



Projects:\21597\Lighthouse\

April 5, 2023

Mr. Jeff Carlson  
Nantucket Conservation Commission  
2 Bathing Beach Road  
Nantucket, MA 02554Address

**Subject: SE48-2824 Sconset Bluff Geotextile Tube Project | Annual Report**

Dear Mr. Carlson,

I write this letter regarding the Commission's request for a 2022 Annual Report for the above-referenced project. As was stated in the February 24, 2023 email from SBPF, we assumed that the Annual Review normally submitted in the Spring would not be presented as has been done during the years in which the project was operating. Given the Project is currently under the Enforcement Order requiring geotube removal, and removal is moving forward, this condensed Annual Report will address all requirements in Condition 29. Condition 29 regarding an Annual Report reads:

*29. An annual assessment report summarizing the beach and bathymetric profile monitoring program, including habitat and substrate sampling, and the invertebrate sampling from the approved protocol shall be submitted to the Department and the NCC each year. This report shall, at a minimum, provide an analysis of beach changes including volumetric changes between surveyed transects, assess location of the top of coastal bank and estimate bank retreat over the previous 12 months and calculate bank volume loss in the project area and 300 feet to the north and south. In addition, the report shall recommend any necessary changes to the beach nourishment program for the Conservation Commission's review and approval. The report will also evaluate shoreline change within the area covered by the quarterly transects.*

The purpose of the Annual Report in prior years was to present in one document the work completed in the calendar year and provide recommendations for the next year in connection with: (1) beach and bathymetric monitoring, (2) substrate monitoring, (3) volume of sand delivered and placed on the template, (4) volume of sand contributed off the template and (5) bank retreat of the bluff protected by the geotubes and adjacent unprotected bluff.

All the elements of the 2022 monitoring to be included in an Annual Report were submitted to the Commission. These include the following:

- Beach and bathymetric monitoring was presented in the four quarterly surveys conducted by and submitted by Woods Hole Group, those included the 87<sup>th</sup> Quarterly Survey, the 88<sup>th</sup> Quarterly Survey, the 89<sup>th</sup> Quarterly Survey and the 90<sup>th</sup> Quarterly Survey.
- Substrate monitoring was presented in the Underwater Video Survey dated August 26, 2022
- Volume of sand delivered and placed on the template was presented in the April 2021 - March 2022 Annual Sand Delivery and Contribution Report submitted to the Commission on September 29, 2023.
- Volume of sand contributed off the template was presented in the April 2021 - March 2022 Annual Sand Delivery and Contribution Report.
- Bank retreat of the bluff protected by the geotubes and adjacent unprotected bluff was presented in the April 2021 - March 2022 Annual Sand Delivery and Contribution Report

Additionally, four quarterly work reports were submitted to the Commission which document template maintenance and monitoring completed throughout 2022.

Copies of the above referenced reports are transmitted with this letter so that the Commission can conveniently access all of them in one place. As such, this submission should be considered as the Annual Report for 2022.

This Annual Report does not include any recommended or necessary changes to the beach nourishment program due to the Conservation Commission's removal order.

A few highlights of the reports are worth noting:

1. In the 2022 Sand Year 100% of the sand volume required by the Order of Conditions was delivered (20,841 cy)
2. The amount of sand that was washed off the template and contributed to the littoral system for the year prior to June 2022 was 12,633 cy (13.1 cy/ft).
3. The cumulative volume of compensatory sand delivered and placed on the template since project inception continued to exceed the pre-construction volume of sand contributed from bluff erosion, which is the normal volume of compensatory sand required by the Commission and the State DEP of all other coastal erosion projects in Nantucket and Massachusetts. (154,239 cy delivered vs. 99,996 cy typically required)

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4. The average rate of sand contributed off the template over the past nine sand years was 13.9 cy/lf/yr which exceeds the pre-construction unprotected bluff contribution rate of 12 cy/lf/yr.
5. The amount of sand on top of the template as of June 2022 was 23,975 cy, more than a year's worth of compensatory sand.
6. The deficit in the amount of sand required by the Order of Conditions (47,464 cy) remained in place but did not grow in 2022.
7. There continued to be no evidence of negative impact on the nearby ocean bottom and cobble habitat according to the bathymetric and substrate monitoring.
8. There continued to be no evidence of impact on neighboring beaches from the project since all changes were within the normal variation of erosion and accretion that existed prior to project installation.

In addition, it is worth noting that Baird, a coastal engineering firm of national reputation that serves as the project's design engineer, responded during the year (with copies to the Commission and Town) to various erroneous assertions by some project critics that the project is having a negative impact on neighboring beaches. Baird's analyses set the record straight and concluded that there is no evidence of negative impact from the project. Baird's assessments, once issued, have not been disputed.

In summary, the data show that the geotube project continued to effectively prevent bluff retreat (i.e., protecting the public road, public infrastructure and houses from loss or damage) without harm to others.

Please contact me with questions or comments.

Sincerely,  
EPSILON ASSOCIATES, INC.



Dwight R. Dunk, LPD, PWS, BCES  
Principal

cc: J. Posner, SBPF  
M. Moldenhauer, SBPF