

**REVIEW OF PROPOSED SCONSET BEACH PRESERVATION
FUND (SBPF) BEACH NOURISHMENT PROJECT**

CONCLUSIONS AND RECOMMENDATIONS



Prepared For:

TOWN OF NANTUCKET BOARD OF SELECTMEN

Prepared By:



In Association with the Garrett Group, Ltd.

April 30, 2007

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FUND (SBPF) BEACH NOURISHMENT PROJECT**

CONCLUSIONS AND RECOMMENDATIONS

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1. Introduction

Applied Technology and Management, Inc. (ATM) was selected by competitive bid to provide the Town of Nantucket, Board of Selectmen (BOS) with a review of the proposed Sconset Beach Nourishment Project. This report summarizes key conclusions and recommendations based on this review. Specific items requested within the review included:

- Review of the Final Environmental Impact Report (FEIR)
- Review project data and information for accuracy, appropriateness, compatibility and completeness
- Identify issues of public concern and means for the Town to address these concerns
- Assess project feasibility and effectiveness, advantages and disadvantages for the Town
- Confirm/Identify potential environmental effects
- Review the proposed monitoring program

In addition to the above elements, the ATM team staff have conducted to date an on-site review of the project area with Town representation, and participated within two Board of Selectmen meetings. Additional project information including the Notice of Intent, project comments, and project vibracores were reviewed in support of this review effort.

2. Role of Town Board of Selectmen (BOS)

With regard to the proposed project, the Board of Selectmen (BOS) serves multiple roles. As riparian property owners the Town BOS serve as Stakeholders within the project. As representatives for Town the BOS also serve as representatives for all affected interests within the Town including interests in support and opposition to the project. These roles are further discussed within the companion review provided by the Garrett Group, Ltd. and included as an attachment to this review.

Determination of whether the project benefits outweigh the impacts of the project is a fundamental evaluation key to the regulatory review and ultimate approval (or denial) of permits for the project. While approval by the local government (Town) is required, the Conservation Commission (ConCom) is the most appropriate forum for this evaluation and ultimate regulatory decision on the project. As a representative for all local interests, the Town BOS should defer issues of a regulatory nature to the appropriate forums for this determination and should encourage the full participation of all affected parties within the process.

3. FEIR Review

ATM has reviewed the FEIR and provides the following comments for consideration:

Completeness - By letter dated August 16, 2006 the Massachusetts Secretary of Environmental Affairs determined that the FEIR is sufficient for the evaluation of the project. The results of this review support the contention that sufficient supporting information has been provided for the evaluation of this project. It is important to note that while the FEIR has been determined to be complete, this determination does not provide project approval but allows for vetting of the project by the appropriate regulatory agencies (State, Federal and Local). Additional clarification and supporting information will likely be required from the project sponsor as part of project regulatory review.

Standard Practice and Due Diligence - The information, analysis and data provided within the document are consistent with accepted practice for beach nourishment design and evaluation. The level of care and due diligence delineated within the FEIR is to accepted standards. The beach and borrow area designs have sufficient technical basis.

Detailed Review- As with all efforts of this magnitude and complexity, certain aspects of the FEIR are lacking or open to critique. Specific items identified within this review are provided as an attachment to this report. It is worth noting, however, that these items do not detract from the inherent adequacy of the FEIR as a whole and would not materially result in a significant change to the project design.

Project Need - Structures and property on the coastal bank are clearly vulnerable to loss in their present state. The alternatives to address this vulnerability are limited and it is reasonable to assume that without significant stabilization of the coastal bank, significant and permanent loss of upland structures and property will occur.

Project Likely Effectiveness (Beach and Coastal Bank) – The proposed project will result in the placement of a large volume of beach material and will create a beach of sufficient size and dimension to provide significant storm and erosion protection to the base of the coastal bank. Experience with numerous beach nourishment projects suggests that the project should be largely effective in providing this protection. The coastal bank itself, however, is currently over-steepened over large sections and will remain vulnerable to slope failure. This vulnerability requires additional stabilization efforts independent of the beach project.

Effects on Town property – The project will help to stabilize and reduce the loss of Town properties within the project area. Town properties within nearby and adjacent areas should remain stable or accrete due to the diffusion of sand into these areas from the project area. The proposed dune at Codfish Park should increase the level of storm protection for upland Town infrastructure and properties.

Effects on the Town Sewer Beds – The proposed dune feature in this area should provide additional storm protection to this upland facility. Additional shoreline accretion within this area is likely due to diffusion of material from the beach placement area to the north.

4. Project Impacts – Turbidity

Given the volume of material required for this project and the rates of excavation and placement, project induced turbidity is a concern of project construction. Based on our review of the provided project information, the following comments are provided.

Magnitude of Concern – A review of the proposed borrow area, available geotechnical data and project details suggests that while turbidity is always a concern with projects of this type, the adoption of appropriate construction methodologies and monitoring protocols should significantly limit the potential for excessive turbidity during construction. This opinion is based on two primary observations. First, the silt/fines content of the material is estimated to be on the order of 1%, which is notably low. For comparison, beach quality material is generally required to contain less than 5% silt. Additionally, though the silt content of the beach is low (less than 1%), the silt content of the coastal bank material is significantly high (on the order of 10% or higher) and is capable of producing natural nearshore turbidity events due to wave impacts on the bank. As such, episodic turbidity events are a natural occurrence within the project area.

Contractor Oversight – Adequate construction protocols and contractor oversight are key to limiting the potential for excessive turbidity. Standard construction practice requires the implementation of temporary berm and diking within the disposal area to limit the discharge of fines into the nearshore environment. With regard to this project, the SBPF consultant team has the demonstrated technical expertise and experience to provide the appropriate construction oversight of this project. Further, given the size of this project the pool of contractors who are capable of constructing this project are limited to a few select companies, all of which have significant experience with turbidity control measures.

Monitoring Protocols – Adoption and implementation of an appropriate monitoring protocol is required to ensure/verify that construction turbidity levels are within acceptable standards. Specific monitoring requirements are generally prescribed by the overseeing regulatory agencies and are included within the project permits. Standard monitoring protocols have been defined for this type of construction. Given the specific concern regarding turbidity within the hardbottom (fishing) areas within the vicinity of the project, the adoption of a resource-based protocol is likely warranted and consistent with current trends in regulatory requirements. This would require that the turbidity is regularly measured during construction operations within the areas most likely to be affected and of the most concern and that these measurements are used to evaluate the effectiveness of turbidity control measures. Further, if measurements within these areas indicate consistently elevated turbidity levels then the contractor would be required to alter or cease construction operations to reduce the measured turbidity values within the

affected areas. Given the concerns raised regarding turbidity, the adoption of some level of independent oversight or review over turbidity measurements should also be considered for this project. This would provide a level of confidence to the larger public regarding project impacts.

5. Project Impacts – Nearshore Habitat

The project as proposed will result in direct, indirect and cumulative impacts to nearshore cobble and hardbottom communities. Based on review of the project documents the following comments regarding impacts to nearshore hardbottom are provided.

Direct Cobble/Hardbottom Impact – To some extent impact to nearshore hardbottom communities is unavoidable given the requirements of this project. The extent to which hardbottom is exposed within the vicinity of the project is a function of the availability of sand within the area, and given that the area has exhibited significant erosion it is reasonable to assume that hardbottom exposure will occur within the project footprint. The project sponsor has developed estimates of direct coverage of these resources from the proposed project. A review of these estimates indicates that they were determined using acceptable methodologies and assumptions. Specifically, the project sponsor concludes that the maximum direct coverage by the project will be on the order of 29.5 acres of hard substrate with a permanent loss of approximately 10 acres.

This review suggests that these estimates are reasonable for direct impacts within the immediate influence of the project. Whether the level of impact is acceptable is a critical element with the regulatory review, and it is the responsibility of the regulatory agencies to make this determination.

It is important to note, however, that these estimates include a level of uncertainty inherent within the assumptions required to make the calculations. The level of direct coverage of nearshore hardbottom is a function of the beach grain size, wave conditions and the magnitude of post-project erosion. While these can be reasonably projected, post-project conditions may result in significant deviations from these estimates. Therefore it is essential that a scientific-based monitoring protocol be adopted and implemented prior to project construction. This protocol should be sufficient to determine the level of pre-project hardbottom exposure and allow for the determination of post-project exposure and level of impact. The project sponsor has provided a good faith effort to provide this baseline data, though additional efforts may be required. Project monitoring efforts are one element within the regulatory review and will be fully vetted within this process.

Beyond the issue of direct impact, review of the project materials raises two important concerns. The analysis of impacts provided in support of the project has focused on the immediate vicinity of the project. While the analysis and baseline data within this area is based on accepted norms for this kind of effort, limited information regarding the potential for impacts outside the immediate project area has been provided. The project

sponsor asserts that significant volumes of placed material will leave the project area due to erosion and further contends that this will limit the magnitude and duration of impact to nearshore hardbottom. This assertion, while reasonable, does not address the potential for coverage as this material erodes from the project area to adjacent shorelines where additional hardbottom not addressed within the efforts to date may be impacted. Additionally, it is important to consider the issue of cumulative impacts to hardbottom from the proposed project. While the impacts from the initial nourishment may be limited, re-nourishment efforts will result in increased volumes of sand within the nearshore system and over time the area of influence from the project and potential for additional hardbottom impacts will increase.

In practice, the issue of cumulative impacts is a common concern associated with nourishment projects. It is not necessarily reasonable to require the application to account for all future and cumulative impacts for approval of the initial nourishment. Additional nourishment efforts will require additional regulatory review for approval and in principle project monitoring efforts will provide information critical to the assessment of cumulative impacts. Delineation of pre-project conditions, however, is critical to these efforts and must be conducted to a level sufficient to allow for these future efforts. As such, the need for good, scientific based pre-project baseline data cannot be overemphasized.

6. Project Impacts – Borrow Area

The following comments are provided regarding the proposed borrow area and associated impacts:

Alternatives Analysis – The FEIR provides an alternative assessment for the choice of the preferred location west of Bass Rip Shoal. The project sponsor rightly concludes that use of an upland sand source is not an economical alternative. In terms of offshore sand sources, the project sponsor provides a screening process that identifies the preferred borrow area. While the evaluation of sand grain screening criteria (specifically the use of a mean grain size vs. median) may be questioned, this screening alternative does provide a reasonable determination of the proposed borrow area as the preferred alternative. While arguments may be made for other alternative sites, a review of the available data does not identify an argument that is particularly compelling for an alternate area from a geotechnical, environmental or economic perspective. The analysis as presented appears to have been performed in a manner consistent with accepted standards for alternative analyses of this type. As the project sponsor, the SBPF has proposed the identified borrow area as their preferred alternative. There are strong economic arguments to support this alternative from their perspective and a review of the data does not indicate a borrow site that would result in less impact than the proposed borrow area.

Level of Impact – Initial project construction will require a significant excavation of material and will result in an essentially permanent change in the bathymetry within the borrow area. A large excavation is required to construct the project and impacts from this

excavation are unavoidable if the project is constructed. The excavation will have an impact on the area, though the resulting excavation holes themselves may provide compensatory habitat to replace to some extent what was lost. Regulatory review is required to determine if the level of impact from the excavation is warranted relative to the project need.

Infilling/ Post-Construction Recovery – Numerical modeling of the borrow area indicates that some infilling will occur. While this analysis is within accepted standards for this type of analysis it is worth noting that the level of uncertainty within this type of analysis is fairly high. Given the magnitude of the excavation and the water depth it is likely that infilling of the borrow areas will be low and on the order of magnitude of the model predictions.

Material Compatibility – Based on review of the geotechnical data and inspection of the cores taken within the borrow area, the material appears to be beach compatible and appropriate for this project. The borrow material is similar to the native beach sand in both geotechnical and aesthetic terms. Limited cobble is present within the cores but the amount appears to be consistent with the native material.

Wave Impacts – The borrow area is located approximately three miles offshore. The numerical analysis presented by the project sponsor indicates that wave modification will be largely limited to a radius of two miles or less from the borrow area. The analysis performed is to an acceptable technical standard for this type of evaluation and the project sponsor's contention that the borrow area will have a negligible effect on the wave climate is a reasonable assertion consistent with observed performance and standard practice.

Cumulative Impacts – Whether the level of impact required for the excavation is warranted in light of the project need is a key issue within the regulatory/permitting review of this project. Beyond the impacts of this excavation, the issue of cumulative impacts is worth noting. It is the intent of the SBPF to renourish this project indefinitely with offshore sand sources. These additional excavation events will result in additional impacts. To some extent the issues of cumulative impacts can be addressed as an element of future renourishment activities. Post project monitoring of this effort will provide additional data on which to assess the impacts of future renourishment events and these events will require additional regulatory review and approval. However, it is unlikely that the issues of cumulative impact and the needs for additional sand sources will ever be fully resolved and will continue to be an issue of concern regarding the project.

7. Project Impacts – Construction

Assuming project approval is granted, construction issues will present major challenges to both the project sponsor and the Town. The realities of construction will require active input and participation by the Town. As such, coordination and negotiation between the

Town and SBPF will be critical to project success. The following comments are provided regarding anticipated construction impacts of note to the Town.

Type of Equipment – The project may be constructed with either a cutter/suction head or hopper dredge. While the project sponsor has stated that the use of a hopper is most likely, they have not ruled out the use of a cutterhead dredge. Identification of the type of dredge at this point is not necessarily required and it is not unusual for this determination to be left to the dredging contractor. In comparison, there are advantages and disadvantages to each type of equipment. These can be summarized as:

- Cutter/Suction Head Dredge - This method uses a dredge which essentially vacuums up the dredge material and pumps it through a single pipe all the way to the discharge point. This requires the placement of several miles of pipe, both submerged and on the beach. The dredge remains within the borrow area and uses a series of anchors and winches to move within the area. Turbidity within the borrow area is less of a concern as the suction of the cutterhead tends to limit turbidity. Turbidity at the project site can be more significant as the dredge can have high production rates and can work for extended timeframes. The production rate for cutterhead dredges is generally greater than for hopper dredges allowing for project construction within a shorter timeframe.
- Hopper Dredge – This method uses a ship with dredging capability to excavate material. Once full, the ship travels to the project area where a pipe in the nearshore is used to pump the material onto the beach. Turbidity within the borrow area may cover a greater extent, though turbidity within the discharge area is less of a concern due to the limited production rates and inherent down time. Given the volume of this project, the use of multiple hopper dredges and potentially more than one discharge pipe may be considered.

Time of Year – The SBPF has indicated a preference for an end of May to October construction window. This window would accommodate a February through end of May restriction for Winter Flounder. The SBPF wishes to avoid winter construction citing efficiency, cost and safety concerns. There is some legitimacy to these concerns as the general meteorologic and wave conditions would significantly reduce production and increase costs during the winter months and there are legitimate safety concerns. Dredging contractors would prefer to not construct during the winter and this would be reflected within the bid unit costs if winter construction were prescribed. It is likely that winter construction would significantly increase the cost of this project.

The proposed construction window will result in construction activities during the peak of the island tourist/usage season. While this may be unavoidable, it will have direct impacts on the Town infrastructure and residents.

Construction Duration – The length of time required to complete the project is a function of the dredge type adopted. Considering the volume of material proposed (on the order of 2.5 million cubic yards), the contractor will likely need the entire construction window

regardless of dredge type, and completion of the project within this window will be tight at best. Downtime for equipment or weather could easily extend the construction schedule beyond the proposed window.

Trucks and Equipment – The number of trucks required to mobilize and demobilize equipment will vary depending on the construction methodology. The number of trucks required, however, may be fairly large depending on the amount of shore pipe required by the contractor. Assuming the worst case scenario (greater than three miles of shore pipe) the project could require on the order of eighty truck deliveries to the site, and an equal number of trips following de-mobilization. The number of truck trips required may be reduced if less pipe is required on the beach by the contractor. Even with a reduced number of truck trips it should be assumed that mobilization and demobilization will have a significant impact on the Town's infrastructure most notably the Town dock facilities, roads to the project site and areas adjacent to staging areas at the project site. Temporary staging areas will be required both at the Town dock and project area. Mobilization and demobilization will require close coordination between the Town and the contractor to limit the impact and inconvenience of these operations.

While mobilization and demobilization will account for the bulk of the truck trip project requirements, regular fuel service to the project site will also be required. This impact should be relatively low by comparison to mob/de-mob operations.

Major Holidays – Given that the current plan would span the entire summer season, construction would coincide with Memorial Day, July 4th and Labor Day. As these days and the associated weekends historically have high beach and waterway usage, additional consideration of construction operations during these key times is likely warranted. At a minimum, the Town should consider this issue in coordination with the SBPF to determine whether additional restrictions on the contractor are warranted for these limited timeframes. Beach access, road usage, security and public safety are all issues which may require additional consideration during these key holidays.

24-hour construction requirement – The project will require 24-hour, seven day a week construction. This will require approval from the Town, but is necessary to efficiently construct the project. Impacts from nighttime construction will be limited to the immediate area of construction.

Public Beach access – The project will limit beach access for the public within the immediate area of construction. Adjacent areas would remain open. Access around the project on the beach would be restricted. Given the limited existing public access within the area, the restrictions on public access associated with the project are likely to be minimal in extent.

Contractor Beach access – The contractor is limited to two areas for access to the beach; Hoicks Hollow and Codfish Park. Both alternatives will have issues regarding this access and it is likely the contractor will wish to use both to the greatest extent possible. The use of Codfish Park is of particular concern for the Town as this is the main avenue of

access to the beach for the public. Coordination between the SBPF, contractor and the Town is strongly encouraged. The Town may also wish to consider restrictions on contractor use of Codfish Park to limit the level of inconvenience to the general public.

Pipeline Corridors – Submerged pipelines will be required to transport dredged material to the project area. For a hopper dredge configuration these will be limited to the nearshore region adjacent to the project. For a cutterhead these would extend all the way to the borrow area. Use of multiple pipeline corridors may be warranted and the submerged line to the beach may be moved. Adoption of a pipeline corridor buffer area around the critical fishing and habitat area could help to limit potential impacts to this area and would allow for public usage of this area throughout the construction process.

Scarping – Following construction the beach will adjust to a more natural condition. As part of this process material will migrate from the upper beach into the nearshore. This will occur largely due to storm or wave events and will result in the formation of scarps on the beach face. While beach scarping is a natural occurrence, the configuration of the constructed beach exaggerates this process and can result in more scarping and larger scarps than occur on a natural beach. Scarp formations several feet high are likely to occur and may extend throughout the project area. Large scarps may impede beach access and represent a hazard to the general public. Scarps may be mitigated by mechanical means which generally requires a bulldozer to re-grade the beach face. It is important that provisions to address beach scarp formations are anticipated within the post construction phases of the project. A plan needs to be put in place to address scarp formations when they occur and should be considered as a maintenance aspect of the project.

Grade Stakes – Grade stakes are required during project construction to define the beach dimensions. Provisions are required to prescribe and track grade stakes. Poor oversight can result in the burial of significant numbers of grade stakes. Even with good oversight practices a certain number of grade stakes will remain un-recovered following project construction. These may be re-exposed within the beach face and can represent a potential safety hazard. Re-exposure is particularly likely during storm/high wave events when scarps form. As with scarp formation inspection and removal should be considered as a necessary post construction requirement and a plan should be developed as a maintenance element of the project.

Sesachacha Pond – The project will result in the accretion of the shoreline in the vicinity of Sesachacha Pond. This will require an increased effort to implement pond opening efforts conducted by the Town. The existing means and methods, specifically mechanical excavation, will still be effective. The excavation volume requirement and contractor effort will increase, though this increase is not likely to be substantial. This incremental increase should be considered as an element inherent within the project construction and should be addressed further in negotiations between the Town and SBPF.

Town Sewer Beds – The proposed dune feature will provide increased storm protection to the Town Sewer Beds as well as additional Town properties and infrastructure. This dune feature will require re-routing of an existing beach access point and re-vegetation.

Hurricane / Severe Weather Plan - The contractor will be required to submit a hurricane/severe weather plan including protocols for equipment and personnel in the event of a severe weather event. Review of this plan by the Town is recommended as it is likely that the Town harbor may be identified for use as a safe harbor for storm events.

Aeolian Sand – The post construction beach will result in a wider, elevated and un-vegetated beach berm that is susceptible to aeolian (wind-blown) sand movement. Implementation of sand fencing and a dune re-vegetation program would help to limit this sand movement. Low upland areas adjacent to the beach may experience increased wind-blown sand following project construction. This is particularly true within the Codfish Park area. This may result in an increased need for maintenance efforts.

Renourishment and Program Abandonment – Renourishment will require the re-initiation of construction activities with similar impact to the Town. The SBPF fully intends to renourish this project indefinitely. Abandonment of the project, however, would not result in any additional remediation cost for the Town or SBPF, as without renourishment the constructed beach would eventually erode to a state consistent with the present (natural) condition.

8. Project Impacts – Fisheries

As stated previously, the project will have direct impacts to nearshore and borrow area habitat. Monitoring and mitigation are proven strategies for addressing these issues. However, the magnitude of impact relative to the project need must be fully weighed within the regulatory process and it is the specific charge of the regulatory agencies to make this determination.

Though not considered significant within the FEIR, there is an additional potential for impacts to marine mammals from the project, particularly with the use of hopper dredges.

9. Project Impacts – Birds

Impacts to birds may occur both in the borrow area and in the nearshore. Impacts within the borrow area are difficult to assess based on the available data as knowledge of usage and data are limited. Historical nesting is noted at the boundaries of the beach project area and within the potential area of influence of the project. The project sponsor contends that the project will result in a net increase in potential nesting habitat. This may indeed occur, though the creation of new upland beach areas does not guarantee that these areas will be of high value or utilized at all for nesting. Efforts can be made to improve the habitat quality of the constructed beach including re-vegetation. The long

term net impact to nesting birds is difficult to determine based on the available data, reinforcing the need for sufficient baseline data and monitoring protocols to assess project performance.

10. Project Mitigation

The SBPF has proposed a mitigation reef to offset impacts to nearshore hardbottom resources. The general concept of mitigative hardbottom as a replacement for impacts is a generally accepted practice for nourishment projects. Regarding the current plan the following comments are provided:

In-Kind Mitigation – A key intent of project mitigation is the replacement of habitat impacted by the project. This requires that mitigation replace the key habitat functions of the impacted areas. The current proposal utilizes concrete railroad ties as mitigation for the natural hardbottom and cobble. While this will provide a hard substrate, it may not replicate all of the functions of the natural habitat. Modification of this plan may be warranted to improve the net quality of the mitigative habitat. Use of a reasonable quantity of natural rock substrate in addition to the proposed railroad ties may provide an economical alternative which would significantly address the in-kind mitigation concerns regarding the mitigation reef proposal. Deployment of a range of reef types may also be considered as an appropriate strategy as this will increase the diversity of the habitat. The mitigation reef may also be presented as a case study for the effectiveness of hardbottom mitigation for nearshore hardbottom impacts.

Proposed Mitigation Plan Review – Whether the proposed mitigation reef is sufficient to offset impacts to hardbottom within the project area is an issue under the direct charge of the regulatory agencies evaluating the project. It is likely that additional detail regarding the mitigation plan is required to fully evaluate the plan. In particular, the specific areas and water depths in which the reefs will be constructed must be defined.

Acreage/Coverage – The project sponsor proposes to construct approximately 17.7 acres of mitigation hardbottom over a net area of 58.9 acres. Whether this acreage is sufficient to offset the anticipated project impacts is a question which will be addressed within the regulatory review process. The proposed acreage is on the order of magnitude of the anticipated impacted area. Issues regarding in-kind mitigation and mitigation functionality must also be considered within the evaluation of impact and mitigation acreage. If the mitigation habitat is of a lower value than that impacted, a greater acreage of mitigation may be required to fully offset the impact. Monitoring may also demonstrate that the constructed mitigation is of lower habitat value than anticipated and the level of impact to the project area is greater than anticipated. Hence the need for a good scientific-based monitoring protocol is essential to addressing the suitability and success of the project mitigation program.

Cumulative Impacts – Renourishment events may result in additional hardbottom coverage not mitigated within the current mitigation plan. Movement of material to

adjacent beaches may also result in additional hardbottom coverage. Project monitoring will support post-project evaluations of both mitigation value and protect impact. Re-evaluation of this issue will be required as an essential aspect to proposed renourishment efforts.

Fisheries Compensation – Direct compensation to impacted commercial fisherman has been proposed as an element of project mitigation. In principle this should be a last resort and to the greatest extent possible efforts should be made to limit impacts. A review of the existing project information suggests that construction methods and practice can be largely effective in minimizing impacts to this stakeholder segment if fully implemented. Mitigation for hardbottom impacts has the potential to significantly compensate for habitat impacts and can result in the creation of new and viable fisheries resources.

11. Project Monitoring

As previously stated, monitoring of the project is required before, during and after construction. While the proposed monitoring protocols within the FEIR provide an appropriate basis for monitoring efforts, review and approval of these protocols within the regulatory process is required. Additional monitoring of areas, particularly those outside the immediate area of project influence are likely warranted in order to adequately account for long term and cumulative impacts.

Baseline monitoring data and protocols adopted for this project may also be expanded to encompass greater extents of the Nantucket shoreline and can provide the basis for the development of a comprehensive coastal monitoring and management program for the island.

12. Conclusions and Recommendations

Based on the cumulative review and efforts conducted to date, it appears that all parties with significant interests in the project are sufficiently represented within the review and approval process. The regulatory entities charged with the vetting of the project appear to have sufficient expertise and capability to fully and adequately evaluate the project and its impacts. The project sponsors have adequate representation and technical support. Project information is readily available and public participation within the project has been noted. As such, the process of project review appears to be progressing in an acceptable and appropriate manner.

With specific regard to the Town of Nantucket Board of Selectmen, the following recommendations are provided for consideration:

- The BOS should encourage the active involvement of all Stakeholders within the regulatory/approval process.

- The BOS should continue active negotiations with SBPF regarding construction issues and issues affecting Town properties. Assuming regulatory approval of the project, coordination between the SBPF and Town will be required to minimize construction impacts to Town residents.
- The BOS should fully support and endorse the regulatory review processes and should defer questions of project approval to these bodies.
- In discussions and agreements with the SBPF, the BOS should retain ownership rights to Town properties within the project area.
- The Town BOS should continue to pursue the adoption of public betterments within negotiations with the SBPF. The One Beach initiatives currently under consideration represent a significant project-related benefit to the general public.
- The Town should structure any agreement with the SBPF to limit the Town's liability for the project.
- Negotiations with the SBPF should address issues of increased and incremental costs to the Town associated with the project.

ATTACHMENT 1

**FINAL REPORT OF FINDINGS – THIRD PARTY PEER REVIEW OF THE
SCIASCONSETT BEACH PRESERVATION FUND (SBPF) BEACH
NOURISHMENT PROJECT IN NANTUCKET, MA**

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April 26, 2007

JN 07-002

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RE: Final Report of Findings - Third Party Peer Review of the Siasconsett Beach Preservation Fund (SBPF) Beach Nourishment Project in Nantucket, MA

Dear Gentlemen:

As authorized, The Garrett Group, LTD. (TGG) of Plymouth, MA has conducted a review of the Regulatory, Biological Resource and the Proposed Mitigation Actions to be taken by SBPF (the applicant) and presents our findings of their presentation the Board of Selectmen's (BOS) review and consideration.

TASK OVERVIEW

TGG has reviewed the project during a previous on-site visit with the team; from discussions at various meetings, presentations and stakeholder comments; and by reviewing several key documents. These documents include: portions of the Final Environmental Impact Report (FEIR), the Secretary's Certificate on the FEIR, Notice of Intent (NOI) filed with the Nantucket Conservation Commission (ConCom), the Massachusetts Wetlands Protection Act and its Implementing Regulations (MGL c. 131, s. 40 and 310 CMR 10.00 et seq.), hereafter referred to as the WPA, and the Local Wetland Protection Bylaw and Implementing Regulations (Chapter 136), the Town of Nantucket Beach Management Plan, and other potentially applicable local Bylaws, all documentation will be cited throughout the narrative.

In general, the technical consultants for the applicants have completed a very professional analysis of the proposed Dredging and Beach Nourishment Project at Sconset Beach, and have prepared comprehensive documentation to advocate the project for their clients. This peer review is intended to advise the BOS, as to project issues that require additional information or consideration, or require a greater level of response from the applicant. This narrative will assist the BOS in identifying and evaluating the key issues, and preparing the BOS to participate in all regulatory settings under public comment or public notice opportunities, to voice the Town of Nantucket's (the Town) position on the proposed project. After all, the entire Town is their constituency. This narrative will identify key benefits and critical concerns to be addressed. This narrative will not direct the Town to support or deny the project, but only how to evaluate it, determine what is best for the Town, and how best to serve the public trust in representing the Town's position based on the applicant's presentation of all of the facts required.

PROJECT DESCRIPTION

As the Secretary's Certificate reads: "...the project involves the placement of approximately 2.6 million cubic yards of sediment along 3.1 miles of the southeast shoreline of Nantucket for beach and dune nourishment; mining the sediment needed for the initial nourishment from a 345-acre offshore borrow site located approximately 2.7 mi east-northeast of Sankaty Head Lighthouse; bank terracing and vegetative plantings on approximately 2000 linear feet of the coastal bank face; and the repair and use of existing dewatering systems to increase the longevity of the nourishment". The Secretary continued relative to the Section 61 Findings (mitigation) that, "I find the FEIR to be adequate, and am allowing the project to proceed to the state permitting agencies. The Final EIR contains adequate information on alternatives, impacts, and mitigation, and allows the state permitting agencies to understand the environmental consequences of their permit decisions".

What is stated in the Certificate is a general, marginally quantitative project description which is appropriate for the MEPA review level; however, now in the permitting phase, the project must be vetted in a quantitative and performance-based review, at all jurisdictional levels – Federal, State and Local, as implied by the Secretary's comment. That last statement truly empowers the local Conservation Commission (ConCom) to set the agenda for the entire permitting process.

In the NOI filed with the ConCom, page 4 of 9 of Form No. 3, presents the following quantified surface area estimates for jurisdictional resource area impacts anticipated by the project:

1. Land Under Water and Land Containing Shellfish (or in laymen's terms, ocean bottom) – 21,435,876 sf or 492+/- ac of ocean bottom.
2. Coastal Beach and Tidal Flat – 1,973,268 sf or 45+/- ac of intertidal shoreline.
3. Coastal Dune – 299,257 sf or 7.0+/- ac of migratory dune.

These 550+/- ac of jurisdictional coastal resources also support various natural, jurisdictional, economic and recreational resources. As part of its project review the Town must weigh the benefits anticipated to be realized from the completion of the project, against the costs (impacts) associated by implementing the project; and the willingness and/or the success of the applicant to mitigate for those impacts. The BOS must be prepared to present their opinions and findings at every opportunity throughout the regulatory review (pre- through post construction periods). The applicant has identified their intended public benefits to be realized by the Town on page 1-4 in Attachment One of the NOI; and the anticipated impacts of the project, in Section 5 of Attachment A to the NOI. The Town needs to evaluate those intended benefits and determine whether they are worth the anticipated impacts; impacts to be mitigated in the form of protective (construction) and compensatory (restoration/replacement) of unavoidably lost resources; and cumulative impacts.

The quantified impacts only represent the initial dredging and nourishment phase of the project, and do not consider any cumulative effects. The NOI requests permission for additional dredging at a yet to be

identified borrow site and further nourishment in the project area, in five (5) years. This request for additional work is made without any determination of specific need for the work, and without any observational or monitoring data that establishes any level of success, or any occurrence of unanticipated or unintended impacts, during the project's first phase.

REGULATORY REVIEW

The overall premise of any regulatory review or alternatives analysis is based on three basic tenants that include:

1. Avoid all avoidable impacts,
2. Minimize all unavoidable impacts, and
3. Mitigate for all unavoidable impacts that are anticipated and/or occur.

These tenants should be applied to any permit review, public/stakeholder comment and the issuance of any permit. It is the responsibility of any applicant to establish by best possible means that whatever is being proposed meets these three tenants.

In Massachusetts, there is a very complex, multi-jurisdictional regulatory process that needs to be addressed. The following is a summary and discussion of that process. The applicant has acknowledged, and the Secretary concurs, that proposed project will require various environmental permits that include the following:

Federal Environmental Jurisdiction

Section 404/10 Permit Applications - Section 404 of the Federal Clean Water Act requires a permit for the placement of any fill or dredged material, or any excavation in "Waters of the United States", including wetlands. In Massachusetts, a programmatic general permit process exists (MAPGP) for small projects up to 1.0 ac of impact. Any projects that exceed 1.0 acre of impact must apply for an individual permit. Appendix A as attached lists and references the Functions & Values (F&V) that are evaluated for any project that affect, in concert with quantified surface area impacts projects to the resources included within the broad definition of "Waters of the United States", and are the basis for the Federal no-net-loss wetland protection policy.

Section 10 of the Federal Rivers and Harbors Act requires a permit for work or structures in or affecting "Navigable Waters of the United States", and include: any wharf, dolphin, weir, boom, breakwater, jetty, or groin; bank protection or stabilization (e.g. riprap, revetment, or bulkhead); permanent mooring structures (e.g. pilings); aerial or subaqueous power transmission lines; intake or outfall pipes; permanently moored floating vessels; tunnels or artificial canals; boat ramps; aids to navigation; any permanent or semi-permanent obstacle or obstruction; dredging or disposal of dredge material, excavation, and filling; or other modifications affecting the course, location, condition, or capacity of

“Navigable waters of the United States”.

Section 401 Water Quality Certificate Application – Any discharge or placement of fill in jurisdictional wetlands or “Waters of the United States or the Commonwealth”, with a surface area that greater than 5000 sf, requires a Water Quality Certification (WQC) establishing that the proposed action will not adversely affect or degrade the existing surface water quality assigned to the project area.

State Environmental Jurisdiction

MGL Chapter 91 License and/or Permit Application - All projects (dredging or structural) occurring with “Waters of the Commonwealth” including tidelands and historic tidelands require either a permit or license under the Massachusetts Waterways Program (MGL c. 91 and 310 CMR 9.00). This would include the placement of dredge material, fill, excavate and/or structure.

Federal Consistency Review - The Massachusetts Coastal Zone Management Office administers the Coastal Zone Management Program and Policies, and ensures that proposed projects meet all appropriate MCZM Management Program and Policies, and ensures that proposed projects meet with the policy standards of the Federal and State Programs as defined in 301 CMR 21.00. When projects trigger a Section 404/10 Individual Permit, they must demonstrate that the proposed project meets those appropriate Federal policies.

Conservation & Management Permit – Since much of the project site is designated as a “Priority Habitat...” for birds, should *MassWildlife* – Natural Heritage and Endangered Species Program (NHESP) determine that the proposed project constitutes a “take” under Massachusetts Endangered Species Act (MESA), then the project is subject to the restrictions and conditions of a Conservation & Management Permit. Said restrictions and conditions may require the planning and management of the resource(s), and the establishment of “Conservation Restrictions” on the project site (town-owned land).

Local Environmental Jurisdiction

The Notice of Intent/Order of Conditions - What is briefly mentioned in the Secretary’s Certificate is the requirement for a permit (Order of Conditions) to be issued permitting the project from the local ConCom. While this brevity may suffice for the Commonwealth’s purposes, it truly minimizes the significance of the local action relative to the project design, and upcoming permit requirements (Federal and State). The issuance of the OOC, that has avoided, or withstood appeal, that is registered at the County Registry of Deeds, is the precursor to the issuance of all required wetland/waterway permits. Federal and State jurisdictions desire to work with, and protect ConCom jurisdiction on local projects, large or small. In Massachusetts, the receipt of the OOC is a very critical first step in the permitting process.

Any activity conducted within the jurisdiction of the WPA or the Local Wetland Protection Bylaw requires a filing of a NOI and the issuance of an OOC. This would include any work within the protectable resources of the shoreline, the nearshore and the offshore areas, and work within the 100-ft regulated Buffer Areas; under the jurisdiction of both the WPA (State Jurisdiction) and the Local Wetland

Protection Bylaw. Therefore, the NOI presents the applicant's proposed "Preferred Alternative" to the ConCom for their concurrent review under State and Local Jurisdictions.

While concurrent, these reviews can be separate and distinct since the WPA and the Local Wetland Protection Bylaw have similar but distinct "Performance Standards" to protect those "Protectable Interests" applicable to specific jurisdictional resources. The issuance of the OOC is also concurrent under both state and local jurisdictions. The implications of the "Preferred Alternative's" proposed activity within jurisdictional resources will determine the basis for approval or denial, and in the former, the number of Conditions to be imposed, so that the project will meet the resource specific "Performance Standards". Appendices B and C, as attached, list the Performance Standards set forth in the WPA and Local Wetland Protection Bylaw respectively. These are evaluated in concert with the quantified surface area impacts of the project to the jurisdictional wetland resources. Conditions are developed by the ConCom for the project to meet the specific Performance Standards. These are typically carried forth through the Federal and State permitting processes.

The Massachusetts Department of Environmental Protection – Southeast Regional Office in Lakeville (MADEPSERO) will review the technical, administrative, and procedural process for the review of each NOI submitted to the local ConCom. MADEP's review is concurrent with the ConCom process. Should MADEP have reason to question the rationale or process for the issuing an OOC, they can do so during the appeal period (10 business days following the ConCom's issuance of the OOC). Should MADEP choose to intercede and appeal the issuance of an OOC, the appeal is limited to the state jurisdiction under the OOC. Other public/private concern(s) may appeal the issuance of any OOC, under either or both state or local jurisdiction, should the municipality have a Bylaw, by registering said appeal MADEP (state) and/or Superior Court (local), and with the support of any ten (10) taxpayers of the Commonwealth during the appeal period.

Following the receipt of an OOC that has cleared the appeal period or has withstood an appeal; and is recorded at the Registry of Deeds, several additional permits will be required before the implementation of this project.

TOWN'S ROLES IN THE REGULATORY PROCESS

The Town has two roles in the review of the project. These include the role as a "stakeholder" and a "regulator". The Town owns the property where the proposed project actions are to take place (both on and offshore). Ownership is immediately seaward of the mean high water line and extends to the three (3) mile extent of territorial waters off the southeastern shoreline of Nantucket Island; and as the steward of the public trust, use and benefits from said land; and as the head of the executive branch of Town government, it is the responsibility of the Board of Selectmen (BOS) to represent the Town's "stakeholder" interest in this matter.

As the property owner, the Town can deny the applicant to the property, or can significantly influence how the project can be implemented as a stakeholder. As the property owner, the Town can deny the property access to the project, or can significantly influence how the project will be implemented.

The ConCom is appointed by the BOS, and is empowered to regulate jurisdiction of the WPA, by the State law; and the local Wetland Protection Bylaw under Chapter 136-3 of the Bylaw itself. The ConCom must review the project based on its ability to meet predetermined, jurisdictional resource specific “Performance Standards” that have been established to protect all “Protectable Interests” of the affected jurisdictional resource areas (Appendices B & C).

Care should be taken in applying the BOS responsibility to function as “stakeholder” during the ConCom’s regulatory deliberations. While they are appointed by the BOS, their charge is specific to implementing State statute and the Local Wetland Protection Bylaw, both with very specific limits of jurisdiction, and not the more global view of the “stakeholder”.

The Stakeholder Role

The BOS, as the head of the executive branch of local government, has a mission statement adopted in July, 2002 and amended May 9, 2006 that reads; “*The mission of Board is to serve the community by providing clear, concise goals and policies that ensure quality in the delivery of town services and approved efficiencies in operating town government*”. As part of the six BOS goals dated 2006-07, in part, the BOS is to work to “*Enhance the Quality of Life for Residents and Visitors [through] Improving Public Access to the Waterfront*”.

As stated clearly, the BOS has the charge of representing and overseeing how the project will effect various municipal departmental operations and meet the goals, objectives and/or any “Performance Standards” of several other local bylaws whose jurisdictions are affected by the project. These would include the following Departments: Marine and Coastal Resources, Parks and Recreation, Police and Fire, Public Works and Health. Specific local Rules, Regulations and Bylaws that may have jurisdiction could include: Beach Rules and Regulations, Shellfish Rules and Regulations, Wharves and Waterways (specifically Chapter 137.6), and the local Endangered Species Program. For many of these, the BOS must consider the potential exposure (legal and economic) that the project creates for the Town, and determine if the project benefits outweigh the costs, and is the anticipated project outcome is consistent with the goals and objectives of each Town Department, Rule, Regulation or Bylaw.

As a stakeholder, the Town must represent the rights and interests of other Townwide stakeholders (e.g. taxpayers, fisherman, environmental, etc.) by commenting during all “publicly or legally” noticed processes (Federal, State and Local), whether for permits or licenses; and should exercise that right in whenever possible.

The Regulator Role

The ConCom has a very critical role in the conditional approval or denial of the project via the OOC. Again, the standing OOC under both the WPA and the Local Wetland Protection Bylaw, will serve as the basis for all other permits and mitigation to be viewed and executed, as long as its preparation is “Performance Standard” based, and not based on emotion.

Should the OOC be appealed under State Jurisdiction, then the appellant(s) would request that a Superseding OOC (SOOC) be issued based on a project and site review by the MADEPSERO. Upon issuance, the SOOC can be appealed to MADEP – Boston. At that point, the Commissioner and staff review the project during an adjudicatory proceeding and then a Final OOC (FOOC) is issued by the Commissioner. Should the FOOC be appealed, that appeal must be made to the Superior Court of Suffolk County which is the jurisdiction where the FOOC was issued. Under the Local Wetland Protection Bylaw, the OOC issued by the ConCom can only be appealed to the Superior Court of Nantucket County, the jurisdiction where the OOC was issued. Typically the courts will wait until the state's jurisdictional appeal process has been completed. In any case whatever the final form that the OOC takes, it will serve as the basis for all other permits and mitigation.

The applicant has correctly identified all on-site jurisdictional resources defined by the WPA and the Local Wetland Protection Bylaw that will be affected by this project. These include:

Land Under the Ocean (LUO) – means all land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction, including estuaries; the nearshore area all being within the municipality and being less than 80 ft at this location.

Coastal Beaches (and Tidal Flats) – or all unconsolidated sediments subject to wave, tidal and coastal storm action which form the gently sloping shore of a body of salt water and include Tidal Flats. Coastal Beaches extend from the mean low water line landward to the dune line, coastal bank line or the seaward edge of existing man-made structures, when the structures replace one of the aforementioned natural features. Tidal Flats are any nearly level part of a Coastal Beach which usually extends from mean low water landward to the sloping portion of the Coastal Beach and can be separated from said beach by LUO.

Coastal Dunes – mean any natural hill, mound or ridge of sediment landward of the Coastal Beach deposited by wind action, storm overwash, or artificial means; and serves the purpose of storm prevention or flood control.

Barrier Beach – means a narrow low-lying strip of land generally consisting of Coastal Beach and Coastal Dunes extending roughly parallel to the trend of the coast, is separated from the mainland by a narrow body of fresh, brackish or saline water or marsh system, and may be joined to the mainland at one or both ends. This includes the stretch of beach segregated from the mainland by Sesachacha Pond as identified by MADEP.

Coastal Banks – mean the seaward faces or sides of any elevated landform, other than Coastal Dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or wetland.

Land Under Salt Ponds – means the submerged land surface beneath a shallow enclosed or semi-enclosed body of saline water that may be partially or totally restricted by barrier beach formation. Salt Ponds may receive freshwater from small streams emptying into their upper reaches and/or spring into the pond itself. Division of Marine Fisheries (DMF) identifies Sesachacha Pond as a Salt Pond.

Land Containing Shellfish – means LUO, Tidal Flats and Land Under Salt Ponds that contain Bay Scallop (*Argopectin irradians*), Blue Mussel (*Mytilus edulis*), Ocean Quahaug (*Artica islandica*), Eastern Oyster (*Crassostrea virginica*), Quahuag (*Mercinaria mercinaria*), Razor Clam (*Ensis directis*), Sea Clam (*Spisula solidissima*), Sea Scallop (*Placopectin magellanicus*), and the Soft-shell Clam (*Mya arenaria*). MDMF Growing Area and Classification Maps for the project area and Sesachacha Pond are also included in Appendix B.

Land Subject to Coastal Storm Flowage – means all land subject to tidal flow or flooding within calculated base flood elevation for the 100-year storm event by FEMA.

Estimated Habitat – are those lands and waters identified as designated habitats, set forth by *MassWildlife* by procedure, that support state-listed species, where alteration of said designated land or water, would have short- or long term adverse effects on the jurisdictional wetland resource(s) and the specific state-listed species in question.

Each of these jurisdictional resources is deemed significant to provide up to eight (8) Protectable Interests. Should any of these jurisdictional resources be affected by project work than it is assumed their assigned Protectable Interests are also impacted. For a project to overcome the assumption that it is impacting said Protectable Interests, it must meet the pre-described Performance Standards under both state and local jurisdiction, and as presented in Appendices B & C.

RESOURCES OF SIGNIFICANCE

The project area supports several resources (jurisdictional, natural, commercial, recreational and seasonal) that have been identified by the applicant and are clearly significant to the Town's Economic, Environmental and the Public health. Several of these resources also have regional significance.

These resources include:

- 1) Commercial Fishing (Inshore and Offshore),
- 2) Recreational Fishing (Surf, Inshore and Offshore),
- 3) Shellfishing (Offshore),
- 4) Public Beach,
- 5) Sankaty Head Coast Guard Light Station,
- 6) Domestic Waste Disposal Site,
- 7) Sand Source for Sediment Transport and far-field Nourishment,
- 8) On-going Beach and Bank Stabilization Projects,
- 9) Existing Endangered Species Habitats,
- 10) Jurisdictional Land and Water Resources.

Items 1-9 are economically significant to the Town as individual uses, attractions or destinations. Therefore as the stakeholder, the BOS should advocate this point at every opportunity, and the need for

their protection or replacement by compensatory mitigation during the project. Less obvious resources also exist such as the aforementioned Sesachacha Pond environment, the nearshore and offshore invertebrate populations, the starved sand resources at the project locus and the effect of that condition on downdrift shores. These must also be a concern of the BOS.

As an example and according to Nantucket (2006)¹, Sesachacha Pond has clearly been identified as a significant environmental asset of the Town. The Town has invested in managing and making sure that the salt pond condition remains healthy as a salt pond. Even as the natural order would have the ecology succeed to something other than a salt pond. As a stakeholder, the BOS must assure that the applicant address this issue and make sure that the project does not adversely effect the pond management strategy and the ability to assure that the bi-annual openings will continue unabated.

The ConCom as the local regulator, in concert with Federal and State regulators must regulate against adverse effects to any of Items 1-9, as they are protectable, and the project must meet those specific Performance Standards or F&V to the best of their ability protect those resources. Again, please refer to Appendices A-C, to view those Performance Standards and F&V that must be addressed.

Sections 3 and 4 of Attachment A in the NOI present a detailed description of the biological and jurisdictional resources that exist at the site.

Finfish exist in the nearshore and borrow site areas. Both of these areas are reported by the applicant to be high energy areas relative to wave and surf action. Schooling pelagic baitfish and predators typically aggregate in the eddies, between the high energy environments just off the surf zone. Demersals and ground fish typically aggregate in the deeps adjacent to shoal waters. Fish will also tend to aggregate at outfalls or stream mouths discharging to the sea. The sampling protocol and results that represent existing conditions appear to be reasonable and expected. The shoreline along southeastern Nantucket functions as a primary migratory pathway for adult fish moving along the coast. The species lists including percent occurrence, Count Per Unit Effort (CPUE), egg and larvae sampled, and months present indicate a typical nearshore Finfish resource expected in the northern extreme of the Mid-Atlantic Zone (zonal boundary extending west from Chatham, MA along the Connecticut shoreline to New York; and from Chatham, MA offshore to the east. Winter Flounder (*Pleuronectes americanus*) as expected is a species of specific attention.

The Nantucket Shoals is an area of shoal waters and deeps. Where these conditions exist, rips or short jets of surface current over sub-tidal breaks in elevation occur. Rips serve to concentrate baitfish and predators. Several have been identified by the applicant and the fisherman (e.g. Bass Rip and Quidnet Rip) and some exist without specific designation, but do attract fish.

The Surf Clam is the dominant shellfish of the project area and supports a commercial fishery. The predominant fishing methodology appears to be bottom draggers. As part of their fishing operations, these draggers stir up the benthic sediments and more than likely cause some level of turbidity in the

1 Town of Nantucket. 2006. Sesachacha Pond Annual Report 2005. Marine and Coastal Dept. K. Conant, March 2006.

offshore waters proximal to the borrow area during ambient conditions. Therefore, the biological resources present should have some level of tolerance to temporal, low-level turbidity. The applicant reports several other bivalves may be present in the nearshore and borrow area and include: Soft-shell Clam, Quahuag, Eastern Oyster and Blue Mussel. These are more inshore species and would not be expected as being significant species in the project area. Several other motile macroinvertebrate (molluscs and arthropoda) exist at the nearshore and borrow areas.

Ichthyoplankton and benthic infauna provide the basis and primary trophic levels in the aquatic food chain. Their displacement or disturbance may require higher predators (finfish and shellfish) to temporarily or permanently relocate to other feeding grounds.

Several areas of Cobble Bottom have been identified in the NOI, and represent patches of varied bottom profiles and cover material set on coarse sediments. Their presence is more likely due to scouring by tidal currents and wave action, and the starved nature of the shoreline due to the lack of sediments present or available at this time. Such variation in cover provide opportunity for varies benthic communities, fouling by algae and macrofauna to colonize, and is attractive to foraging fish.

Certain locations within the project area provide nesting and brood-rearing habitat for the Piping Plover (*Charadrius melodus*) and the Least Tern (*Sterna antillarum*), both being state-listed species and the former also being a federally-listed species. Both nesting above the High Tide Line (HTL) on broad coastal beaches with gently-sloping fore dunes and blowouts between and behind the dunes that have also been overwashed by storms. Dredging operations at the borrow site should not adversely affect waterbirds since there is minimal habitat present and proximal alternative feeding locations are abundant.

Section 7 of the NOI – Attachment A provides the applicants presentation as to how the project meets Regulatory Compliance. These should be reviewed in the context of the perceived intent of both the WPA and the Local Wetland Protection Bylaw.

ANTICIPATED IMPACTS AND CONCERNS

The project as proposed will cause several unavoidable direct and indirect impacts and have been categorized as follows:

Construction Impacts are those impacts caused by the mechanical implementation of the project. The major impact of concern in any dredging or nourishment project is the physical displacement of resources either by the removal or deposition of material. As stated in the NOI, approximately 550+/- ac of biological and jurisdictional resources are to be involved with the first phase of dredging and material deposition along the project area. Of concern here is that the project application requests an initial dredging phase from an identified borrow area and the resulting placement of the dredge material on the nearshore area of Sconset Beach; and a second phase of re-nourishing of Sconset Beach in approximately five (5) years with dredge material from an as yet to be identified borrow area. Therefore, increasing the quantified area of displacement substantially; allowing an additional project to go forth without the benefit of knowing whether the first project was conducted and performed in a successful manner; or did it cause unanticipated or unintended consequences.

Should the Town support the project, a condition of approval should be that the project should be “bracketed” to approve only the first dredging and nourishment phase of the project, then conduct an extensive monitoring program to determine the success of the nourishment program, the extent of recovery from any realized unavoidable construction impacts, and the ability of the overall mitigation program to protect from and/or compensate for any realized and unavoidable permanent impacts. The latter to be discussed later in this section.

In addition to the actual removal and deposition of material on resources, turbidity plumes arise during dredging and disposal of material. One of the areas of displacement occurs within the field of the plume itself, as it migrates and dissipates. As materials fall out of suspension they settle on the bottom covering and potentially smothering immobile bottom resources. Thin veneers of fine particulate material, as well as measurable thicknesses of coarser material can alter bottom conditions within the plume footprint. Coarser particles will fall out of suspension closer to the source of the plume than the fines and the silts. It is understood that there are very limited fines in the source materials discussed for this project.

Lastly, displacement can occur by avoidance. This is typically temporal and is a behavior of motile species that inhabit or transit a proposed project area. Each species has its own flight threshold, or tolerances to stress and/or activity. Many species with short flight tolerance will move away to other more suitable and available habitat relatively quickly. Other species with longer flight tolerances will wait until they sense physiological stress before they leave (e.g. stressed respiration or light deprivation).

Entrainment occurs when organisms (motile or non-motile) are drawn into the dredge head during active dredging. Ichthyoplankton, shellfish and benthic organisms are at the greatest risk of entrainment; while larger more mobile species and life stages will avoid the dredge.

The proposed construction window should be of great concern to the BOS. The applicant proposes work to occur during the period commencing at the end of May and extending through November. Their rationale for this schedule includes:

1. Meteorological and oceanographic conditions are prohibitively dangerous during the winter season,
2. Allows for a breeding window from February to the end of May for the Winter Flounder, and
3. Due to the project size, the proposed six (6) month project duration is necessary.

The BOS needs to address several key elements of their needs and responsibilities in determining whether the applicant’s schedule is in the Town’s best interest. Several issues to consider include:

The first half of the proposed construction window occurs during the height of the tourist season

on Nantucket, and the height of resource usage and activity.

- Greatest concentration of population and traffic on the island,
- Heavy fishing period (commercial and recreational) at the locus,
- Heaviest beach usage potential at the locus,
- Potential impacts to municipal infrastructure access and function during the height of the season.
- 24 hour/7 day a week production schedule (heavy construction) during seasonal property owners occupancy of abutting homes or renter occupancy of abutting homes (noise and aesthetics), no all Siasconset residents are members of SBPF, and
- Area limitations to land-based equipment mobilization/demobilization, maintenance and movement due to increased island traffic and restricted island access (e.g. available dock space and/or ferry access).

In addition, the first half of the proposed construction window occurs during the height of the following:

- Biological resource production (land and water) along the Northwestern Atlantic shoreline,
- Spawning of many other marine species, other than the Winter Flounder,
- Nesting and brooding of two (2) state – and one (1) federally listed species,
-
- Height of the northern migration of various finfish populations to the region, and
- Greatest nearshore population of motile shellfish and crustacean to the nearshore.

As a general rule when establishing construction windows, regulators attempt to address the localized environmental issues over economic issues within reason.

The applicant states that conditions during the winter are “prohibitively dangerous” to conduct offshore dredging. It is agreed that winter conditions are more harsh and difficult to contend with; however, the limited number dredging companies capable of conducting this work, are well-experienced in dredging during winter conditions since most dredging work occurs during the fall, winter and spring throughout the region. While their proposed schedule attempts to avoid the winter storm season it overlays the New England hurricane season. Hurricanes and tropical storms may ravage the project area with the same frequency and intensity as nor’easters. Aside from temperature and some winter surf conditions as variables, southeastern New England appears equally susceptible to major coastal storm events in all seasons. Problems arise due to interruptions in work due to weather events, and these operators have protocols for demobilizing and securing projects during short-termed climatic episodes, and returning to operations rapidly. Climatic interruptions tend to be more of an economic issue to the applicant, then a scheduling issue.

The required project period (6 months) is not at question as part of this analysis. Should the

proposed construction window be permitted, then temporary cessation of work should be required over the three (3) major summer holiday weekends.

Navigational concerns have been raised by representatives of the charter and commercial fleets as the project is proposed to be conducted during the height of their season and in the same waters that they fish. Concerns included project activities concentrated near the “rips” that are fished, and the temporal navigational restrictions/limitations placed over “already” restricted fishing grounds and fishing periods. A protocol, schedule and piping layout plan should be developed for review and consensus prior to project implementation. Every effort should be made to place offshore equipment and piping in limited locations and corridors. On-shore discharge point can move with the need as they will have no effect on offshore navigation. Fewer offshore locations and corridors can more easily be documented and marked with the approval of the Harbormaster and/or the U.S. Coast Guard.

Permanent impacts are those irreversible changes caused by the project itself; after all of the construction is completed.

As has been discussed, several biological and jurisdictional resources will be unavoidably altered by the project. These alterations will include partial to total resource displacement, and interrupted or impaired resource function and/or performance. The applicant requests authorization of multiple work phases without presenting any additional borrow sources, and without any observation or monitoring to determine the success of the nourishment program, the extent of recovery from any realized unavoidable construction impacts, and the ability of the overall mitigation program to protect from and/or compensate for any realized and unavoidable permanent impacts.

In addition, when shorelines are actively managed, they require continued management. Beach nourishment is not permanent; it is a temporary fix that requires on-going and future nourishment operations and management. Several questions need to be addressed at the outset, but are not limited to:

1. Cumulative impacts will occur during multiple phased projects, as is the case here. However, the applicant does not offer much if any discussion on what is anticipated, or how cumulative impacts will be monitored in the future.
2. What is the duration of the applicant’s (SBPF) funding stream for the continued future management and nourishment of Sconset Beach ?
3. Should SPBF dissolve as an entity, who or what will replace it as a successor ?
4. Should there be no successor be identified, as the property owner, is the Town of Nantucket required and/or willing to accept the responsibilities/costs for future work ?
5. Should there be no successor identified, and should the Town of Nantucket authorize

such work on their property, do they become legally obligated or responsible for future work, or costs associated with rectifying impacts ?

6. If the answer to Question 3 is no, than is it worthwhile to permit such an aggressive and expansive program to stabilize Sconset Beach, or to incur the anticipated and unanticipated impacts, with future management or success in question ?
7. In addition, aside from beach nourishment, are there other less encompassing soft (non-structural) practices that can be employed at the site, understandably practices with lesser levels of success, to offset the proposed and anticipated impacts of the applicant's "Preferred Alternative"

Cumulative impacts are those permanent impacts that are associated with all aspects of the project, can occur anywhere that is associated (tied to the project or project area in some way), and compound over time. The applicant needs to propose how these will be monitored and how their negative effects will be offset.

PROPOSED MITIGATION

As the Town deliberates as a "stakeholder" and as a "regulator", consideration must be given to the proposed mitigation program offered by the applicant. They also understand the cost/benefit relationship of the project. Section 6 of Attachment A of the NOI presents the current mitigation package offered by the applicant to offset anticipated unavoidable impacts. These include:

1. The applicant proposes a construction window (Late May to November) that provides them with the required project duration, favorable climate (potentially), and avoids the spawning period of the Winter Flounder. Is this the best timing for the Town and the environment ? Pushing the schedule back three months appears to be better for the Town and better for the environment as a whole, and would still meet the applicant's and avoid Winter Flounder spawning.
2. The applicant offers to harvest Surf Clams, assumed to be from the borrow area since the text does not specifically identify the harvest area; then to relay and transplant sub-legal sized clams to other local suitable shellfish habitat on Bass Rip, and to bring all legal shellfish to market. A future re-seeding program in the borrow area should also be considered.
3. To offset the loss of cobble bottom habitat, the applicant offers a plan to construct one or more offshore artificial reef sites to expand the acreage of, and increase the amount of hard bottom substrate in the area. While new and controversial in the northeast, many successful artificial reefs exist all over the world. When planning these resources, especially as compensatory mitigation for lost jurisdictional resource, regulators tend to over think the design. Simply put, an artificial reef is any natural or unnatural material

placed in a subtidal environment that attracts fouling organisms, and creates a self-sustaining patch community or ecology.

The applicant is proposing to provide 59+/- acres of hard substrate mitigation at various locations as depicted on Figure 6-1 of the NOI package. Each location will provide for 20+/- acres of hard substrate. This mitigation is to offset those impacts to finfish resource due to construction impacts and temporal recovery periods, and permanent losses of existing hard substrate habitat. The applicant suggests that the benefits to be realized include:

- Increasing Overall Habitat Diversity,
- Increasing Regional Habitat Diversity,
- Enhancing Recreational Fishing Opportunities, and
- Increasing Scientific Understanding of Beach Nourishment and Artificial Reefs.

Consideration must be given to the type and composition of materials used. A combination of natural and man-made materials should be considered. As stated in the NOI, care should be taken relative to the chemical properties of the man-made materials used (e.g. concrete), especially pH. Siting and placement issues, along with deployment and anchorage systems must be addressed and well thought out. Depth and wave climate are critical to appropriate siting. Improper design and anchorage can cause these systems to be torn apart, displaced, with component material(s) transported to inappropriate locations.

4. A Marine Protection Observer has been suggested by the National Marine Fisheries Service (NMFS) to be stationed on the offshore working platform (the dredge) to monitor routes between the borrow site and the nourishment area to prevent ship strikes, during construction activities observe the borrow and nourishment sites for the presence of protected species, and monitor dredge material and document any entrained organisms taken on board.

In addition, a third party construction observer(s) should be required to be stationed on-site to monitor all construction operations and assure that all permit conditions and approved operational performance standards are met. Should a condition or approved performance standard be violated, that person should have the authority to shut down operations until the problem is resolved.

5. The applicant will monitor during both the construction and post-construction periods to document/verify the project area recovery from habitat related impacts. Proposed monitoring will include:

Construction Period

- Turbidity, and

- Finfish response.

Post-Construction Period

- Cobble coverage in the nourishment area, and
- Re-colonizing of the Project Area.

Monitoring protocols and results should be reviewed by the Town or any authorized representative.

6. The applicant is open to discuss financial compensation with the fishermen should they demonstrate a material financial impact has been caused on their businesses, by the project.

An essential part of any dredge project is the development of a **Dredge Management Plan (DMP)**. Typically, DMP's are prepared by the selected contractor to address the conditions of all applicable permits. However, there is precedent here in New England (e.g. The Boston Harbor Navigation Improvement Project), for complex and/or large-scale dredging projects, where the applicant prepares a DMP as part of the permitting process. This allows all agencies and interested parties to have an opportunity to review and publicly comment on the actual operational manual to implement the project, as part of the permits. The DMP will clearly establish all procedural elements and contingencies to complete the project in full conformance with all regulatory requirements. While much of the information required has been presented throughout the FEIR and the NOI, it must be organized into a clear operational plan. The development of the DMP should occur as part of the permitting process and should be referenced as one of the documents of record in each permit. The DMP should identify and address several key issues including but not limited to:

1. The extent of the proposed dredging footprint(s), including future borrow sites,
2. All regulated resources within and adjacent to the dredging area,
3. Quantity of material to be dredged by each project phase and in total,
4. The dredging methodology and operational and mitigation protocols to be employed,
5. Detail all sedimentation and erosion controls to be implemented,
6. The location(s) and method(s) of disposal,
7. All mitigative measures to minimize impacts,
8. A health and safety plan to protect the workers and the public at large (curiosity seekers),
9. Crowd control measures at the nourishment site (curiosity seekers),

10. Nourishment projects attract many birds (typically scavengers) at the discharge location(s), a bird control plan becomes essential since their presence and concentrations cause undesirable affects to the site and its surroundings,
11. Description of all safety contingencies, safety and informational signage,
12. A list of all responsible Personnel and Superintendents on-site during all operations, with their qualifications and their individual contact information.
13. A list of specific operational and construction performance thresholds,
14. Project equipment requirements including pieces of equipment required, fueling, maintenance and containment procedures, and
15. Emergency notification procedures (small island with limited resources).

A copy of which should be at every work station throughout the project; given to all personnel associated with the project; and be on file with all local officials, public safety personnel, the Harbormaster, and the U.S. Coast Guard. A copy of the plan should be included as part of the Construction Documents and Bid Specifications during the Contractor Solicitation Process. The selected contractor should augment company specific information as appendices to the DMP. Given the potential extended project life, the DMP should be periodically updated as project elements or conditions change.

SUMMARY OF KEY RECOMMENDATIONS

The BOS has the responsibility to represent the interests of the Town, its constituency and its departmental operations; as defined in its “Mission Statement” and “Goals and Objectives”. Several issues have been discussed herein that fall within the BOS role as a “Stakeholder” and need to be addressed during the upcoming publicly and/or legally noticed regulatory processes.

In summary, these key issues are listed again for your consideration.

1. Are the reported quantified surface area impacts of coastal resources acceptable to the Town knowing that future project phases will cause added, yet unidentified surface area impacts, and/or cumulative impacts ?
2. Has the applicant avoided all impacts where practicable, or have they minimized and mitigated those unavoidable impacts, to the greatest extent practicable unavoidable impacts?
3. The BOS should be noticed and copied on all matters related to this project.
4. Is the BOS willing to accept any responsibilities, potential liabilities and cost for future operations and management of the program, should it be necessary ?
5. The BOS should charge the Town’s legal council to prepare documents to indemnify and hold harmless the Town from any legal responsibility associated with construction, permanent and cumulative impacts caused by the project.
6. The BOS should comment and raise concerns when it is determined that the project may adversely affect any portion of the Town.
7. The BOS may want to consider extending this, or hiring an existing third party peer consultant to serve as a technical advisor throughout the construction and post-construction phases of the project.
8. The project must adhere to, or be granted waiver from adhering to all required jurisdictional resource functional and performance thresholds.
9. The ConCom has a critical role in drafting an OOC that is fair, yet sets the tone for all other permitting under State and Federal jurisdiction. Permitted activities and impacts should be governed all relevant performance standards and/or threshold limits.
10. Several significant environmental and economic resources exist in the offshore and nearshore project areas, and special concerns should used in considering the protection of, or mitigation for these resources.
11. Consideration must be given to establishing an appropriate construction window that is

workable to all concerned.

12. The development of an approvable and amendable Dredge Management Plan as part of the permitting process is recommended by TGG.
13. Navigational concerns need to be vetted through the applicant, the marine community and the boating public; and the resulting actions should be clearly spelled out by the Harbormaster and U.S. Coast Guard.
14. Should any, or all elements of the proposed mitigation fall short of reasonable expectation to protect and compensate for impacts or resource losses; reasonable and additional mitigation (construction and compensatory) should be required; and the applicant or any successor fail to complete the work, then a pre-negotiated compensation fund shall be provided by the applicant and held in escrow, to guarantee that critical mitigation be completed; as a condition of all resource based project permitting.
15. Lastly, if approved, the project should be **“BRACKETED”** to a single dredging and nourishment phase until suitable monitoring and observational information confirm the predicted success of the project and the resulting mitigation.

Hopefully this narrative will assist the BOS in understanding and being proactive throughout the project. The Town and its citizens look toward the BOS for leadership and guidance throughout the project. This narrative should also support the needs of Applied Technology and Management, as part of their overall review. Please contact me for any questions that you may have. Thank you for your time and consideration and the opportunity to participate in the project.

Respectfully,
THE GARRETT GROUP, LTD.

Marc J. Garrett
Principal Investigator

appendices

ATTACHMENT 2

REPRESENTATIVE CONSTRUCTION PHOTOGRAPHS

The following photographs are representative of typical beach nourishment operations and were taken in April 2007 in Indian River County, Florida. They are presented here for informational purposes and to provide a better understanding of the elements that would be required for project construction. This project consisted of the placement of approximately 300,000 cubic yards of material from an offshore shoal sand source. A combination of two hopper dredges was utilized.



Figure 1. Upland Beach Access/Staging Area. This site is representative of the staging area required at the beach access site. Fuel delivery activities are occurring in the photo. Pipe sections are also visible in the background.



Figure 2. Close-up of Stockpiled Beach Pipe Sections. Pipe sections are typically 40 feet long by 30” diameter and are generally stockpiled in strategic locations for use on the beach. Typically 6 sections of pipe can be transported by flatbed truck and an end loader is required to move the pipe.



Figure 3. Beach Discharge Location. Note security fencing in foreground. Equipment and pipe storage and staging is present. Discharge occurs in the vicinity of the two bulldozers.



Figure 4. Close-up of pipe discharge. The two bulldozers are required to grade the placed material, direct the discharge, and maintain the construction dikes. These operations occur 24 hours per day, 7 days per week.



Figure 5. Discharge Pipe Beach Landing. The submerged pipeline from the dredge extends up the beach and is connected to pipe sections that extend down the beach as construction progresses. The beach shown in this photo was constructed from the dredge material.



Figure 6. Hopper Dredge and Pumpout Booster. The pumpout hook-up is located in the nearshore in water depths sufficient to allow the dredge to hook to the discharge pipe. In this case a booster pump on a jack-up barge is utilized to extend the range of the pumpout discharge. This dredge (*The Dodge Island*) has a hopper capacity of 3,600 cubic yards. Active pumpout is occurring within the photo. Note the presence of turbidity within the immediate nearshore.



Figure 7. Finished and Graded Beach Face. Note the construction/discharge operation in the background and the grade stake in the foreground.

ATTACHMENT 3

FEIR TECHNICAL REVIEW

FEIR Technical Review

The following provides a critique of key elements within the FEIR technical documentation. As stated within the report body the FEIR effort as a whole is to accepted standards, and the critique provided here does not alter the fundamental conclusions or project design.

Grain Size Compatibility (Section 4.1.1) – The document provides mean estimates of native and borrow area grain size and percent silt. Additional statistical data, specifically the median grain size would be useful in evaluating grain size compatibility. Given the presence of cobble/pebble within both the borrow area and native sand, the use of a median statistic is likely more appropriate. The coarse fractions may skew the mean determination that is representative of the sand fraction. Sediment distribution curves would be helpful in evaluating geotechnical characteristics.

Physical Monitoring Surveys - The physical monitoring protocol prescribes a survey out to a minimum depth of -30 feet. Given that the proposed depth of closure is -26 feet, an offshore extension of the profile is warranted to ensure full closure of the profile. This should be prescribed in terms of a minimum depth and a minimum distance offshore to ensure that the full active profile is covered including any shoal interactions. The current protocol calls for profiles over a five mile lineal extent. Given that the project is on the order of three miles, this represents an approximate extension of monitoring on the order of one mile to the north and south of the project. This distance is insufficient to capture the full, long term impact of the project on adjacent shorelines and should be expanded to cover the entire impacted littoral cell. The density of profiles can be reduced with distance from the project, but a good pre-project baseline across the entire littoral cell is required to fully assess project impacts.

Model Calibration - Model calibrations for the wave, transport, and shoreline modeling components have not been provided. This limits the ability to fully assess the predictive value of the models. While the availability of data to calibrate the models may be limited, the calibration process is critical to model development and should be fully presented within the model analysis. Un-calibrated or poorly calibrated models do not provide the same level of certainty that a well-calibrated model provides. The design cross-section is based on SBEACH modeling which can be very sensitive to the choice of model calibration coefficients. Shoreline modeling (both GENESIS and Delft 3D) require calibration coefficients that strongly influence model results. Review of the shoreline modeling further emphasizes this concern within the area of Codfish Park. Available data indicate significant accretion within the vicinity of profiles 83 and 84. This accretion trend is not represented within either modeling effort and the models suggest an erosion trend in these areas. As these models are presented as support for the project performance, the ability of the models to adequately replicate erosion and accretion trends is central to their application in support of project performance.