

Case Study

Municipality/Nonprofit Organization: Town of Nahant

Project Title: Increasing the Resiliency of Short Beach on Nahant to Sea Level Rise: Access Point Restoration and Modification Plan

Grant Award: \$35,565

Match: \$16,400

Community Overview:

Provide a general description of your community as a brief introduction to the project.

The Town of Nahant is approximately one square mile in size and completely surrounded by water with only one road to enter and exit. Short Beach in Nahant is comprised of an approximately 2,800 linear foot dune system adjacent to Nahant Road and is a state-designated Barrier Beach¹. The Short Beach Dune Access Points are currently concrete and at least 2 feet lower than the dune.

Description of Climate Impact:

Address the community's current and potential future vulnerability to climate change impacts. What are the specific threats to the project area/site and reasons for applying to the grant program?

Climate projections of sea level rise by mid-century range from 1.1 feet to 3 feet (worst case of up to 9.7 feet by 2100), with an extra 1 foot of sea level rise expected above the global average for the Northeast US², bringing the total expected up to 4 feet. At times of coastal flooding, **all** residents are at risk, with extreme risk for individuals needing medical attention and vulnerable populations including the elderly, handicap, and young children. With only one Emergency Route out of Nahant adjacent to Short Beach when coastal surge overtops the Short Beach Dune and floods this main evacuation route. There are no medical facilities on Nahant, and during storms when Nahant Road was flooded, the only access to medical facilities was via a National Guard vehicle. Fire and police personnel were unable to respond to emergencies in isolated Nahant areas. In addition, a Nahant Fire engine and Ambulance were stranded when Nahant Road became impassable due to flooding.

Although Nahant's equalized valuation per capita is similar or slightly higher than nearby towns, this measure is skewed due to a small population and a number of high-valued properties. The Town has a high coastline-to-area ratio with a low overall tax base due to the small population size. About 97% of the Town's revenue source is from residential property taxes. In other towns,

¹ Coastal Zone Management Map

² NOAA Technical Report NOS CO-OPS 083, Global and Regional Sea Level Rise Scenarios for the US

property tax revenues can grow by adding residential units or new businesses. Nahant, being the smallest town by land mass in the Commonwealth has very little undeveloped land that could lead to such growth, and most of Nahant's "business zone" lies in the area is impacted by coastal flooding from the overtopping at Short Beach. External grants are necessary for dune restoration efforts.

Project Goals:

What were the specific goals of the project?

The overall goal of this planning analysis is to produce restoration plans for the concrete access points while considering sea level rise scenarios and the need for future improvements to the dune. The main deliverable was permitting plans that the Town can implement in the subsequent year. This project will improve the resiliency of the main evacuation route, businesses, critical infrastructure, and residential neighborhoods behind the Short Beach area to sea level rise, and is an important first step as we plan a long-term resiliency plan for the area. Community education, outreach and engagement was also an important goal of this grant.

Approach and Result:

How did the project team implement the project? Describe the methodology or your approach to achieve the project goals. Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created). Provide web links, if available, to your project deliverables.

MVP Committee took the lead to facilitate the tasks in the grant with the Town Administrator as the grant Project Manager and final decision maker. Preliminary design meeting with Applied Coastal was implemented with key partners, to educate all on coastal dunes and review design considerations for the project. Feedback was incorporated and addressed in the draft design along with input from jurisdictions of authority on what could be permitted. The MVP Committee held regular public meetings to track the progress of the grant.

COVID-19 greatly impacted the implementation of the grant, the Town's priority shifted with the pandemic as first and foremost. Public Outreach shifted to email newsletters from both Library and SWIM. Signage was installed on the beach but COVID regulations limited public engagement. Limited resources delayed the final tasks, shifting to virtual public meetings was not always successful and the beach cleanup, dune planting and weeding had to change to incorporate COVID requirements along with several delays. The Town engaged VM Consulting Engineers to help facilitate the completion of the grant which was needed to relieve the Town Administrator who required focus on other town matters.

Lessons Learned:

What lessons were learned as a result of the project? Focus on both technical matter of the project and process-oriented lessons learned.

- We learned that cobble will play a critical part in the Dune maintenance and Nahant DPW is already making modifications in their maintenance routine.
- We will have significant challenges with the historical Life Saving Station that portions are located within the current dunes. An in depth study is needed to review options of preserving the historical structure and maintaining the dunes.
- A majority of the grant decision making was required of the Town Administrator who is already overburdened with town responsibilities and was exacerbated by COVID-19. A

new communication structure was developed by engaging VM Consulting Engineers to take over the Project Managing responsibility and liaison with the MVP Committee to complete the grant.

- Advance scheduling is needed for coordination of all parties while maintaining the timeline.

Partners and Other Support:

Include a list of all project partners and describe their role in supporting/assisting in the project.

- MVP Committee - Grant Management/Coordination, Public Outreach, Signage design
- Antonio Barletta - Town Administrator - Grant Project Manager
- Zach Taylor - Superintendent - Nahant Department of Public Works - Provided feedback for design considerations, coordination with Dune grass planting and Beach cleanup, signage installation for public outreach
- Victoria Masone - VM Consulting Engineers - Project Management & Coordination with Town Administrator
- Applied Coastal - Design of Access Point Restoration
- Wilkinson Ecological Design - Design of Access Point Restoration
- Nahant Public Library - Public Outreach/Education - Newsletter & Purchase of Resiliency Books
- Safer Waters In Massachusetts (SWIM) - Public Outreach/Education, Dune Grass Planting Support & Beach Cleanup
- Nahant Emergency Management - Provided feedback for design considerations
- Nahant Police Department - Provided feedback for design considerations
- Nahant Fire Department - Provided feedback for design considerations
- Nahant Conservation Commission - Provided feedback for design considerations
- Open Space & Recreation Plan Committee - Provided feedback for design consideration
- Nahant Preservation Trust - Leases the Nahant Life Saving Station property along Short Beach from the Town of Nahant - Provided feedback for design considerations

Project Photos:

In your electronic submission of this report, please attach (as .jpg) a few representative photos of the project. Photos cannot show persons who can be easily identified, and avoid inclusion of any copyrighted, trademarked, or branded logos in the images.



Dune Educational Material at Short Beach Entrance Point



Community Education and Outreach - Signage Placed on Existing Post and Rope Fence as a Reminder to Stay on Designated Pathways



Community Outreach and Involvement -Nahant S.W.I.M. Inc. (Nahant Safer Waters in Massachusetts Inc.) held a beach cleanup on 6/14/20. Several bags of trash were collected by the organization's members.

TRASH COLLECTED

Citizen scientist: Pick up all trash and record all items you find below. No matter how small the items, the data you collect are important for Trash Free Seas.®

June 14, 2020 Short Beach + Black Rock (Doggie) Beaches

EXAMPLE: Plastic Bags: = 8

Please DO NOT use words or check marks. Only numbers are useful data.

58 volunteers, 22 forms completed

MOST LIKELY TO FIND ITEMS:

Cigarette Butts: 101	=	Beverage Bottles (Plastic): 132	=
Food Wrappers (candy, chips, etc.): 122	=	Beverage Bottles (Glass): 12	=
Take Out/Away Containers (Plastic): 7	=	Beverage Cans: 46	=
Take Out/Away Containers (Foam): 5	=	Grocery Bags (Plastic): 19	=
Bottle Caps (Plastic): 452	=	Other Plastic Bags: 48	=
Bottle Caps (Metal): 17	=	Paper Bags: 2	=
Lids (Plastic): 41	=	Cups & Plates (Paper): 9	=
Straws/Stirrers: 142	=	Cups & Plates (Plastic): 29	=
Forks, Knives, Spoons: 20	=	Cups & Plates (Foam): 5	=

FISHING GEAR:

Fishing Buoys, Pots & Traps: 30	=
Fishing Net & Pieces: 41	=
Fishing Line (1 yard/meter = 1 piece): 42	=
Rope (1 yard/meter = 1 piece): 800+	=

PACKAGING MATERIALS:

6-Pack Holders: 2	=
Other Plastic/Foam Packaging: 34	=
Other Plastic Bottles (oil, bleach, etc.): 12	=
Strapping Bands: 48	=
Tobacco Packaging/Wrap: 1	=

OTHER TRASH:

Appliances (refrigerators, washers, etc.):	=
Balloons: 22	=
Cigar Tips: 14	=
Cigarette Lighters: 9	=
Construction Materials: 78	=
Fireworks: 1	=
Tires: 1 at Doggie Beach	=

PERSONAL HYGIENE:

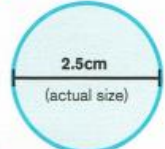
Condoms: 1	=
Diapers: 2	=
Syringes: 3	=
Tampons/Tampon Applicators: 42	=

2 shot gun shells
1 sheet
1 golf ball
2 masks

3 hood, gloves
2 fish j l v ros
1 towel

TINY TRASH LESS THAN 2.5CM:

Foam Pieces: 70+	=
Glass Pieces: 25+	=
Plastic Pieces: 465+	=



DEAD/INJURED ANIMAL

STATUS

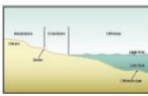


ENTANGLED

TYPE OF ENTANGLEMENT ITEM

Details of debris collected during the Short Beach Cleanup Day



Dune Grass Planting Week of April 6 - April 10, 2020

<p>Municipal Vulnerability Preparedness Committee Newsletter May 2020</p> <p>NAHANT RECEIVES MUNICIPAL VULNERABILITY PREPAREDNESS ACTION GRANT OF \$35,565 TO PLAN IMPROVEMENTS TO SHORT BEACH</p> <p>The Town of Nahant has been awarded a Municipal Vulnerability Preparedness (MVP) Action Grant of \$35,565 to plan improvements to Short Beach Access points, in order to reduce flooding. The Town will be working with Applied Coastal to study and develop these plans.</p> <p>The Nahant MVP committee will be working to increase community engagement throughout this process.</p> <p>What is Short Beach Anyway?</p> <p>Short Beach is recognized as one of three Massachusetts Designated Barrier Beaches in Nahant. Long Beach and Black Rock/Doggie Beach are also designated barrier beaches. Barrier beaches are narrow, low-lying strips of beach and dunes that are roughly parallel to the coastline and are separated from the mainland by a body of water or wetland. As a Barrier Beach, Short Beach is a protected area.</p> <p>In 1980, Executive Order No. 181 was enacted to strengthen the protection of barrier beaches in Massachusetts. This order recognized the dynamic nature of the barrier beach is essential for storm damage prevention and flood control. Development and other human-induced changes to barrier beaches can reduce the effectiveness of these beaches during storms to prevent flooding and protect lives and property.</p> <p>Our efforts to protect Short Beach will help reduce future storm damage, due to sea level rise, thereby protecting lives and property.</p> <p>Why is a dune important?</p> <p>The illustration below shows a dune. The dune is an important part of the beach that helps to protect from flooding.</p>  <p style="text-align: center;">Volume 1 1</p>	<p>Municipal Vulnerability Preparedness Committee Newsletter May 2020</p>  <p>Naturally growing dune grass and root system on Black Rock/Doggie Beach</p> <p>What can dune grass do?</p> <p>Dune Grass is one of the most effective and natural ways to hold and build the dune. Each blade of grass catches particles of sand that are blowing in the wind, helping to grow the dune. The root structure of dune grass is very sensitive to pressure. Walking or driving on the dune kills the dune grass.</p>  <p>On Black Rock/Doggie Beach, dune grass seeds have been carried by the wind and have naturally taken root. Particles of sand from Revere Beach and the low tide flats have also been carried by the wind only to be caught in these blades of the grass. This natural process has helped to build and preserve the dune at Black Rock/Doggie Beach, which then protects the community from flooding during coastal storms.</p> <p style="text-align: center;">Volume 1 2</p>
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Community Education and Outreach: MVP Newsletter distributed through Nahant Public Library and SWIM mailings