Rec. @ 7/30 meeting

Nantucket Land Council, Inc.

Six Ash Lane
Post Office Box 502
Nantucket, Massachusetts 02554

508 228-2818
Fax 508 228-6456
nlc@nantucketlandcouncil.org
www.nantucketlandcouncil.org

July 30, 2013

Dr. Ernie Steinauer, Chair
Nantucket Conservation Commission
4 Bathing Beach Road
Nantucket, MA 02554

Re: NOI, Baxter Road and Sconset Bluff Storm Damage Prevention Project

Dear Commissioners,

The Nantucket Land Council, Inc. is a non-profit, environmental organization, which is supported by more than 1800 members. After reviewing the Notice of Intent materials filed for the project listed above and attending the first public hearing and presentation on this matter we would like to submit the following comments and concerns.

The application is not complete and it is not possible to fully evaluate the proposed project because a stamped engineer's plan of existing conditions has not been provided. Elements such as the location of property lines relative to proposed work, actual beach width and current bank slope have not been identified. While the project as proposed has not met the standards of the state Wetlands Protection Act, this letter addresses concerns under the local Regulations. There are a number of performance standards under the local Bylaw and Nantucket Wetland Protection Regulations that have not been met and will require the justification of a waiver. We also remain seriously concerned that the amount of mitigation in the form of sand nourishment is not sufficient and will cause adverse impacts to surrounding resource areas including the destruction of the Coastal Beach fronting the proposed revetment.

Regulatory Compliance

The applicant is proposing to construct a rock revetment on the coastal beach and along the toe of the coastal bank fronting portions of Baxter Road. These structures will consist of "a geotextile filter fabric covered in a filter layer of gravel and then very large stones and would be buried about 8 feet below the existing beach level". The project, as proposed, does not meet the following performance standards of The Nantucket Wetland Protection Regulations:

Section 2.02 B(2) for coastal beaches states:

"No new bulkheads or coastal engineering structures shall be permitted to protect structures constructed, or substantially improved, after 8/78. Bulkheads may be rebuilt only if the Commission determines there is no environmentally better way to control an erosion problem, including in appropriate cases the moving of the threatened building. Other coastal engineering structures may be permitted only upon a clear showing that no other alternative exists to protect a structure built prior to 9/78, and not substantially improved, from imminent danger".

There are a number of houses behind the project area that have been constructed or substantially improved since 1978 and also multiple properties that are currently vacant and so are also not eligible for protection under the above performance standard. As stated above, coastal engineering structures may be permitted only when no alternative exists to protect a pre-1978 structure. There are existing open permits allowing for the construction of coastal bank sand filled terraces such as those that have successfully prevented erosion at 79 Baxter Road for many years.

Under **Section 2.05 B(1)** for coastal banks, the local regulations state:

"No new bulkheads, coastal revetments, groins, or other coastal engineering structures shall be permitted to protect structures constructed, or substantially improved, after 8/78 except for public infrastructures. Bulkheads and groins may be rebuilt only if the Commission determines there is no environmentally better way to control an erosion problem, including in appropriate cases the moving of the threatened buildings and/or public infrastructure. Other coastal engineering structures may be permitted only upon a clear showing that no other alternative exists to protect a structure that has not been substantially improved or public infrastructure built prior to 9/78, from imminent danger".

Again, several houses and vacant lots do not meet the criteria for protection. This performance standard under coastal banks includes an exception for the protection of public infrastructure. According to the provision, the Commission must determine whether the infrastructure is in imminent danger and if there are any alternatives that exist **including relocating the infrastructure** (emphasis added). The Board of Selectmen has reviewed multiple alternatives for relocating the threatened public infrastructure, and a comprehensive plan is being developed for this eventuality.

The Nantucket Wetland Protection Regulations also state under Section **2.02 B(6)** for coastal beaches and Section **2.05 B(5)** for coastal banks:

"All work on projects which are not water dependent shall maintain at least a 25-foot natural undisturbed area adjacent to a coastal beach/bank. All structures which are not water dependent shall be at least 50 feet from a coastal beach/bank".

The Conservation Commission has found in past decisions that coastal engineering structures are not water dependent projects. The proposed project is not water dependent under the local definition and will require waivers from the above performance standards. However, even if this project is found by the Commission to be a water dependent use, then Section 2.01 B(8) for land under the ocean must be applied as Section 2.01 B(1-8) must be applied to all work within the buffer zone to a coastal beach. **Section 2.01 B(8)** states:

"Water dependant projects shall be designed and performed so as to cause no adverse effects on wildlife, erosion control, marine fisheries, shellfish beds, storm damage prevention, flood control, and recreation".

As proposed the project will cause adverse effects on wildlife, erosion control, storm damage prevention and recreation. The mitigation proposed in the form of beach nourishment is not sufficient to protect downdrift beaches, and the applicant has asserted that as designed the proposed project will cause the coastal beach fronting the revetment to erode away and disappear. **The loss of 0.8 miles of coastal beach resource area will absolutely result in adverse effects on wildlife, erosion control, storm damage prevention, and recreation.**

Section 2.05 B(3) for coastal banks under the local regulations states:

"All projects shall be restricted to activity as determined by the Commission to have no adverse effect on bank height, bank stability, wildlife habitat, vegetation, wetland scenic view, or the use of a bank as a sediment source".

The applicant is proposing that the project will have no adverse effect on the above protected interests for coastal banks. Based on information provided by SBPF and comments from our consultants, Applied Coastal Research and Engineering, Inc., we do not agree that the proposed nourishment schedule and volumes are sufficient to ensure no adverse impact on the use of the bank as a sediment source.

The performance standards listed above have not been met by the proposed project and in order for the project to be permitted waivers must be granted. We believe that the project as proposed will have an adverse impact on coastal bank and coastal beach resource areas. There are no waivers that can be justified by the applicant and so we do not believe the project can be permitted.

Destruction of Coastal Beach

We would like to stress again, the applicant has confirmed that constructing their revetment, as designed, will result in the destruction of the coastal beach fronting the structure. The purpose of Chapter 136, Wetlands, under the Nantucket Bylaw is stated as follows: *"The purpose of this chapter is to protect the wetlands of the Town of Nantucket by controlling activities deemed to have a significant or cumulative effect upon wetland values..."* The unmitigated destruction of 0.8 miles of coastal beach is absolutely going to have adverse effects on the values of this resource area.

Conclusion

There are several performance standards in the Town of Nantucket Wetland Protection Regulations that have not been met. The justification to waive these performance standards has not been provided. The applicants have not provided the Commission with stamped engineering plans showing the existing conditions at the project site. The applicant has also stated that their project as proposed will result in the complete loss of a significant area of coastal beach resource area protected by your regulations.

Thank you for your time,

Emily MacKinnon
Resource Ecologist

Rec. @ 7/30 meeting

Applied Coastal Research and Engineering, Inc.
766 Falmouth Road
Suite A-1
Mashpee, MA 02649

MEMORANDUM

Date: July 29, 2013

To: Emily MacKinnon and Cormac Collier, Nantucket Land Council

From: John Ramsey, P.E. and Trey Ruthven

Subject: Baxter Road and Sconset Bluff Storm Damage Prevention Project

We have completed a brief review of the Bluff Storm Damage Prevention Project additional information submitted by the Siasconset Beach Preservation Fund (SBPF) on July 26, 2013. The latest information provides the analysis SBPF utilized to calculate mitigation volumes for the proposed 4,253 ft (0.81 miles) revetment, as well as documents that were prepared in 2010 regarding the design of previous shore protection efforts. Although the impacts of this project would cause a complete loss of the sediment supply along the armored section, the proposed beach nourishment volume computed to mitigate for this loss is not based on the best available information (e.g. the severe documented bluff erosion over the 2012-2013 season was not included in the mitigation calculations although it was readily available). In addition, the mitigation approach is not consistent with previous methods presented by SBPF, leading to concerns that the beach will narrow or disappear for the area fronted by the coastal armoring. The SBPF representatives at the July 24, 2013 Conservation Commission meeting indicated that they expected narrowing of the Town-owned beach as a result of this project. No technical information was presented regarding what techniques would be utilized to maintain the beach fronting the coastal bank or if the applicant is actually attempting to maintain the beach in the future. The example touted by the applicants' representative as a comparable project was the revetment along Triton Way in Mashpee. As shown in Figures 1 and 2, a high tide beach no longer exists along this section of the Mashpee shoreline. Numerous technical concerns described in our July 19, 2013 comment letter remain, and some additional comments regarding the SBPF July 26, 2013 responses have been highlighted below:

1. The Applicant provided numerous examples of armor stone revetments along the coast of Massachusetts; however it is unclear (a) whether any of these (or other) revetments are in an area with bluff erosion rates in excess of 5 feet per year and (b) what the long-term impact on downdrift beaches has been as a result of revetment construction. We did not indicate that revetments could not be constructed in this level of wave energy, but rather that we are unaware of successful revetments that have been constructed in areas with excessively high natural erosion rates (in excess of 5 feet per year, as demonstrated below). Again, the applicant should provide examples of where revetments have been successful on coastal banks/bluffs with erosion rates similar to the Sconset Bluff, where the structure has provided long-term bank stability and downdrift impacts have been negligible and/or mitigated with nourishment. Information provided to date merely indicates that other

revetments have been constructed in Massachusetts, but does not provide any documented evidence of revetments in similar erosional environments. For example, the Triton Way revetments are in an area with long-term erosion rates of less than 1 ft/yr and as demonstrated, the areas fronted by revetments no longer have a high tide beach.

2. The applicant provided updated information that indicated between 2003 and 2012, the crest of the coastal bank from Lot #73 to #119 eroded an average of 3.18 feet per year. As discussed during numerous previous Conservation Commission hearings, it has been acknowledged that the bluff erodes in episodic events (i.e. during the series of storms over the 2012-2013 season), rather than gradually like the fronting beach. In the past, Applied Coastal has stressed that long-term shoreline change rates provide the best proxy for bluff erosion, as the two features are linked: once the beach erodes, the base of the bluff becomes exposed to wave energy and eventually re-adjusts to the beach position. According to the 2010 OCC Alternatives Analysis (Table 7), the long-term 1994-2009 shoreline change rate is more than 8 feet of erosion per year, where over the same time-period, Epsilon Associates computed a bluff erosion rate of only 3 feet per year. Clearly, this bluff erosion rate is indicative of a coastal bank that is becoming over-steepened, as the loss of ~123 feet of beach width over 15 years will eventually cause a similar recession in the position of the bluff crest.

   An updated natural bluff erosion rate was provided in their July 26, 2013 response, where the 2003-2012 time period was evaluated utilizing aerial photography that yielded a bank erosion rate of 3.18 feet per year. However, the applicant also provided additional data (Table 1 of the NOI) that demonstrated the episodic readjustment of the over-steepened bluff during the 2012-2013 storm season. Table 1 below presents the same information as the applicant provided in the NOI, except only the areas utilized to compute the 3.18 ft/year rate are included to provide a direct comparison. The bluff erosion rates measured during the 2012-2013 storm season were used to augment the 2003-2012 data set provided by the applicant. Due to the significant amount of bluff retreat over this past year, the long-term rate jumps from 28.62 feet over 9 years to 53.64 feet over 10 years. Therefore, the long-term bluff erosion rate from 2003 to 2013 is 5.36 feet per year, based on the data provided in the NOI and supplemental documents. The applicant should be utilizing the best available information to provide realistic bluff erosion rates, rather than skewing results by not including episodic bluff erosion events.

3. Unlike the previous armoring proposal, the applicant no longer is planning to provide nearshore and beach volume mitigation. The previous proposal included 6.8 cubic yards per linear ft per year as the nearshore and beach component of the mitigation that would help maintain the stability of the Town-owned beach fronting the structure. No reason has been provided as to why SBPF has removed this mitigation volume from their mitigation plan. Overall, the existing proposal represents less than 50% of the mitigation rate that was proposed in 2012 for a similar project by the same coastal geologist and engineer.

4. As discussed during the July 24, 2013 meeting, the 2010 site plans are out of date, as more than 40 feet of bank erosion has occurred at some areas (with an average rate of bank erosion during 2012-2013 of over 20 feet). Updated 2013 plans of existing conditions and where the proposed structure will be placed on the coastal bank and beach are critical for evaluating the project. At this time, it is not possible to determine project limits relative to property lines, resource areas, etc. In addition, the coastal bank slope along the project has not been provided to determine whether the natural angle of repose will even allow safe

construction of the revetment and long-term stability for the dwellings at the crest of the bluff. At a minimum, updated plans by a licensed professional should be provided to document the existing conditions, as well as proposed conditions (including any proposed bank re-grading, fill, or excavation).

5. The Shoreline Monitoring Plan should include additional transects on regular intervals (50-100 foot intervals) immediately updrift and downdrift of the proposed project to monitor the project for end effects and increased erosion along the adjacent shoreline and coastal bank. The monitoring survey should be conducted pre- and post- nourishments to allow for quantification of shoreline variations and movements after the revetment is constructed. This near-field monitoring is critical to ensure that the structures are not having adverse impacts on adjacent properties due to 'end effects'. Mitigation volumes associated with addressing 'end effects' are not part of the calculation in #2 above, as these are associated with wave reflection which would not naturally occur.

Table 1: Baxter Road 2012-2013 Coastal Bank Erosion Rates for 73 to 119 Baxter Road from NOI for Comparison with Figure S-1 Provided by SBPF on July 26, 2013

Lot #	Map/Parcel #	Property Length (ft)	2012-2013 Loss of Coastal Bank (ft)
119	48/7	67	10
117	48/9	113	5
115	48/10	104	12
113	48/11	93	14
Way		20	6
109	48/12	163	21
107	48/14.1	162	27
Way		18	25
105	48/15	166	31
101	48/17	188	23
Way		24	
99	48/18	173	30
97	48/19	171	32
Way		18	
93	48/21	89	23
91	48/22	94	35
87	49/8	164	43
Way		26	
85	49/35	281	27
83	49/34	134	24
81	49/33	106	23
79	49/32	99	22
77	49/31	88	24
75	49/30	80	21
73	49/27	149	26

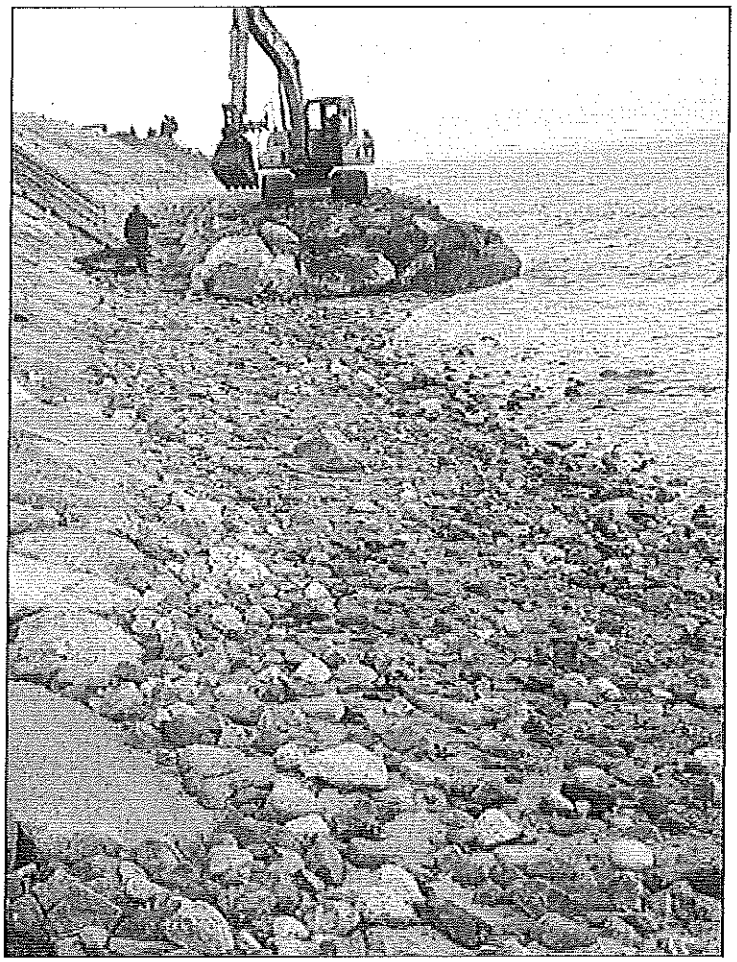

Figure 1: Photograph from letter written by Robert Hamilton (VP of Business Development) and Tara Marden (Coastal Geologist) of Woods Hole Group, Inc. regarding 2007 reconstruction of revetments along Triton Way in Mashpee. Note the lack of beach fronting the structure and the need to construct a work platform at the base of the revetment to allow reconstruction (*source: Maushop Village Trust website*).

Figure 2: View of completed Triton Way revetment reconstruction that occurred during the 2006/2007 winter season (*source: Woods Hole Group, Inc. website*).