation and Recreation  
 Boston, MA 02114-2104

PLAN BY: **WOODS HOLE GROUP**  
 81 TECHNOLOGY PARK DRIVE EAST FALMOUTH, MA 02536  
 TELEPHONE: (508) 540-5080 FAX: (508) 540-1001

DATE: 6-26-09 SHEET: 1 OF 2

GENERAL LAW 36 SECTION 13-A  
 I CERTIFY THAT THIS PLAN CONFORMS  
 WITH THE RULES AND REGULATIONS  
 OF THE REGISTERS OF DEEDS.



PROPOSED CONDITIONS PLAN  
 SCALE: 1" = 100'  
 SEE GENERAL NOTES: SHEET 17 OF 17

PLAN ACCOMPANYING PETITION OF:  
 TOWN OF OAK BLUFFS

TO LICENSE & MAINTAIN  
 BEACH NOURISHMENT AND  
 GROIN & JETTY REHABILITATION

NANTUCKET SOUND  
 OAK BLUFFS, MASSACHUSETTS  
 DUKE'S COUNTY

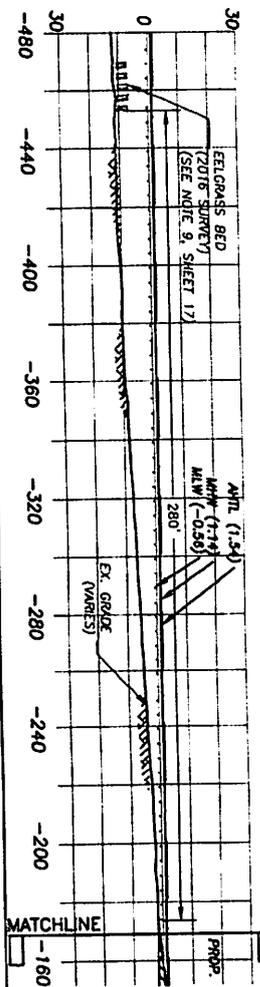


PAGE 3 OF 17 DATE 07/07/2017

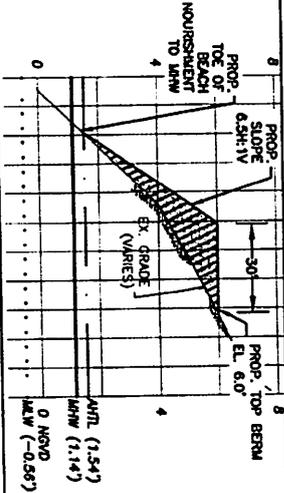
GENERAL LAW 36 SECTION 13-A

I CERTIFY THAT THIS PLAN CONFORMS WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

ELEVATION (FT-NGVD 1929)



NORTH BLUFF BEACH SECTION D - D (STA. 10+50) SCALE: 1" = 40' VERT. & HOR.



PROPOSED BEACH NOURISHMENT - JETTY BEACH SECTION A-A (STA. 1+50) SCALE: 1" = 40' HOR. 1" = 4' VERT.

SEE GENERAL NOTES: SHEET 17 OF 17



PLAN ACCOMPANYING PETITION OF:  
TOWN OF OAK BLUFFS  
  
TO LICENSE & MAINTAIN  
BEACH NOURISHMENT AND  
GROIN & JETTY REHABILITATION  
  
NANTUCKET SOUND  
OAK BLUFFS, MASSACHUSETTS  
DUKES COUNTY

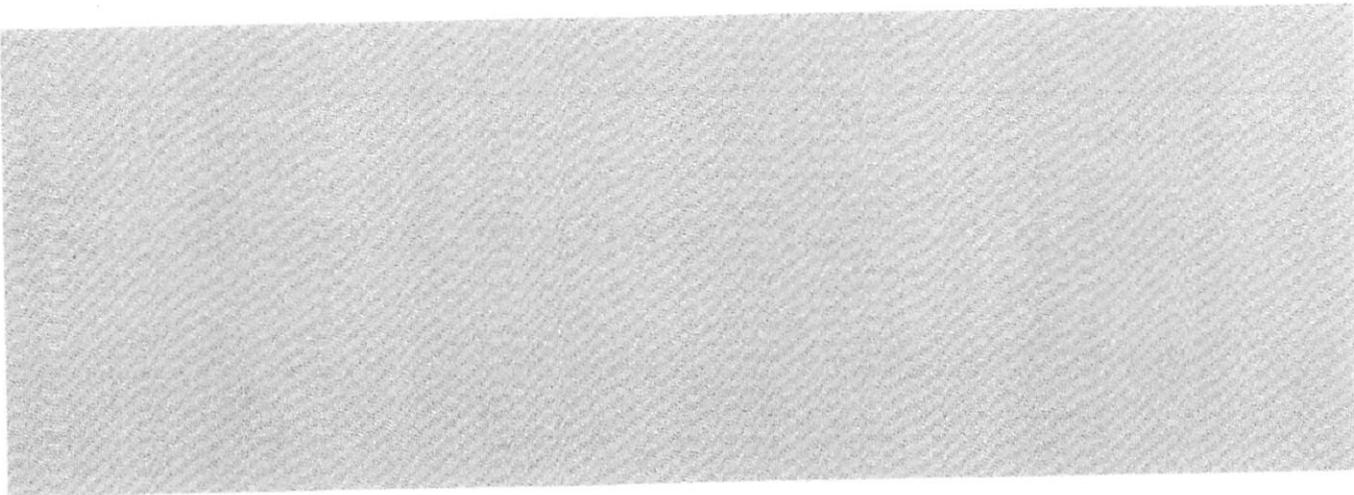
Preliminary Cost Estimate  
January 2017

Beach Nourishment and Groin/Jetty Rehabilitation Project  
North Bluff, [REDACTED] Beaches  
Oak Bluffs, MA

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)
North Bluff Beach Nourishment	16,500	CY	\$ 80.00	\$ 100.00	\$ 1,320,000.00	\$ 1,650,000.00
Reconstruct Timber Groins (6)	312	LF	\$ 1,500.00	\$ 1,600.00	\$ 468,000.00	\$ 499,200.00
Mob-Demob	1	LS	\$ 225,000.00	\$ 250,000.00	\$ 225,000.00	\$ 250,000.00
				<b>subtotal</b>	\$ 2,013,000.00	\$ 2,399,200.00
				<b>15% contingency</b>	\$ 301,950.00	\$ 359,880.00
				<b>Eng &amp; Permitting</b>	\$ 175,000.00	\$ 200,000.00
				<b>total</b>	\$ 2,489,950.00	\$ 2,959,080.00

Notes:

Unit costs are based upon 2006 repair/rehabilitation costs provided in Appendix D of the MA DCR Coastal Infrastructure Inventory & Assessment Project.



Attachment B- Budget

DRAFT - FOR DISCUSSION ONLY - NOT FOR PUBLIC DISSEMINATION

# CAPE AND VINEYARD ELECTRIC COOPERATIVE, INC.

## SOLAR PV PROJECT ROUND 4

4.18.19

### OAK BLUFFS CAPPED LANDFILL PV

VENDOR	Approx. SYSTEM SIZE (kW)	Annual Escalator for Electric COSTS	PPA \$\$ PRICE Per kWh	YEAR 1 SYSTEM OUTPUT (kW)	SYSTEM DEGRADATION	YEAR 1 Guarantee GAO (kWh)	GAO AS % OF OUTPUT	Waste Treatment Annual DEMAND CHARGES*
Greenskies	1,821	2.10%	\$ 0.0740	2,367,300	0.50%	1,893,840	80%	\$ 13,500

\*Demand Charges eliminated using battery

YEAR	Estimated kWh of PV production	Guaranteed kWh annually (GAO)	Estimated Value of Net Metering Credit (NMC) with escalator	Estimated Cost of Electricity (COE) with escalator	PPA Cost (PPA)	BENEFIT (NMC-PPA) Times GAO	Additional Benefit from battery	TOTAL BENEFIT WITH BATTERY
1	2,367,300	1,893,840	0.170 \$	0.2000 \$	0.0740 \$	181,808.64	\$ 13,500	\$ 195,308.64
2	2,355,464	1,884,371	0.174 \$	0.2042 \$	0.0740 \$	187,626.80	\$ 13,783.50	\$ 201,410.30
3	2,343,686	1,874,949	0.177 \$	0.2085 \$	0.0740 \$	193,522.80	\$ 14,072.95	\$ 207,595.75
4	2,331,968	1,865,574	0.181 \$	0.2129 \$	0.0740 \$	199,497.95	\$ 14,368.49	\$ 213,866.43
5	2,320,308	1,856,246	0.185 \$	0.2173 \$	0.0740 \$	205,553.57	\$ 14,670.22	\$ 220,223.80
6	2,308,706	1,846,965	0.189 \$	0.2219 \$	0.0740 \$	211,691.03	\$ 14,978.30	\$ 226,669.33
7	2,297,163	1,837,730	0.193 \$	0.2266 \$	0.0740 \$	217,911.69	\$ 15,292.84	\$ 233,204.54
8	2,285,677	1,828,542	0.197 \$	0.2313 \$	0.0740 \$	224,216.95	\$ 15,613.99	\$ 239,830.95
9	2,274,249	1,819,399	0.201 \$	0.2362 \$	0.0740 \$	230,608.23	\$ 15,941.89	\$ 246,550.11
10	2,262,877	1,810,302	0.205 \$	0.2411 \$	0.0740 \$	237,086.95	\$ 16,276.67	\$ 253,363.62
11	2,251,563	1,801,250	0.209 \$	0.2462 \$	0.0740 \$	243,654.59	\$ 16,618.48	\$ 260,273.07
12	2,240,305	1,792,244	0.214 \$	0.2514 \$	0.0740 \$	250,312.63	\$ 16,967.46	\$ 267,280.10
13	2,229,104	1,783,283	0.218 \$	0.2566 \$	0.0740 \$	257,062.57	\$ 17,323.78	\$ 274,386.35
14	2,217,958	1,774,367	0.223 \$	0.2620 \$	0.0740 \$	263,905.95	\$ 17,687.58	\$ 281,593.53
15	2,206,868	1,765,495	0.227 \$	0.2675 \$	0.0740 \$	270,844.31	\$ 18,059.02	\$ 288,903.33
16	2,195,834	1,756,667	0.232 \$	0.2732 \$	0.0740 \$	277,879.24	\$ 18,438.26	\$ 296,317.50
17	2,184,855	1,747,884	0.237 \$	0.2789 \$	0.0740 \$	285,012.34	\$ 18,825.46	\$ 303,837.81
18	2,173,931	1,739,144	0.242 \$	0.2848 \$	0.0740 \$	292,245.25	\$ 19,220.80	\$ 311,466.04
19	2,163,061	1,730,449	0.247 \$	0.2907 \$	0.0740 \$	299,579.60	\$ 19,624.43	\$ 319,204.04
20	2,152,246	1,721,796	0.252 \$	0.2968 \$	0.0740 \$	307,017.09	\$ 20,036.55	\$ 327,053.64
					TOTAL at Yr 20	\$ 4,837,038.20	\$ 331,301	\$ 5,168,338.87