PROJECT DESCRIPTION

Town of Hilton Head Island, SC:
Port Royal Shoreline Restoration and Stabilization Project

Applicant: The Town of Hilton Head Island, SC
Agent: Olsen Associates, Inc., Jacksonville, Florida

The proposed project will be located at the northeastern end of Hilton Head Island, SC at the intersection of the Atlantic Ocean and Port Royal Sound shorelines. The project will include (1) the placement of approximately 0.8 to 1.0 million cubic yards of beach compatible sand along approximately 5,400 feet of Atlantic Ocean shoreline between Barnacle Road (just north of The Westin Resort) and the southern area of the "sand spit" at the northeast tip of the island as configured at the time of construction and (2) the construction of a low-crested, "leaky" groin at the northern terminus of the island's Atlantic Ocean shorefront and within the limits of the beach fill. This project area is located between Atlantic Ocean and Port Royal Sound shorelines that have been nourished in the past. The area of interest for this project has not been previously nourished. Due to the present day erosion rate at this location, the project design and configuration will be reevaluated immediately prior to construction considering site conditions at that time. As such, the noted range of expected required sand volume is intended to accommodate the replacement of additional sand that will in all likelihood be eroded from the project shoreline between the time of this application and the time of construction.

The purpose of the project is to restore an area of highly erosional beach with sand fill from an offshore borrow site and stabilize the area with a low-crested, "leaky" groin by reducing future sand loss rates. The project will include sufficient sand volume to minimize potential downdrift effects of the proposed permeable groin and meet typical annual sand transport volume demands expected for the period between project completion and the next planned comprehensive beach renourishment project on the island. The expected date for the next major renourishment on Hilton Head Island will be around 2015 to 2017. The risk of potential adverse effects along the adjoining Port Royal Sound shoreline will be further minimized and managed through the continued implementation of the Town of Hilton Head Island's Beach Management Program. The program includes monitoring, maintenance, management, and enhancement of the island's shorelines through periodic beach fill placement and the strategic use and maintenance of shore stabilizing structures, as needed. The shore stabilizing benefits of some of the seventeen existing groins along the 9,000 feet of Port Royal Sound shoreline located immediately north of the proposed "leaky" groin will further serve to stabilize the shoreline downdrift of the proposed project.

The proposed project is required due to a recent onset of persistent chronic shoreline retreat along the noted shoreline. Since about 1999, portions of the proposed project shoreline have experienced consistent recession rates varying from 60 to 130 feet per year (Olsen Associates, Inc., 2008). Prior to that date, the shoreline has been highly accretional. A copy of the 2008 engineering report prepared for the Applicant documenting the recent erosion history of this area is included with this application as **Attachment B**. Considering the present day extremely high rate of erosion at this location, sand fill alone *cannot* successfully address the ongoing shoreline retreat problem and provide sufficient protection to upland development. The low-crested, "leaky" groin is intended to reduce the shoreline retreat rate following fill placement, maintain a more consistent shoreline positions along the Atlantic Ocean and Port Royal Sound shorelines, and allow for continued alongshore sand transport from the Atlantic Ocean shoreline to the Port Royal Sound shoreline.

The hydraulically placed sand will be shaped into the typical construction berm configuration used on Hilton Head Island in the past with a crest elevation of +8 ft NGVD and a seaward slope of 1:20 (i.e., 1 vertical unit to 20 horizontal units). Fill berm widths are expected to vary from 250 to 500 feet. The variation is due to the irregular configuration of the existing, eroded shoreline. The fill will taper to the existing shoreline at both the north and south ends. At the southern end of the project, the fill will taper about 500 feet to the existing shoreline. At the northern end of the project, just north of the structure, the fill will taper from the low-crested groin to the southern area of the "sand spit" as the spit is configured at the time of construction.

Beach quality sand fill for this project will be dredged from a portion of a large linear ebb tidal shoal feature located on the eastern side of the Port Royal Sound ebb tidal shoal platform. Sediment conditions at this location have been investigated through seismic sub-bottom survey techniques (Gayes, P.T. and J.C. Hill., 2008), Vibracore collection, and laboratory analyses. The results of these investigations are summarized in a sand search report by Olsen Associates, Inc. (2009). These reports and associated relevant geotechnical data and analysis results are provided on CD in PDF format with this application as **Attachment C**. The proposed sand source is highly suitable for use as beach fill material on the north end of Hilton Head Island. Dredging will be performed by a hydraulic cutter-suction dredge. The sand will be pumped from the borrow area to the fill site through a submerged pipeline. Operational conditions during construction will be placed upon the use of the proposed borrow area to avoid creation of isolated deep holes that may adversely affect the recovery of benthic invertebrate communities following dredging.

To evaluate project performance and potential effects to adjacent shorelines, the Town of Hilton Head Island's annual beach monitoring program will be expanded. This will include the establishment of additional beach profile monitoring stations, more frequent surveys of the project area in the two years following project completion, and specific annual summary reports related to the project. The physical monitoring will also include periodic surveys of the proposed borrow area.

The project fill site is located along a section of shoreline that is designated as Critical Habitat (USFWS SC Unit-15) for wintering piping plover (*Charadrius melodus)*. The project is intended to stabilize and maintain the critical habitat area through continued beach fill placement at a nourishment interval of approximately eight to ten years. The current erosional conditions significantly threaten the habitat area and, if unaddressed, it is quite possible that most of the remaining shorefront which is designated as critical habitat within Unit 15 will be lost. Stabilization, maintenance, and protection of the remaining shorefront habitat are principal goals and beneficial effects of this project. Minimization of potential adverse effects to the spit and foraging habitat north of the beach fill area within Unit 15 is considered in the proposed project design and is also a primary objective of the project.

It is understood that a Section 7 consultation with the USFWS will be required as part of the permitting for this project to address nesting sea turtle, piping plover, and piping plover critical habitat issues. In support of this consultation and in consultation with other resource agencies, the Applicant has initiated the preparation of an Environmental Assessment (EA) and Biological Assessment (BA) for the proposed activities. A monitoring and management plan for piping plovers is also under development by the Town for the protection and management of wintering piping plovers during and following project construction and evaluation of potential impacts and recovery of foraging habitat within Critical Habitat Unit 15 following project construction.

The Applicant intends to minimize potential project-related effects to nesting sea turtles and wintering piping plovers. It is noted, however, that due to the expected time required to construct all project elements (beach fill and structure), construction related activities will overlap into both of these seasons. The Applicant has initiated informal consultation and will continue both informal and formal consultation with resource agencies to determine the time of year during which construction related activities will least affect listed species and resources of concern. In this regard, initial consultations with the agencies have contributed to the current project design. Specifically, the Town has agreed to pre-consultation recommendations for minimizing direct fill placement north of the "sand spit," an area identified as high quality foraging habitat.

REFERENCES

Gayes, P.T., and Hill, J.C. (2008). *"High-resolution Geophysical Survey & Interpretation for the Entrance to Port Royal Sound: Hilton Head, South Carolina,"* report prepared for Olsen Associates, Inc., Center for Marine and Wetland Studies, Coastal Carolina University, Conway, SC.

Olsen Associates, Inc. (2008). *"Town of Hilton Head Island, SC: North Island Shoreline Change Study,"* report prepared for the Town of Hilton Head Island, SC, Olsen Associates, Inc., Jacksonville, FL, August 2008.

Olsen Associates, Inc. (2009). *"Port Royal Sound, SC 2009 Sand Search Investigation,"* report prepared for the Town of Hilton Head Island, SC. Olsen Associates, Inc., Jacksonville, FL, July 2009.