



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
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MEMORANDUM

TO: Rebecca L. Tepper, Secretary, EEA
ATTN: Katherine Miller, MEPA Office
FROM: Alison Brizius, Director, CZM
DATE: January 29, 2026
RE: EEA# 15240 Baxter Road & Sconset Bluff Stabilization Project

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Notice of Project Change (NPC), noticed in the *Environmental Monitor* dated August 22, 2025, the Supplemental Information dated October 1, 2025, the Supplemental Information dated November 3, 2025, and additional information provided during subsequent consultations, and offers the following comments.

Project Description

The proposed project is an update and extension to the existing +950-foot sand-covered geotube system, which was installed in the winter of 2013-2014 as a pilot project. In 2019, an NPC was reviewed by the MEPA Office for a 2,683 linear foot (lf) extension to the pilot project. A Superseding Order of Conditions (SE48-3115) was issued by the Massachusetts Department of Environmental Protection (MassDEP), which authorized 2,363 lf of the extension and denied 320 lf of the extension. The extension was not constructed because it was denied under the local wetlands bylaw. The current NPC proposes numerous changes, including a phased approach to the overall project, an additional 1,280 lf of nature-based stabilization, and a revised operations, maintenance, monitoring, and reporting plan.

Phase I includes a 1,860 lf extension of the geotubes, plus 75-foot end returns, for a total of approximately 2,810 lf, and installation of a continuous array of coir terraces to replace several individual coir terrace installations from the edge of the dune in front of 61 Baxter Road, for a total of 690 lf. Phase I also includes adding sediment to the coastal bank above the geotubes and coir terraces, vegetating the bank, installing a seating area and viewing area at the top of the bank, and engaging an engineer to investigate the design of one or two access stairs down to the beach. In Phase II, an additional 690 lf of geotube will be installed, extending the overall geotube installation to 3,500 lf. In addition, 1,280 lf of dune nourishment is proposed along with the installation of additional public access stairways over the coastal bank. Future phases include replacing the proposed sacrificial dune with coir terraces and replacing sand-filled coir terraces with geotubes once slope failure criteria are met for the terraces.

The revised operations, maintenance, and monitoring plan proposes a significant change from the approved plans and proposes a sand compensation plan that will initially place 22 cubic yards (cy)/lf of sand on the template (on top of the geotubes) during construction. Annual monitoring will determine the volume of sand contributed off the template during the winter storm season. Each fall,

it is proposed that the template will be “re-filled” to 22 cy/lf/yr to replace the sand lost from the template during the previous storm season.

Project Comments

Resource Area Impacts

The plans in the NPC are based on topography collected in June 2022. Beach profiles are required to be collected quarterly as part of the permit requirements for the pilot project. CZM had been receiving the monitoring data until 2022, but it has not been provided since 2022. The beach profile monitoring data as well as updated topography data should be provided.

The project plans provided are at a large scale, making it challenging to review the proposed project components relative to the resource area boundaries. The resource area boundaries are not shown on the plans or cross-sections to facilitate a detailed review of the potential impacts of the project. Updated plans for the proposed coir terraces should be provided, showing the taper and a minimum setback from the coastal dune. Dune nourishment between the coir terraces and the coastal dune could also be conducted to improve protection of the bank landward of the area where the terraces are set back from the dune.

Based on a review of the NPC, there may be temporary and permanent impacts to resource areas associated with the construction, maintenance, and mitigation that have not been identified. The activities that weren't included in the total impact calculation include, construction access along the beach for both Phase 1 and Phase 2, construction equipment work area around the installation trenches for the geotubes and coir terraces, nourishment/fill and vegetation of the coastal bank above the geotubes and coir terraces, impacts to the coastal bank from delivering sediment to the site, or impacts from pushing the sediment from the sand template onto the coastal beach. The calculations of temporary and permanent impacts provided in the Supplemental Information dated November 3, 2025, list a 20-foot width for the sacrificial dune; however, the revised project plans in the NPC show a 40-45-foot dune width in the cross-sections. The calculations for the footprint of the geotubes list a 60-foot width. The cross-sections for the proposed geotubes in the NPC indicate that the full width of the components is 95 to 100 feet. The cross-section doesn't include the sand berm needed seaward of the trench to protect it, so the proposed width of resource impact would be larger. Access to and from Hoicks Hollow for vehicles for construction and maintenance activities can also have an impact on the coastal beach during each phase of the project, as well as for maintenance of the geotubes. Based on the dimensions of the various project components shown in the project plans, the temporary and permanent impacts associated with Phase 1 and Phase 2 components are over 10 acres.

Maintenance of the coir terraces, sand covering the coir terraces, and maintenance of the sacrificial dune are proposed, but limited detail regarding construction access points, sand delivery points from the top of the bank, or construction equipment routes is provided. Additional delivery points along the top of the bank may be needed to minimize impacts to the coastal beach from transporting sediments along the length of the project, and should be identified.

The NPC states that all construction will be above the mean high water line (MHW). The construction of the pilot project was proposed to occur above the mean high tide line when the beach width was wider than it is today. The construction activities observed involved equipment working in the water and dewatering the trench, creating gullies on the coastal beach that extended into the intertidal. In the Supplemental Information, the proponents state that the high-tide line (HTL) and MHW are elevations on the beach, and runup can extend beyond that. Photographs of the construction on days when the sea state was flat with no waves show work below the high tide line when no runup was occurring. In addition, there appears to be little, if any, dry beach seaward of the existing geotubes, and construction equipment will have to go around them to access the beach to the

south. An updated proposal for how the construction will take place, reflecting lessons learned from the pilot geotube project as well as the individual coir terrace projects, should be provided. These lessons learned should be used to update the construction protocols for each phase of the project. In addition, a plan reflecting the full scope of construction needed to accomplish each phase of the project relative to each resource area and jurisdictional boundaries (e.g., MHW, HTL) should be provided.

The proposed expansion of the geotubes to replace the coir terraces and sand dunes will result in an increase in the armoring of approximately 4,700 lf of the major source of sediment for the eastern side of the island. There has not been an assessment of how the proposed project will affect the sediment supply and sediment transport system. When combined, as proposed in the NPC, the geotubes could be expanded to almost a mile along the largest sediment source on the island. A sediment transport study should be conducted to inform the project before more coastal engineering structures are installed.

Off-Site Sediment Needs

The sand source for construction projects is a significant challenge on Nantucket. The Supplemental Information dated October 1, 2025, states that just over 87,000 cy of sediment is needed to fill the geotubes, coir terraces, and fill the sand templates for both installations in Phase 1 of the project. The source of sediment is anticipated to be from off-island upland sources that are trucked to the site. This is estimated to be completed by 9-10 trucks per hour during the workday for four months. These estimates do not include providing the mitigation sand required by the permits for the pilot project. The sand deficit is over 100,000 cy, and there have been impacts to the island roads and coastal bank along Sconset from the delivery of sediment from an upland source as part of the past efforts to stabilize Sconset Bluffs. The NPC states that an alternatives analysis of potential sand sources identified offshore sand as a cost-effective source of a large quantity of compensatory sand. The NPC also states that offshore mining sites were evaluated, and potential mining sites were identified and presented in the Environmental Impacts Report prepared for the Sconset Beach Nourishment Project (EOEA No. 13468). The proponent should include a detailed description of the sources of sand necessary to complete the proposed project. If the proponent seeks a subtidal source of sand, the Massachusetts Ocean Management Plan and Ocean Sanctuaries Act regulations could become applicable to the project.

Mitigation

The original volume of sediment required to mitigate for armoring the sediment source type coastal bank with the pilot geotubes was 22 cy/lf of coastal bank. This is based on the methodology from [Applying the Massachusetts Coastal Wetlands Regulations: A Practical Manual for Conservation Commissions to Protect the Storm Damage Prevention and Flood Control Functions of Coastal Resource Areas](#) (aka the Coastal Manual). The proponents have proposed reducing the sediment mitigation volume to be provided and shifting to an adaptive management method. This proposal was considered as part of the previous NPC, with the stipulation that monitoring of the impacts demonstrates the project does not have any adverse effects. Based on a review of the monitoring data provided to date, and analysis provided by Dr. David Kriebel, the responses provided by Epsilon, photographs in the NPC, and Supplemental Information provided, it appears the project is having downdrift impacts increasing erosion on adjacent properties. Reducing the volume of mitigation sediment, as proposed in the NPC, does not seem to be appropriate. The bluffs in Sconset are an important source of sediment for the eastern side of the island. Preventing the bluffs from eroding

with geotubes and coir terraces deprives downdrift areas of their primary sediment source, resulting in increased erosion. In order to avoid adverse impacts, the project should, mitigate for armoring the sediment source. Additional scour observed adjacent to the geotubes should also be quantified and mitigated by the placement of an additional volume of sediment on the coastal beach. The analysis of erosion trends provided in the NPC is from a short period of time and is not consistent with standard methodologies for assessing mitigation volumes. In order to install new coastal engineering structures, including geotubes and sand-filled coir terraces, the proposed project should include a mitigation plan that addresses impacts to fronting and adjacent resource areas as well as downdrift properties.

Based on the narrowing of the dry beach fronting the geotubes and the increased erosion and end scour adjacent to them, the current delivery method used for the mitigation sand does not appear to be contributing the necessary volume of sediment to the beach system to mitigate the adverse impacts associated with the existing installations. More direct placement on the beach is needed, consistent with how other shore protection projects mitigate for armoring a bank that serves as a sediment source. It does not appear that all the shoreline change data for the project site has been considered as part of the calculations provided in the NPC, resulting in lower mitigation rate proposals. Additional analysis of the long- and short-term erosion rates was conducted to inform the original requirement in the pilot project permits regarding the appropriate volumes of mitigation sand. There should be a commitment to adding sediment to the beach system from an off-site source based on the erosion rate previously calculated for the project area, height of the bank, and length of the project as described on pp. 3-55 of the Coastal Manual guidance developed by MassDEP and CZM.

The current proposal includes a 10-year plan to make up for the deficit in mitigation sand of over 100,000 cy that was required to provide as part of the permits for the pilot project. Since the project appears to be impacting adjacent properties, options to provide the mitigation sand deficit to close out the previous permit before the project is expanded should be provided. Options that should be evaluated include providing the deficit of mitigation sediment to create dunes adjacent to the pilot project geotubes (north and south), and sand-filled coir terraces fronted by sacrificial dunes. These alternatives may address the need for the Phase I extension of geotubes proposed in the NPC.

Alternative Approaches

The 2021 Nantucket Coastal Resilience Plan identified options to address the short-term erosion along the Sconset Bluffs. The Town of Nantucket has developed an alternate plan for access to properties on Baxter Road and relocation of utilities, which was filed as a Notice of Intent with the Conservation Commission in August 2025. The NPC provided little detail about the plans that have been prepared and how the Town is moving forward with those plans to address the erosion threats to Town infrastructure and help provide alternate access to the homes along Baxter Road. Due to the dynamic nature of the shoreline, the coir terraces and any erosion control technique will require regular maintenance. The NPC identifies some failures in the bank above the coir terraces as triggering the need for geotubes. The NPC states that these triggers have already been met for the Phase 4 area. It appears that additional, more frequent maintenance could address many of these issues identified with the coir terraces. Artificial dunes, sand-filled coir bags, vegetation on the coastal bank, and reducing runoff from the upland can help stabilize the bank in the short term while other planning takes place for the mid- to long-term options. The pilot geotube project is reported to be successful in stopping the retreat of the coastal bank immediately landward of it, but the coastal beach seaward of it has narrowed, and the scour impacts will continue to increase as the shoreline moves landward. In addition, photographs have documented the end scour adjacent to the pilot geotubes, which has

increased the retreat of the bank in these areas. These impacts have not been mitigated by the end returns installed after the original pilot project. Alternatives not explored in the NPC to address the erosion in the Phase 1 area include extension of the existing sand-filled coir bags, construction of more sacrificial dunes, additional sand nourishment over the coir terraces, and adding sediment to the eroded areas on the coastal bank above the coir terraces and the existing dunes. These alternatives, in combination with vegetation of the coastal bank, reducing runoff from the upland, shifting houses landward, and bringing in the deficit of over 100,000 cy of mitigation sand, could be implemented with less reflection and erosion compared to the proposed geotubes.

After two years, when mitigation sand was not provided for the pilot geotube project, the Conservation Commission issued an enforcement order requiring the removal of the geotubes. The original proposal for the pilot project stated that the geotubes could be easily removed if the conditions of the permit were not met or if they had adverse impacts. When the enforcement order was issued, the proponents indicated the geotubes could not be easily removed. Since the geotubes are not temporary structures that can be removed if there are adverse impacts, and the proponents have not been able to keep up with the mitigation sand requirements, expansion of the geotubes should be reevaluated. The shoreline north and south of this area will continue to erode, exacerbating the impacts of the structures.

Additional Detail Needed

The NPC states that a seating and viewing area is proposed for the top of the bank as part of Phase 1. No details regarding the location or plans were provided. Since the bank is a dynamic landform, details of the proposed structures at the top of the bank should be provided for review to evaluate any potential effects on the stability of the bank. Supplemental Information states that the task to design and site the viewing area has not moved forward yet, so no information is available.

Federal Consistency Review

The proposed project may be subject to CZM federal consistency review and, if so, must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Sean Duffey, Project Review Coordinator, at sean.duffey@mass.gov or visit the CZM website at <https://www.mass.gov/federal-consistency-review-program>.

AB/ts/sm/rh/tc

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