November 12, 2013

Mr. Ernest Steinauer, Chairman
Nantucket Conservation Commission
2 Bathing Beach Road
Nantucket, MA 02554

Re: Baxter Road Conservation

Dear Chairman Steinauer and Members of the Conservation Commission:

Thank you for all of your effort in working towards a solution for protecting Baxter Road from further erosion this winter season. We are hopeful that you and your fellow commissioners will unanimously approve the installation of a geotube at the toe of the bluff in the most threatened areas of Baxter Road in tomorrow night's meeting. While many of us are not on-island to attend, we will be following the outcome very closely. The current design represents an environmentally accepted "soft solution" that has been used in many coastal communities throughout New England and Mid Atlantic states. It will be closely monitored, and it can readily be removed if adverse impacts are observed.

New Jersey, Florida, Maryland and California spend hundreds of millions annually to protect their coastal communities. There is no "one size fits all" solution; different applications have been used in various coastal environments. Nantucket's coastal problems are not unique, and neither should be our responses. ***Geotubes have been proven effective throughout the east coast of the US, including post Super Storm Sandy*** (see attached). With the strong support of the Town's Board of Selectman, we ask that you and your fellow commission members work expeditiously and constructively with the Town staff to implement this Town co-sponsored project in the days ahead. Time is critical with winter season upon us.

Our project has the benefit of using private dollars to protect a Town of Nantucket asset from erosion on a remote beach***. Failure to approve this project will likely result in the collapse of Baxter Road, which will be at a significant cost to Nantucketers***, and will only increase over time. A collapsed road will also serve as a costly precedent for the Town, and the Commission will have missed an opportunity to try an environmentally sound alternative. We encourage you to prevent this from occurring on your watch as Commission Chair.

Mr. Chairman, it is up to you to show leadership on this issue and approve a project that can help solve future coastal problems for the Town, and its assets. Other towns have taken steps to permit projects (see attached letter from Town of Southampton) to battle erosion, we remain hopeful that the Town of Nantucket is not an "outlier" in addressing a widespread problem.

Respectfully submitted,

Northern Baxter Road Homeowners

David & Dorothy Bailey	Elizabeth Claudy	John DeAngelis	Martha Lyn Dippell
Steve & Erin Freeman	Sam & Ann Furrow	Daniel Korengold	Bill & Marilee Matteson
Margaret McQuade	Patrick & Molly Ryan	James & Deborah Walker	Alexander & Laurie Webb III
The Judy Family	Loretta Yoder		

Geotube technology protects New Jersey shoreline from Hurricane Sandy

At the end of October, 2012, Hurricane Sandy hit the Caribbean area and subsequently the eastern coast of the United States with devastating force. Sandy claimed dozens of lives and caused damage amounting to $30 billion. TenCate Geotube® containers had been placed in the dunes in parts of the coast of New Jersey, which restricted the erosion of the shoreline there.

To help with dune restoration, dune dikes with TenCate Geotube containers were constructed along the New Jersey shoreline, starting in the 1990s. In 2010, a total of 1.47 km of these containers had been installed. This afforded places such as Ocean City, Sea Isle City, Beach Haven and Atlantic City optimal protection against hurricane forces. No needless precaution, as it turned out recently. The tubular containers in the row of dunes managed to withstand the pounding waves that buffeted the coast as Sandy struck. The tubes lived up to expectations, even though part of the dune was washed away.

In September, 2008, 5m-high waves generated by Hurricane Ike, one of the predecessors of Sandy and Isaac, which also hit in 2012, ravaged the coast of Galveston, Texas. The damage remained reasonably restricted thanks to the row of Geotube containers along the shoreline.

Ocean City's beach after Hurricane Sandy.

Hurricane Irene hit the East coast in August 2011; containers installed at Beach Haven and Ocean City held up and protected properties.

TenCate's long history with marine construction and shoreline protection applications started with the development of nylon bags just after the major flood disaster that hit the south-west of the Netherlands in 1953. This catastrophic event killed 1,850 people, destroyed 4,500 houses and left 100,000 people homeless. Where other companies in the region decided the future still lay in cotton and other traditional fibers, TenCate accepted the challenge posed by the Dutch authorities and developed a technical textile for use in marine structures.

For more information, E-mail: j.mckay@tencate.com

ANNA THRONE-HOLST
Supervisor

TOWN OF
SOUTHAMPTON
116 Hampton Road, Southampton, NY 11968

Telephone: (631) 283-6055
Fax: (631) 287-5708
athrone-holst@southamptontownny.gov

September 27, 2013

Jeffrey Blau
c/o The Related Companies
60 Columbus Cir FL 19
New York NY 10023

RE: 313 Dune Rd

Dear Beach Erosion Control District Property Owner,

The beach renourishment project for the Sagaponack, Bridgehampton and Water Mill shoreline is now underway! Equipment and personnel from the Great Lakes Dredging Company have begun arriving in the area, and it is anticipated that actual sand placement will begin by mid-October.

In order to keep you informed about what to expect during and after the construction phase, please find enclosed a series of fact sheets prepared by the project designers at Coastal Science and Engineering.

This information will also be posted on the Town's website at www.southamptontownny.gov/becd along with routine updates on the construction schedule.

If you have any questions about this information or the project in general, please do not hesitate to contact my office at 631-283-6055.

Sincerely,

Anna Throne-Holst
Supervisor

FACT SHEET #1 — Scale, Schedule & Milestones

The Town of Southampton, in coordination with the Erosion Control Districts (ECD) of Sagaponack and Bridgehampton–Water Mill, has received permits and bids to complete a major beach nourishment project between September and December 2013. This is the first of a series of Fact Sheets that outlines the scope and schedule of the project and discusses how the beach will be widened. Fact Sheets also discuss impacts of construction and future changes to expect along the oceanfront.

Where is the project?
The project will extend from Townline Road (Sagaponack) to the Town beach at Flying Point Road ~½ mile west of the entrance to Mecox Bay. **Total Length: 5.7 miles**

What is the cost of the project?
The Town received bids on July 10, 2013. Based on the fixed construction budget of approximately $22,143,000 established by referendums at each ECD and the Town's matching funds, a total of ~2,573,000 cubic yards will be placed along the beach. The volume of sand that can be accomplished within budget is about 20 percent greater than the Town anticipated, prior to the referendums, due to favorable bids.

What will the project do?
The project will widen the beach an average of 75–100 feet by adding new sand to the beach zone. Sand will be obtained from a deepwater area one mile offshore. Initially, the constructed beach will be built wider than this average so as to control the sand placement. Waves and tides will then reshape the profile of the beach, shifting sand toward the dune and a significant volume to the outer bar as illustrated below. After the profile "equilibrates," the new beach will change with the season much like any natural beach.

How does the size of the project compare with previous beach rebuilding efforts east of Shinnecock Inlet?
Records show there have been ~14 nourishment events along Southampton and Easthampton beaches since the 1940s, totaling ~2.9 million cubic yards. The Town's project will nearly equal the sand volume of all prior events in the region.

When will construction begin?
The contractor started mobilization around 20 September and will need 2-3 weeks to assemble personnel, equipment, pipeline, and supporting vessels to the job site before the dredge can begin work. We now anticipate the earliest sand placement along the beach will occur during the week of October 14th.

How long will it take to place ~2.5 million cubic yards on the beach?
About three months. This will depend on weather and the number of dredges used. A rough guide for production by one ocean-going dredge is 1 million cubic yards per month for the type of sand and pumping distance from the borrow area to the beach. If significant weather delays occur, the contractor has additional dredges available to supplement construction.

What is the life expectancy of the project?
Over ten years under normal conditions. The historical sand loss rate has averaged about 4 cubic yards per foot of shoreline per year. The project will add an average of ~85 cubic yards per foot of shoreline. If we assume, conservatively, the average erosion rate increases after the project by 50 percent to ~6 cubic yards per foot per year, then at least 30 percent of the nourishment sand will remain after ten years. The lost sand will have migrated west and east, helping reduce the average rate of erosion along neighboring villages.

Given the limited historical survey data available for the project area, predictions of longevity are uncertain. That is why the Town is committed to measuring how much sand remains in the project area each year. The results of annual surveys will be posted on the Town's website for independent review and judgment.

The Town will not know the schedule for sand placement along specific properties until the project is underway. A tracking map of the oceanfront will be available on the Town's web site to assist homeowners in determining the approximate week to expect work in a particular section of beach.

KEY DATES

10 July	*The Town received bids from two dredging companies. Great Lakes Dredge & Dock Company (GLDD—Oakbrook Illinois) submitted the lowest bid. The bid was ~3 percent below the engineer's final project estimate.*
3 August	*The Town received the federal permit which was the final regulatory requirement to implement the project.*
5 August	*The Town awarded the contract to GLDD and is awaiting performance bonds and related contractual documents before issuing a Notice to Proceed with construction.*
15 August	*A pre-construction meeting convened at Town Hall with representatives of the Town, contractor, and project engineer.*
1 September	*Earliest date permitted by the State of New York and US Army Corps of Engineers for construction activities. Note: The contractor is finishing a project in Coney Island during the month of September and began mobilizing support equipment to the Southampton in late September for a construction start in mid-October.*
31 December	*Latest date allowable for construction under the contract with the Town.*

Following is a link to results of annual monitoring two years after the Nags Head (NC) nourishment project: [http://www.nagsheadnc.gov/vertical/sites/%7BB2CB0823-BC26-47E7-B6B6-37D19957B4E1%7D/uploads/NH_BeachConditionSurvey-Memo(07-26-2013).pdf].

— The next Fact Sheets discuss the specific dredging operations and impacts of construction. —

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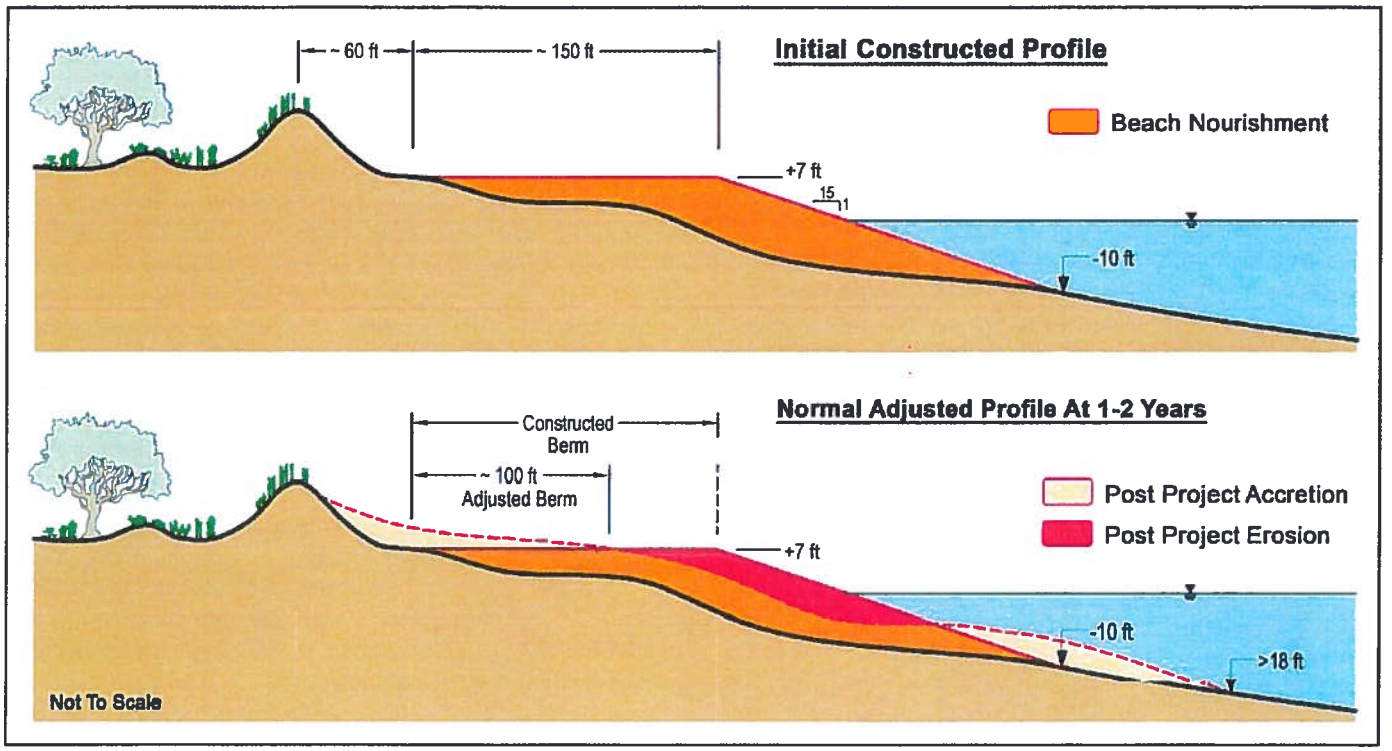


FACT SHEET #2 — Beach Nourishment Operations

Beach nourishment is simply the addition of quality sand to the beach for purposes of widening it and replacing sand that has been lost over time. The Sagaponack—Bridgehampton–Water Mill project will be constructed using ocean-going dredges that pump sand from an offshore "borrow area" directly to the beach. This is generally considered to be the most efficient and least disruptive method for rebuilding beaches. Fact Sheet #3 describes the dredging operation and associated shaping of the new sand on the beach. Fact Sheet #4 discusses how the project has been designed to minimize adverse environmental impacts.

What type of dredge will be used?
The contractor (Great Lakes Dredge & Dock Company — GLDD) plans to mainly use the cutter-suction dredge, *Illinois*. The *Illinois* is ocean-certified by the US Coast Guard and one of only a dozen or so dredges in the United States that are licensed to work offshore.

How do dredges work?
Cutter-suction dredges anchor over a borrow area and lower a "ladder" supporting the drive shaft for a 12-foot-diameter cutterhead and an intake suction pipe. The dredge swings side to side by means of anchor cables and winches while the cutterhead spins, mobilizing the sand. Hydraulic pumps suction the sand/water slurry off the bottom and send it shoreward through a 30-inch-diameter pipeline.

How will the sand reach the beach?
GLDD will place long sections of steel pipe on the ocean floor between each of the three borrow areas permitted for the project. The landward end of the "submerged" pipe will terminate at the edge of the dry-sand beach. A "Y-valve" will be attached at that point and used to control the direction of flow. Sections of steel pipe 40 feet long will be attached to the valve and directed along the beach. A sprayer head will be placed at the end of the "shore" pipe to distribute the sand slurry over a wider area. Depending on the locality within the project area, the nourishment sand will have traveled between about 1 to 3 miles from the underwater borrow area to the discharge point.

How will the sand be shaped?
The slurry of sand and water will discharge parallel to the shoreline in the vicinity of the low-tide mark. Sand will settle rapidly while the water and fine particles will mix with the water column. As sand mounds around the pipe end, bulldozers will shape it to the natural contours of the beach. Personnel onshore will use reference stakes and electronic survey systems to control the shape and dimensions of the project. As sections are completed, more lengths of pipe will be added.

Will construction proceed continuously along the beach?
No. The size of the project requires multiple "landing points." Work will proceed in one direction from a given landing point for several thousand feet. Then the shore pipe will be removed, and work will proceed in the other direction from the same landing point. When all work planned for a particular landing point and pipeline length is complete, GLDD will temporarily stop pumping sand and relocate the submerged pipeline to a new landing point. Because work proceeds from multiple landing points, there will be temporary gaps as construction progresses between completed sections and the active work area. This is the main reason the Town of Southampton cannot alert property owners well in advance of the expected date of nourishment along a particular property.

What will be the normal area of impact each day?
The main area of activity on the beach will be a 300–800 ft corridor around the end of the pipeline. A backbeach strip of dry sand will be accessible to beachgoers for uninterrupted walks along the beach. However, for safety reasons, the construction area will be cordoned off, and a safety inspector will be stationed to alert beachgoers. As the nourishment progresses, completed sections will be reopened and usable immediately. The security area will shift with the discharge point. Lengths of shore pipe necessarily will remain in place over the new beach while a particular reach is constructed. The contractor will provide frequent sand ramps over the pipeline so beachgoers can enjoy the rest of the beach.

A time-lapse video of the Nags Head (NC) beach nourishment project illustrates the "roll-out" of a new beach at one locality over a 24-hour period (http://www.youtube.com/watch?v=tGs-OUIi9js).

— The next Fact Sheet discusses the impacts of construction. —

FACT SHEET #3 — Impacts of Construction

Beach nourishment is disruptive. However, the community may be surprised to see how rapidly such projects can be completed and disruption minimized to beachgoers and the environment. This Fact Sheet discusses some of the frequently asked questions about impacts.

How long before the new beach can be used?
Immediately upon removal of the construction flags and safety fence from the active work area. Tests show there is negligible mud in the planned borrow area. The new sand will settle and drain rapidly, leaving a usable beach that will adjust to waves and tides just like a natural beach.

Will construction activities occur at night?
Yes. Construction will run 24–7 so as to maximize the production and efficiency of the dredge at considerable savings to the community. Nighttime construction can be seen in the time-lapse video of the Nags Head (NC) beach nourishment project (http://www.youtube.com/watch?v=tGs-OUIi9js).

How noisy will construction be?
Noise levels will be high in the immediate vicinity of the discharge point, mainly due to the activity of bulldozers. Diesel engines and backup beepers will be in use. The main area of noise will extend ~500 feet (ft) from the discharge point.

How long will it take to complete work along my section of beach?
Typical production is about 300 ft of beach per day so the active work area will move quickly past each property. However, owners and guests should expect disruption for a few days before most of the equipment and safety fence are relocated to another section of beach.

What will the new sand look like?
The "borrow" sand from offshore was beach sand thousands of years ago when sea level was lower. It has a similar color and texture as the existing sand on the beach. It will be wet and slightly darker when pumped into place, but we expect it to dry out and bleach rapidly so that it becomes indistinguishable from the existing beach sand.

Will the water be muddy for a while?
The offshore sand contains a tiny fraction of mud and organic matter. This fine material will wash out with the slurry as new sand settles on the beach. There will be higher turbidity in the water close to the active discharge point over a distance of several hundred feet. Turbidity levels are expected to remain the same as ambient ~500 ft from the active construction area.

How long will the pipeline block my section of beach?
The pipeline will extend up to one mile along the beach before it is dismantled and relocated to another section. Depending on the location of your property, it may be in place for one to three weeks. As new sections of beach are filled and reopened, sand ramps will be placed over the pipeline to provide access to the water.

Will the pipeline damage my dunes?
The pipeline will run along the middle of the dry-sand beach well away from the dunes and the surf. There will be a wide area of beach to use between the pipeline and the water.

Is the pipeline dangerous?
Yes. It will be discharging a slurry of sand and water under high pressure. Sudden leaks can occur and shoot spray into the air. Beachgoers should only cross the pipeline at the sand ramps and not place blankets and chairs close to the pipe.

What are the public safety measures during the project?
The contractor will station safety personnel at either end of the active work area. Temporary fencing and flagging ribbon will cordon off the area. Inside the safety fence, all workers and authorized visitors must wear hard hats, safety glasses, reflective vests, and steel-toed footwear. The Town will also have police and emergency personnel on standby to respond immediately to incidents.

Will the public be able to watch construction?
Yes. The beach will be open during construction and will be accessible along a narrow backbeach corridor in the active work area. Existing beach accesses will remain available, but some parking spaces will be cordoned off for the contractor's support equipment. Please use caution around equipment and pipes stored on the beach.

— *The next Fact Sheet discusses environmental impacts.* —

The Town will not know the schedule for sand placement along specific properties until the project is underway. A tracking map of the oceanfront will be available on the Town's web site to assist homeowners in determining the approximate week to expect work in a particular section of beach.

FACT SHEET #4 — Environmental Impacts

This Fact Sheet discusses some of the environmental impacts of the project. When properly performed, beach nourishment is no different than natural accretion and simply feeds new sand to the beach/dune system.

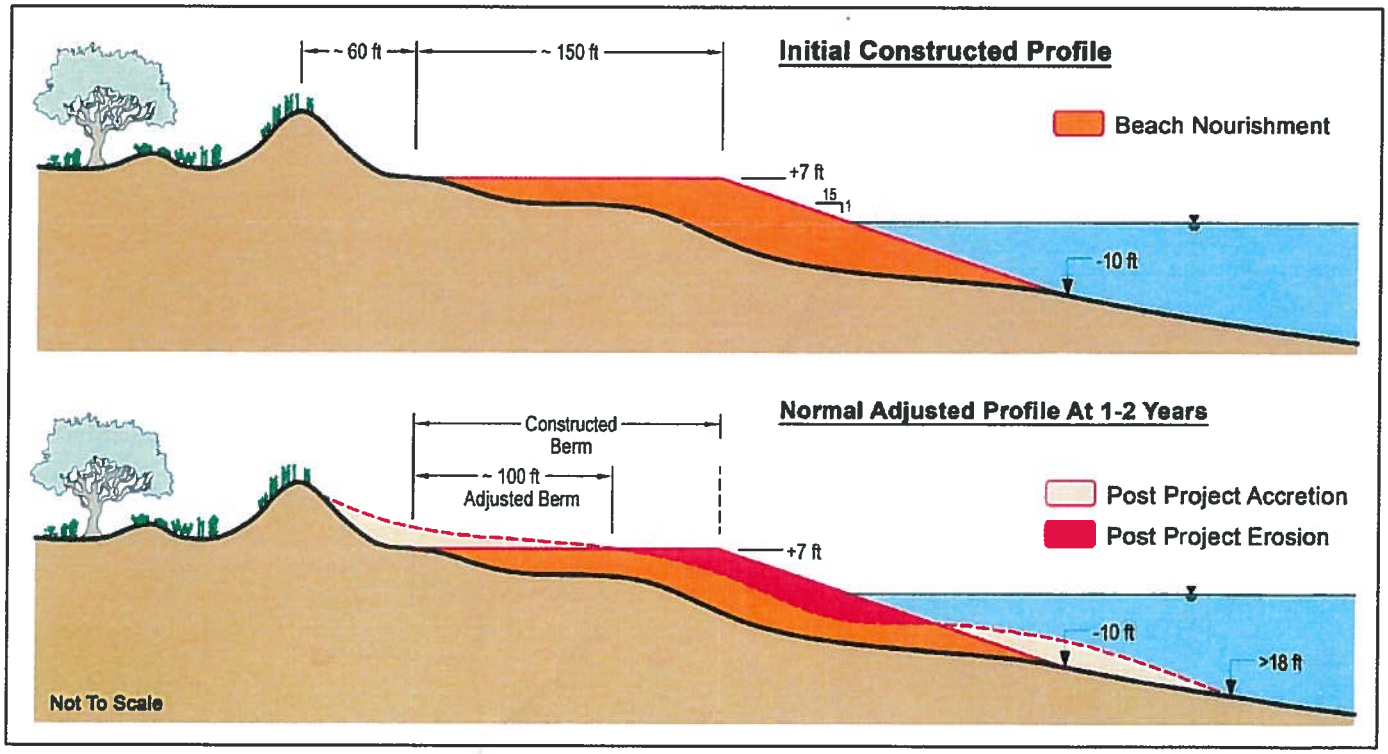
How will the Sagaponack—Bridgehampton–Water Mill project help the environment?
In several ways. First, new beach-quality sand will feed the littoral system and offset decades of chronic erosion. Second, the extra sand volume will widen the beach and lessen the degree of dune erosion in storms. Third, excess sand will naturally rebuild dunes, further bury emergency sandbags, and allow new vegetation to propagate. A wide, dry-sand beach after nourishment is a favored habitat for certain rare species (such as seabeach amaranth) and piping plovers.

Will the new beach produce unpleasant odors?
No. The offshore borrow material is almost entirely sand with minor shell fragments, which smells like the sand in the surf zone. Dredged material from harbors and estuaries often contains high proportions of mud and organic matter which will release hydrogen sulfide and other odors associated with decaying matter. This will not be the case during the project.

Will the profile of the beach remain the same?
Not initially. The sand will be pumped into place at an elevation that is a mid-range of the normal dry-beach level. We do this so that minor storm tides will wash over the new beach and help mix the nourishment sand with the native sand. Washovers will push some sand toward the dunes and position it favorably for dune growth by winds. Meanwhile, the seaward edge of the dry beach will retreat landward as the slope adjusts. Some sand will shift toward the outer bar in shallow water. This sand redistribution is important because it results in a new beach with slopes and surf breaks similar to the existing beach.

[See graphic which shows "cut-away" profiles of the beach before and after nourishment, and adjustment of the new beach.]

Will the nourished beach erode faster than the beach has in the past?
To a small degree. When there is a protrusion of the shoreline into the ocean, relative to adjacent sections of beach, it becomes a focal point for waves and sand redistribution. This is nature's way of producing the long strand beach that exists between Montauk and Shinnecock Inlet. The project will create a wider beach and therefore tend to give up sand to adjacent, less healthy sections to the east and west. This redistribution will occur gradually, and the Town plans to monitor losses each year and determine how much sand remains within the project area.



Why is the project being constructed in the fall?
This is the time allowable under the permits in consideration of protection of threatened species such as the piping plover. This schedule will also provide a protective beach which can absorb and adjust to winter storms and take on a natural look prior to next summer.

What will happen to the organisms living in the beach?
Nourishment buries some "benthic" organisms like surf clams and worms which are less mobile. However, the species living in the surf zone generally have short life cycles and are adapted to high-energy conditions and the constant changes in the sand level. As soon as the project is finished in a section, beach organisms will begin to populate the new beach. Studies have shown that nourishment projects which match the sand textures of the native beach tend to rapidly recover their population of organisms—in weeks to months.

Will dredging leave a big hole offshore and produce a biological "dead zone"?
No. Sand will be dredged from water depths between 45 and 50 feet deep about one mile offshore. The maximum excavation permitted is 7 feet below the existing bottom. The sediments below this level are similar in size and quality to the borrow sediments and are generally free of mud. Dredging will, in effect, remove a shallow "plate of sand" across many acres, leaving similar sands in place. Waves and currents will maintain circulation and water quality (particularly dissolved oxygen) across the borrow area and allow organisms to quickly recolonize the dredged area.

Will the project affect surf fishing or offshore species?
Not to the degree the season of the year affects fishing. The impact on fisheries is highly site-and-season dependent. Offshore dredging mobilizes organisms and exposes fresh substrate, which can initially attract some fish species because of the availability of food. On the other hand, fish generally avoid the immediate vicinity of the dredge and discharge points due to elevated turbidity. However, turbid waters will be localized and short-lived, returning to ambient conditions soon after pumping stops. We expect surf fishing and trolling for fish over the borrow area to remain as unpredictable as these activities have been for all the years before any beach nourishment activity.

— *The next Fact Sheet discusses impacts of storms.* —

FACT SHEET #5 — Storm Impacts

Storms will affect any beach nourishment project just as they modify natural beaches. This Fact Sheet describes some likely impacts and ways nourishment will mitigate damages.

What will happen when a storm impacts the project area?
The beach will absorb the high waves and will change shape. Contrary to conventional wisdom, most of the sand will remain in the "beach system," but large quantities will shift from the upper beach and move toward the outer bar. If the storm is of moderate intensity such as a typical northeaster, little sand will be eroded from the foredune, but if a major hurricane impacts, the storm surge will allow waves to reach the foredune and cut it away. In either case, sand erodes from the visible beach and is deposited in shallow water. The net result is a flatter profile compared with the normal "fair-weather" profile.

What happens to the beach after storms?
The visible beach gradually rebuilds. Normal waves will reshape the profile, pushing the sand landward and restoring the dry beach. The underwater profile will also tend to rebuild a protective bar. This process of profile adjustment will occur over several weeks to months. Dune rebuilding will also occur, but at a slower rate. The storm/post-storm profile response is referred to as the "beach cycle."

How much nourishment will be washed completely away in storms?
It depends. For a relatively large project like Sagaponack/Bridgehampton–Water Mill (~5.7 miles, ~2.6 million cubic yards), it would not be unusual to lose 25 percent of the nourishment in a major, slow-moving storm such as Hurricane *Sandy* or the 1962 Ash Wednesday northeaster. Both storms produced strong currents to the west which is the process that carries sand downcoast away from the project area. But fast-moving hurricanes often produce more cross-shore sand transport, meaning the sand stays mostly within the boundaries of the project area. Fair weather returns sand to the visible beach, limiting the net loss.

How does project length affect the sand losses during storms?
Longer projects are better. In fact, project life increases geometrically with length. For example, a four-mile-long project will generally retain sand four times longer than a two-mile-long project, all other factors being equal. Some recent projects along Fire Island lost high proportions of nourishment because they were relatively short (~1 mile). Most of the sand loss involved spreading of nourishment sand to adjacent, unnourished sections of the National Seashore.

If sand is lost in a major storm, can it be replaced with little cost to the community?
Yes, provided the storm receives a federal declaration of disaster and the losses are properly documented. The project is engineered and therefore is expected to qualify for FEMA post-disaster community assistance grants. These emergency funds can be used to replace sand lost in a major storm. The eroded beach would be renourished and restored to its condition prior to the storm. The Town plans annual surveys, as required by FEMA, to document the nourishment volume remaining on the beach prior to a catastrophic storm. FEMA does not reimburse communities for normal yearly erosion losses or losses due to minor storms.

Will the project reduce damages during storms?
Yes. A wider beach will absorb storm waves before they reach people's houses. A wider, dry-sand beach will also feed sand to the foredune, allowing it to build volume and height. ***Wide beaches plus high dunes equal less damage*** to upland and community infrastructure.

Will the project reduce my annual dune maintenance cost?
It should. A wider beach creates a reservoir of sand that gradually feeds the dune system. It also allows the annual cycle of winter erosion and summer accretion to occur within the zone of dry beach without impacting the backbeach zone. Presently, even minor winter storms cut away the beach up to the dune, making it harder and more costly to maintain protective vegetation.

Are there examples of beaches where the dunes have grown naturally after nourishment?
Yes. The Village of Westhampton Dunes is one example where the dunes have become bigger each year since the first nourishment in the mid 1990s. Another example is Bogue Banks (NC). Before nourishment, the typical annual cost of dune maintenance was $2,000–$5,000 per property with upward of 350 permits issued each year for beach scraping and walkover replacement. Over the past decade since nourishment, few sand scraping permits have been issued, and walkover permits are generally for lengthening, not rebuilding, damaged structures.