

**Commonwealth of Massachusetts**  
**Executive Office of Energy and Environmental Affairs**  
**Massachusetts Environmental Policy Act (MEPA) Office**

**Environmental Notification Form**

*For Office Use Only*

EEA#: 15817

MEPA Analyst: Page Gepiga

*The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.*

Project Name: Wareham/Buttermilk Bay Oyster Habitat Restoration		
Street Address: NA		
Municipality: Wareham	Watershed: Buzzards Bay	
Universal Transverse Mercator Coordinates: 4624101 N, 364568E	Latitude: 41° 45.405' N Longitude: 70° 37.746' W	
Estimated commencement date: 6/25/18	Estimated completion date: 12/31/18	
Project Type: Shellfish Restoration	Status of project design: 100 %complete	
Proponent: Town of Wareham Harbormaster and Shellfish Department		
Street Address: 48 Marion Road		
Municipality: Wareham	State: MA	Zip Code: 02571
Name of Contact Person: Matt Pelikan		
Firm/Agency: The Nature Conservancy	Street Address: 18 Helen Ave.	
Municipality: Vineyard Haven	State: MA	Zip Code: 02568
Phone: 508-693-6287, ext. 11	Fax: 508-693-4891	E-mail: mpelikan@tnc.org

  

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?  
 Yes  No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting: -

a Single EIR? (see 301 CMR 11.06(8))                       Yes  No  
a Special Review Procedure? (see 301CMR 11.09)                       Yes  No  
a Waiver of mandatory EIR? (see 301 CMR 11.11)                       Yes  No  
a Phase I Waiver? (see 301 CMR 11.11)                       Yes  No  
*(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)*

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?  
*Alteration of one-half or more acres of any other wetland (301 CMR 11.03 3b1f)*  
Which State Agency Permits will the project require?  
Order of Conditions, DEP water quality, Chapter 91, MESA  
Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres: None.

12814  
Pete Giddens

Summary of Project Size & Environmental Impacts	Existing	Change	Total
<b>LAND</b>			
Total site acreage	NA		
New acres of land altered		NA	
Acres of impervious area	NA	NA	NA
Square feet of new bordering vegetated wetlands alteration		NA	
Square feet of new other wetland alteration		42,000	
Acres of new non-water dependent use of tidelands or waterways		NA	
<b>STRUCTURES</b>			
Gross square footage	NA	NA	NA
Number of housing units	NA	NA	NA
Maximum height (feet)	NA	NA	NA
<b>TRANSPORTATION</b>			
Vehicle trips per day	NA	NA	NA
Parking spaces	NA	NA	NA
<b>WASTEWATER</b>			
Water Use (Gallons per day)	NA	NA	NA
Water withdrawal (GPD)	NA	NA	NA
Wastewater generation/treatment (GPD)	NA	NA	NA
Length of water mains (miles)	NA	NA	NA
Length of sewer mains (miles)	NA	NA	NA
<p>Has this project been filed with MEPA before?  <input type="checkbox"/> Yes (EEA # _____) <input checked="" type="checkbox"/> No</p>			
<p>Has any project on this site been filed with MEPA before?  <input type="checkbox"/> Yes (EEA # _____) <input checked="" type="checkbox"/> No, but see project description for comments on a similar project carried out nearby in 2015.</p>			

## **GENERAL PROJECT INFORMATION – all proponents must fill out this section**

### **PROJECT DESCRIPTION:**

*Describe the existing conditions and land uses on the project site:* The project footprint (approximately one acre) features a firm sandy bottom with no known structures. The footprint is about 85 meters away from the nearest dry land. Depending on the tide, the site is submerged by approximately 3-6 feet. The site has been designated as Priority Habitat and Estimated Habitat for Rare Species and is mapped for three state-listed species: Common Tern, Roseate Tern, and Least Tern. Because the site is open water, these birds may use the site for foraging but not for nesting, migration staging, or other dry-land activity. Bottom conditions and tidal flow appear well suited to sustain an oyster population, and existing oysters have been observed in the area. Spat sampling on tile arrays suggest that existing oyster populations spawn successfully, if sparsely, in the area but that limited availability of hard substrate (which this project is explicitly intended to address) constrains oyster populations in this embayment.

Describe the proposed project and its programmatic and physical elements: The goal of this project is to create a permanent population of eastern oysters (*Crassostrea virginica*) on 0.99 acre of sub-tidal sea floor in the upper reaches of Buzzards Bay in Wareham. The purpose is to create structurally complex benthic habitat, improve water quality through water filtration and nutrient sequestration by oysters, and enhance the population of oysters (including harvestable oysters for the public fishery) in this embayment.

Restoring populations of shellfish, especially oysters, has proven to be an effective strategy to help increase the productivity and resilience of inshore systems. Oysters feed by filtering organic material, including living and dead phytoplankton, out of the water column, sequestering much of the nitrogen contained in the phytoplankton and improving water clarity, improving conditions for submerged vegetation. Restored shellfish enhance existing harvestable resources, with their spawn augmenting existing beds or colonizing new ones. And restored oyster beds, by offering structurally complex benthic habitat, can support a wide range of vertebrate and invertebrate species, enhancing biological diversity and resilience. We expect that a self-sustaining oyster population will, over time, respond to selective pressure (e.g., from salinity regime, water chemistry, pathogens, and the particular local mix of shellfish predators), developing adaptation to the specific local conditions. To the extent that such adaptation is genetically determined, spawning by the restored population may augment the resilience of other oyster populations in the embayment and beyond.

#### *Location of project*

The Buttermilk Bay site is near the upper (northern) end of Buzzards Bay, not far from the southern terminus of the Cape Cod Canal and in an area known to have supported large oyster populations historically. The specific site proposed for restoration was selected through a prioritization process and close consultation with the Wareham shellfish constable and the Division of Marine Fisheries on the basis of proximity to existing oyster populations (inferred from spat detection), suitable water quality and tidal flow to support oysters, sufficiently firm bottom to support the weight of the project, and to avoid or minimize interference with navigation, other resources, or existing fisheries. The project will be in waters that the state Division of Marine Fisheries classifies as “Approved” or “Conditionally Approved” for shellfish propagation, making the site suitable for oyster restoration from a regulatory perspective.

#### *Project implementation*

The essence of the project will be the placement of approximately 100 cubic yards of cultch (aged sea clam [*Spisula* sp.] shell) onto the bottom in the project footprint. This cultch will provide a hard substrate that is suitable for larval oysters to attach to, which they require in order to mature, and it will vertical relief off the bottom, which improves spat capture, affords oysters better water circulation, and offers a measure of protection against predators. All shell sources will meet the Massachusetts Division of Marine Fisheries requirements to prevent disease and pathogen transfer to the restoration site.

The precise configuration of cultch on the bottom will depend on factors including the nature of the equipment available for depositing cultch and the water depth and currents at the site at the time of cultch deployment (cultch disperses as it descends through the water column, with deeper water resulting in less precise placement). But the objective is to place the cultch in four parallel piles running across the short axis of the rectangular project footprint, leaving uncovered area between the rows for other benthic organisms or aquatic vegetation, enhancing the overall diversity of the site. Based on prior shell placement work, we estimate this will result in a vertical height of about 30 cm (roughly 12 inches) at the center line of each row of cultch, tapering off toward the edges.

While we anticipate at least some amount of colonization of this cultch from nearby oyster beds, one way to ensure a healthy population on the project site is by introducing young oysters produced in a hatchery using so-called "remote set" methods. Hatchery oyster stock will be induced to spawn, and the resulting larvae, at an appropriate age, will be introduced to bags of shell in tanks in the hatchery. The young oysters will be allowed to "set" on the shell. When the young oysters have developed enough to have some ability to resist predation (about 1 cm diameter), the shell with its attached oysters will be distributed onto the cultch piles, where the oysters will (hopefully) continue to develop to maturity. The amount natural set from existing oyster populations in or near the embayment cannot be predicted, since spawning success varies widely from year to year and the currents that drive spat distribution are not predictable. The timing of cultch deployment is aimed partly at ensuring that cultch will present and in a receptive condition when locally bred oysters are setting.

The project will be entirely sub-tidal when complete except for buoys marking the corners of the footprint. No new infrastructure will be involved. Cultch will be delivered to and stored (for as short a time as feasible) at a boat ramp in the area (probably one at the terminus of Electric Avenue in Bourne). At about 30 yards per truck load, delivery should require three arriving trucks over the course of a few days prior to implementation. Implementation of the project is expected to take about two days and will occur as soon as feasible upon receipt of all required permits and permissions. Work will be scheduled for weekdays if possible to minimize impacts on other users of the boat ramp. A front-end loader or similar piece of equipment will transfer cultch to an array of fish totes set up on a barge; the barge will be towed or pushed to the project site, and the fish totes will be emptied manually off of the barge as the barge is pushed or towed over the predetermined pattern for cultch placement. Placing the cultch will result in temporary suspension of sediment (mainly powdered shell) in the water column, but this will settle or disperse fully in a matter of hours. Once the oyster bed is established in Wareham's municipal waters, the shellfish warden and municipal leadership will have management responsibilities over the site.

Establishment and growth of oysters will be monitored by standard methods that involve establishing quadrats at random locations along transects across the project site, counting the number of living oysters in each quadrat, and measuring each oyster. Monitors will also record other wildlife noted in the quadrats or along the transects. Specific objective targets include: 1) Approximately one acre of shell-planting area adequately covered in a mosaic of shell reef areas; 2) average density of >20 spat/m<sup>2</sup> in first year of settlement from natural recruitment; 3) deployment of 250,000 spat-on-shell for seeding. Long-term objective is a density of >50 mature oysters/m<sup>2</sup>.

*NOTE: The project description should summarize both the project's direct and indirect impacts*

*(including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.*

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

Site was chosen because it features suitable bottom types, adequate tidal flow, appropriate water depth, compatibility with existing uses (including navigation and fisheries), and strong indications (from monitoring using tile arrays) of existing spawning populations of oyster in the area. The location is also convenient for town shellfish authorities to monitor and manage. The proposed project is an ecological restoration project designed to improve conditions in this particular embayment, which was selected through an objective prioritization process. So locating the project elsewhere would defeat its purpose.

**NOTE:** *The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

*Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:*

The primary mitigation strategy for this project is careful siting to minimize or avoid altogether any negative impacts on other uses or resources. State eelgrass mapping shows that eelgrass was extirpated in Buttermilk Bay by about the year 2000. Direct observation on site reconnaissance visits and a benthic survey conducted by the Division of Marine Fisheries detected no eelgrass on or near the projects. We are confident that no eelgrass is present in or around the proposed site, and therefore this project will have no negative impacts on eelgrass. Since oysters are filter feeders and remove organic material from the water column as they feed, one effect of a successful project will be greater water clarity within and immediately around the project footprint. So while the project may result in short-term negative impact on eelgrass, over the longer term, the project may improve conditions locally for this important resource.

Cultch placement is expected to cause temporary suspension of sediment in the water column, but this will settle or disperse quickly and will be similar to turbidity caused by shellfishing activity or even natural disturbance.

A benthic survey conducted by the Division of Marine Fisheries (DMF) on November 17, 2017 found low densities of two commercially important shellfish species on the site: quahogs (*Merceneria mercenaria*) and American oyster (*Crassostrea virginica*). Following DMF recommendations, as many oysters as possible on the site will be either moved or harvested; we will also fine-tune the placement of cultch to minimize impacts on existing oysters. DMF has stated that “[b]ecause this B-120 activity is being conducted as municipal propagation within each town, DMF has no issue with TNC’s plans to place cultch and oysters within each proposed site.”

If the project is proposed to be constructed in phases, please describe each phase:

NA

**AREAS OF CRITICAL ENVIRONMENTAL CONCERN:**

Is the project within or adjacent to an Area of Critical Environmental Concern?